VOL. 28 NO. 8

What price this hill development ?

yojana

MAY 1—15, 1984 □ RUPEES 1.50

New approach to Indian planning

NEXT ISSUE

The concept of well-being

20-Point programme review

OVER 25 LAKH people belonging to Scheduled Castes and Scheduled Tribe families have been given economic assistance under the 20-Point Programme during 1983-84.

A review of the programme's achievements upto the end of January 1984 by the Planning Commission reveals that 80.4 per cent of the target was achieved in providing economic assistance to Scheduled Tribes. About 6.14 lakh Scheduled Tribe families were given economic assistance during the year.

Himachal Pradesh and Manipur had made nearly 162 per cent progress. Two other States, Bihar and Uttar Pradesh, and the Union Territories as a whole had also exceeded their targets. Madhya Pradesh and Rajasthan had achieved over 90 per cent of their targets and another six States had made between 74 to 81 per cent progress.

More than 39,800 biogas plants have been set up during the period which is nearly 80 per cent of the target. This does not include the biogas units set up by the Khadi and Village Industries Commission. Five States, namely Himachal Pradesh, Karnataka, Bihar, Tamil Nadu and Rajasthan have crossed their goal. Himachal Pradesh was leading them all with 209.7 per cent achievement.

Achievement in opening of new Primary Health Centres was 83 percent. During this period 339 PHCs were opened against the annual target of 405.

In three fields, viz. distribution of house sites to the houseless, tree plantation and opening of new ICDS blocks, country has fully achieved the annual targets for the year 1983-84. However, in these areas also some States have exceeded their targets while some others have lagged behind.

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What price this hill development ?

Sunderlal Bahuguna

Mindless cutting of forests and destructive methods of quarrying have caused not only irreparable damage to the hills but also upset the life of the local people. What after all do the forests bear ? Soil, water and pure air that are the very basis of sustenance. The development strategy in the hills require a close coordination between the national needs and local aspirations, says the author.

HILL DEVELOPMENT has become a matter of great concern today and is being talked about in remote huts in hills, in the air-conditioned rooms of multi-storeyed Yojana Bhavan and in States Secretariats. Himalaya's strategic situation and its being the birthplace of life-giving rivers has given it national and international importance. With the increase in the national and international importance of Himalayas, the neglect of the interests and aspirations of the local people has also increased. As a result of this the cold icy mountains have turned into mountains of warm discontent.

The traders of development and those possessing bookish knowledge suggest new prescriptions to the planners and experiments on these begin. The examples are the development projects launched through the universities of Hill areas. I could see one such project in a collage of Jammu University at Bhadrwah. There was a signboard depicting the number of fast growing tree species planted under this project, but the plants had gone in the stomachs of cows. The empty pits were certainly there as a proof of the labour put in digging the pits by the students and the teachers. These empty pits were waiting for the next planting season to come.

The main contradictions of hill development are :

There is lack of coordination between the aspirations of the local people and national interests.

The standard of living of the planners and those who implement the plans is totally different from those for whom the plans are made.

The aspirations of the local people are always (a) to be connected with their soil and (b) lead a comfortable life out of it. In the context of hills they want to get rid of the life of drudgery. They want easy availability of basic necessities of life in place of scarcity. When the era of quick and intensive development of Himalayan region began two decades ago, top priority was given to connect these areas with the plains by constructing roads. After the construction of main roads was completed, construction of feeder and link roads was started. This continues till today and is likely to continue till each village is linked with a motor road.

The roads of discontent

Occurrence of landslides and soil-erosion is on mass scale. According to Dr. K. S. Wadia, the renowned scholar of Himalayan geology and environmental science, "construction of 44,000 km motor roads in Himalayas have generated 2,650 million cubic meters of debris. Each year every kilometre of these roads produces 550 cubic metres of debris by landslides and rockfalls, so that every year about 24 million cubic metres sediments slide down the slopes killing vegetation and choking mountain streams". The rate of soil erosion is 2000 times more in areas with roads as compared to a forested area.

Hill roads are the examples of that cartoon which depicts a pigmy running with a huge tree under his arm. When asked here he was going, he replied, "to find some safe place to hide this tree, because the cement road is following me." With the construction of the roads a continuous process of forest destruction

is encouraged through timber trade and illicit felling. The hill slopes have been stripped off due to dragging and rolling of huge logs. Saw mills have reached inside the remote dense forests, as in Chenab Valley in J&K, Fold in Uttarkashi and in the Darjeeling hills of West Bengal.

Mining has begun, Doon Valley, Jhiroli (Almora) and Chandhak (Pithoragarh) are the examples of the irreparable losses occurring due to the destructive system of quarrying.

Village economy shattered

End of subsistence village economy and its replacement with money and market economy. Earlier where a few villages existed to supply salt, oil, jaggery and cloth, now small bazars with city provision stores have developed. The barter economy has been replaced with the money economy, in which the villagers lose both ways as seller and purchaser. The villagers are now compelled to sell their valuable products like milk, ghee etc. export man-power and adopt unsocial means to earn money to satisfy their ever increasing demands. These village markets have become the centres of liquor and gambling. Healthy men leave village in search of job and on their annual leave they spend lavishly. The life of hill women becomes more miserable.

The other development programme in the hills was the opening of schools and colleges. This has brought with it evils of present day education which alienates youth from their culture and life style and produces unemployment. The educated unemployed have adopted professions like contractorship, in which they hope to earn by least effort. This has encouraged corruption and over exploitation of the natural resources.

Agriculture and animal husbandry have not improved. In a subsistence economy as in the hills, the agricultural products cannot be sold. The holdings are very small. Women play most prominent role in agriculture and animal husbandry. The development programmes have not reached the women.

Dams for destruction

Construction of dams along hill rivers to meet the increasing demand of irrigation water and power in the plains, has been taken up and a number of such projects have been proposed for future. The number of such projects over the Ganga and its tributaries in the hills alone is 22. One of such completed projects is Pong dam in Himachal Pradesh. Tehri Dam over Bhagirathi in Uttar Pradesh is under construction. For hills these projects are programmes of destruction.

These dams will flood the fertile flat land of the valleys. The problems of rehabilitation of the displaced people have been created. The Pong Dam oustees, in spite of getting land for rehabilitation in Rajasthan, could not settle there. Not even four villages out of 92 affected by the proposed huge Tehri Dam have yet been fully settled. The human rehabilitation creates social, psychological and cultural problems.

The greatest tragedy of hill development is the conversion of natural forests into timber mines to feed the forest-based industries. This happened because the sources of raw material to forest-based industries had been exhausted as all the land in the plains was put over to agriculture. The objective of fourth, fifth and sixth Five Year Plans in forestry sector has been to bring more areas of hill forests under industrial plantations. For this purpose valuable oak forests, as in Ringali (U.P.) and Thaltukhor Mandi (H.P.) have been converted into coriferous deodar forests. In Eastern Himalayas dense mixed forests were felled to plant dhupi (in Darjeeling). In North Kanara district of Karnataka in the Western Ghats, forests were cleared to plant tea and eucalyptus, even though the climate of that region does not favour eucalyptus.

The gaps

The exploitation of the undeveloped areas to meet the ever increasing demands of the affluent societies is a global phenomenon. This is evident from the development programmes of the hill areas of which construction of roads and high dams, mining, and the management of the forests are the glaring examples. The hill areas, once known for their enchanting scenic beauty, have now become deserted battlefields.

The main reason of this is the big gap between the thinking and ideals of the planners, policy makers and the hill people. This distance is not only physical, but there is also a big distance between the minds and the hearts of both. This distance was highlighted in a slogan raised by the local people, when the construction of Tehri dam was started under the guard of armed police in the face of people's resistance. The slogan was—you love electricity, we love soil. Similarly during the *chipko movement*, the traditional slogan of forestry management was: What do the forests bear? Resin, timber and foreign exchange. This was challenged by the village women of Henwal Ghati by saying what do the forests bear? Soil, water and pure air. Soil, water and pure air, are the basis of sustenance. These sentiments show the distance between the thoughts and ideals of both.

Back to traditions

A number of problems have cropped up on account of the traditional definition of 'Development' as affluence. In the so-called developed societies, modern poverty has emerged in the shape of increased oil prices, permanence of pollution, higher bank rates, and fall in the purchasing capacity of salaried persons.

This development has made life impossible without money. So we shall have to adopt the traditional life style of the commoners, in which everybody has an opportunity to survive. There are no economic disparities. In such a system the primary use of the natural resources is to meet the basic needs—oxygen, water, food, shelter and clothing—of the local population from their surroundings. For this purpose we shall have to rely on the customs, traditions and wisdom gained from the experiences of the generations of the common people, rather than big research volumes and reports prepared after long intellectual exercises.

Areas of coordination

We shall have to discover the areas of coordination between the national needs and the local aspirations. The primary national interest in the context of hill

areas and specially the Himalayas is strengthening these areas from the point of view of national defence. The experience is that a self-sufficient and contented population on the borders is the strongest defence line. More than this they should have an unflinching faith in their cultural radition. The people of Monpa community in Tawang area set an example of this in 1962.

The second national need is of the maximum utilization of the resources of this area for the development of the entire country. Now comes the plan for the utilization of forest, water and mineral wealth of the hill areas.

We have inherited a colonial forest policy which has made the forest dwellers aliens in their own land and finally the enemies of the forests. Our natural forests have disappeared and these are now the timber mines and the stores houses of industrial raw material. The forest area is gradually shrinking and the whole country is being affected by the devastating floods and accelerated soil-erosion. This good sense has come on the eve of Seventh Plan. The importance of the protection of environment has been recognised and the United Nations slogan "Development without destruction" is on the tongue of everybody.

The benefactors

The scientific truth should be accepted that the main role of the Himalayan forests is to maintain the balance in the climatic conditions of the whole of Northern India, and the fertility of the Gangetic plain. These are the storehouses of water and the factories of soil manufacture. The findings of meteorologists and glaciologists regarding the increase in temperature and recession of glaciers cannot be ignored. The latest position of Himalayan forests has been clearly depicted by satellite imagery.

According to the studies made by Dr. J. S. Singh and Dr. S. P. Singh of Kumaon University, there is only 31 per cent forest area in the eight hill districts of U.P. Out of which forests with density of more than 60 per cent are only 4.8 per cent. Now where do we stand in the context of national policy of having at least 60 per cent land area under forests in the hills?

In view of its national and local importance, conservation and augmentation of forests should get the top priority in the planning for the development of the hills. Clear-felling of forests and extraction of resin for comercial purpose should be immediately stopped and only such tree species should be planted and promoted which contribute to soil and water conservation and provide shade.

Forest and farm ratio

Though the land-man ratio in the hills appears to be very favourable due to large areas covered by the hills and small population, the density of population in the hills is highest if taking into consideration the cultivable land only. Encroachment of cultivation in the steep and unproductive slopes covered by forest and progressive reduction in the Jhuming cycle are evidence of the heavy population pressure on land in the hills.

Agriculture cannot be separated from the forest. One unit of cultivated area requires seven units of forest area to sustain agriculture. In the context of Western Ghats, it was estimated about 50 years back that one acre of plantation crop, required 9 acres of forest land to provide required shade, green manure and moisture to the soil. Accordingly, plantations of aracnut, cardamam etc. had been raised by providing adequate forest land (Betta land) in this proportion.

In other areas, commercialisation of forests has created a conflict between the forest and agriculture base hill communities. The objective of land-use planning should, therefore, be to promote farming of such trees which provide food, fodder, fuel wood, green manure and fibre so that the relationship of conflict between the people and the forest could be changed into goodwill and complementality. This can be one of the practical steps in changing from shifting cultivation to settled agriculture. For this purpose, priority should be given to the plantation of such trees which are of direct use to the people for their own food and fodder for their cattle.

Pasture development

Next to farm forestry, pasture development is another area which deserves emphasis. In high altitude areas where climatic conditions do not favour tree growth, extensive summer pastures have given rise to sheep and cattle rearing. There is primarily an animal based economy as they provide, food, wool, milk and also means of transportation. In the opinion of the people inhabiting the upper reaches of Byans and Darma valleys on the tri-junction of India, China and Nepal border the best development plan during last 20 years has been the cross breeding of yak and cow to produce draught stock capable of carrying heavier loads. They also prefer cross breeding of donkeys and mules for the same reason. These animals provide more employment and income as a means of transport.

Similarly in upper reaches of Himachal Pradesh and Uttarkshi district of UP sheep rearing has been a profitable occupation but the main problem is progressive depletion of winter pastures in the foothills. The pastures of Terai and Bhabar have been shrinking due to expansion of agriculture there. Cultivation of such grass should be promoted in these areas and could be preserved as dry fodder for winters.

There is more serious problem of fodder in areas of permanent settlement between 1000 and 2000 metres above sea level. This is the zone which is more densely populated but the predominance of monoculture pine forest has resulted in acute shortage of fodder for the cattle.

The only way to control open grazing in forest lands in this zone is to popularise plantation of nutritious fodder trees on a big scale. The people of Bhatiyat tehsil of Chamba district in H.P. have gone to the extent of uprooting the saplings of pine and planting Bhimal, Bakarin and Ten in their place. So far plantation of trees is concentrated in only barren

and waste lands. It should be extended to all the areas including those covered by reserved forests. The monoculture conifer forests should be converted into mixed forests. This is a more practical way of maintaining a healthy environment and also of protecting the forests from fire etc.

Source of fuel wood

The third priority should go to fuel wood production. For this purpose climbers and bushes which regenerate forestry after cutting need be planted alongwith trees. Hatab was one such species which grew abundantly in Kashmir but it has now vanished as it was mistaken for a weed.

If is often held that availability of fuel wood would ward off the energy crisis. But in the context of hills, the real source of energy are the human beings and animals themselves. Therefore, conservation of the energy source through the plantation of nutritious food and fodder trees is important.

The forests are also important sources of green and compost manure. The use of chemical fertilizers has not been successful in the hills due to the kind of soil there and lack of irrigation facilities. Chemical fertilizers have instead proved harmful. The people, therefore, depend solely on organic manure composed of leaves and cattle dung. The species which are considered useless weeds from the stand-point of commercial forestry are the ones which contribute maximum to compost manure.

Fibre for industries

The next important species are those which produce fibre for the small and household industries based on spinning, weaving and production of ropes, fibre etc. In this connection it may be argued that the priorities outlined above do not take into consideration the requirement of raw material for the forest based industries. The point that need to be emphasised and understood is that there is no place for such industries in the hills which are based on mass exploitation and extraction of resources.

If industries are to be established at all they should be based on the processing of forest produce such as flowers, fruits, leaves, deadwood etc. and not the forest itself. Walnut, mulberry and wild khumani trees produce raw material for industries. The padan tree which produces nutritious food for honey bees during the lean winter season is also another example of such trees. There cannot be any plan more devastating than the one which proposes industries based on the forests and trees themselves. Previous Five Year Plans encouraged saw mill as a forest based industry in the hills, as a result of which there was a flood of saw mills in the entire Himalayan region from Kashmir to Kohima. These are causing havoc.

Abode of plenty

Hill forests are undoubtedly a—national resource not in the form of wood but as the preserver of soil and regulator of water flow in the rivers. Only such trees should therefore be promoted in the hills which are capable of producing more bio-mass. The bio-mass output from chir forest is only 199 tonnes hectare which is negligible compared to the 786.6 tonnes per hectare bio-mass output of mixed oak forest.

Connected with this is the problem of controlling floods by regulating the flow of water in the rivers. The sources of principal rivers lie in the great Himalayan glaciers but most affluents which actually cause flood during rains originate in the forest areas of middle Himalayas. The glaciers of Pindari and Gomukh in Central Himalaya are retreating by 31 and 18 metres respectively every year due to gradual increase in atmospheric temperature which is direct result of the depleting forest cover. Water flow ratio in these rivers fluctuates from 1 to 60 during dry and rainy season whereas this ratio in Bhutan, where sufficien forest cover is still available, is only 1 to 7. The impact of this fluctuation is well-known in the shape of dwindling reservoirs and frequent breakdown in the supply of electricity.

Hydroelectricity from the rivers offers the biggest promise as a future national resource but in order to conserve and augment this resource, the catchment areas of the Himalayan rivers need to be clothed with vegetation. The same applies to the mountains of Arawal, Satpura, Vindhyachal and Eastern and Western Ghats. The hydro-electric projects should be based not on blocking the flow of the rivers and creating huge reservoirs but on the currents of the flowing water. The hydrologists have come to the conclusion that for the preservation of environment and for maintaining the purifying capacity of the rivers, it is not advantageous to tamper with the natural flow of water.

The need for pure water is increasing with the increase in population and industrialisation. This has become one of the main concerns for several industrialised nations. The scientists in the United States have estimated that availability of pure water in their county will be only for 20 to 30 minutes a day by the year 2000. yet there is no technical process which could purify water in such a short time.

Conservation of water sources

Conservation of water sources is important from the local development point of view. Most villages have problems of drinking water. Drinking water schemes are not successful because the sources of water dry up after some time. It is, therefore, necessary to maintain the flow of water in springs by providing vegetative cover. Till now the use of water resources has been restricted to the production of hydro-electricity through big projects. Local needs of electricity are also being met out of the big projects. This is more prevalent in Himachal Pradesh.

The central grid system on the one hand increases the management cost and transmission losses, and on the other it takes longer to restore the supply if there is a breakdown. Multi-purpose community hydro-electric power houses along flowing rivulets should be encouraged. These may provide power for paddy-dehusking, flour-grinding, oil-extraction, lighting and keeping the houses warm. Where more power may be generated, it should be utilised to lift water for the

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New approach to Indian planning-I

Dr. V.K.R.V. Rao

One of the primary objectives of Indian Planning must be the creation of an integrated Indian society where the distance between high and low is within the limits of psychological tolerance. The high should be within the reach of the low with self-effort accompanied by appropriate training in skills and equal opportunities of access to assets, technology and credit, the author adds.

THERE IS NO NEED for me to dwell on the country's achievements in economic development after the creation of the Planning Commission and the adoption of plan programmes and of plan outlays for financing them. The manifold increase in the output of wheat and of crude oil are the two conspicuous success stories in India's post-independent history.

The output of foodgrains has nearly trebled. India now ranks as one of the world's major industrial nations in terms of the magnitude of its industrial output, its diversification, import substitution, and production of capital and intermediate goods. In the human factor area. The increase in its stock of scientific and technical personnel, its enrolment of students at all levels, its medical and allied personnel and supply of health and other social services constitute a record of substantial achievement.

There has been a significant increase in transport facilities of all kinds, including railways, shipping, road and air and communication facilities including posts, telegraphs and telephones. India has also an honourable place in the realm of research and development notably in nuclear and space research and technology.

Silver Jubilee lectures series delivered in the Institute of Economic Growth, Delhi University, Delhi, recently.

Net national product has recorded an annual growth rate of 3.5 per cent, with agriculture averaging at 2.5 per cent and industry at 5.5 per cent. Per capita income has increased at about 1 per cent a year and expectation of life at birth has increased nearly 70 per cent to reach 51 years for males and 50 years for females. In absolute terms, the achievement is quite impressive, while in comparison with its pre-independence history, the record is even more impressive. What then is wrong with Indian Planning, and why do we need new directions ?

Dissatisfaction with achievements

There are many reasons behind the reasons why there is popular dissatisfaction with our developmental achievements. I shall briefly indicate them below and in summary fashion :

Multiple and non-integrated targets.

Mistakes of omission and commission in the listing of priorities and targets.

Non-fulfilment of targets, except in the case of the First Five Year Plan.

Inadequate rate of economic growth, lower than in many of the other developing countries.

Excessive attention to financial targets to the exclusion of physical targets.

Inflationary financing with its resulting sharp rise in prices and in cost of living.

Assumption of price stability during plan periods and absence of plan policies for its realisation.

Inadequate attention to quality as against volume in the output of goods and services targeted or achieved as a result of planned development.

Increase in unemployment of both educated persons and unskilled workers.

Failure of family planning programmes to bring about a reduction in the rate of population growth.

Neglect of ecological and environmental factors in the planning of development, resulting in deforestation, soil erosion, increased exposure to floods, water logging and salinity in land, and destruction of flora and fauna which had a positive role in maintaining balance between nature and man.

Widening distance between urban and rural areas and increasing rual-urban dichotomy.

Steady drift of population from the rural to the urban areas, involving both unemployed unskilled labour and skilled and educated rural workers, leaving the rural population in a self-sustaining poverty rap and also increasing urban poverty with its increasing slum-dwellers and unskilled unemployed.

Increase in the absolute number of persons below the poverty line and near stability in their percentage of the total population.

Increase in the incidence of vulgar and ostentatious consumerist life styles and spread of Five Star Hotel culture.

Inadequate project preparation and tardiness in implementation, with increasing time and cost over-runs and diminished returns from investment.

Continuing dimension of under-utilisation of capacity in both agriculture and industry.

Continuing failure of public enterprises to generate profits or achieve cost-reduction or improve quality.

Widening incidence of tax evasion, bribery, corruption and black money with a consequential development of a parallel economy in the country.

Failure of exports to increase sufficiently to prevent increasing dependence on foreign aid, non-resident Indian remittances, and commercial loans for securing the foreign exchange needed to finance imports and debt-service payments.

Increasing departure from the industrial culture needed for accelerated development such as discipline, work-ethic and credit ethic.

Lack of modernisation and competitiveness in spite of expenditure incurred on R & D and the large numbers of scientific and technological personnel we have in the country.

New directions

One can extend the list further, but it is long enough and sufficiently massive to justify the prevalent disenchantment with our current style of planned development and set both planners and the people to seek new directions in the planning process. No one wants to do away with planning or go in for an un-adulterated laisez-faire in economic affairs. But every one wants some change in the right direction. **Some are stressing economic growth, while others emphasise social justice; some are for liberalisation of governmental controls and regulations with an increasing role for private enterprise and the private sector, while others would urge a tightening of controls and a larger role for the public sector.**

A distinguished ex-civil servant and economic administrator has given public expression to his view, I quote : "We can and should plan for full employment and the Seventh Plan as a whole should have a new orientation in order to maximise the capacity for removing mass poverty through full employment". And he has outlined a five-point strategy for its achievement, which is not dis-similar from what others have been saying on the subject including Planning Commission documents, but what is not indicated is the extent to which this will maximise productive employment, let alone secure full employment.

An eminent economist, who is currently also a member of the Planning Commission, has stated in a public interview to a national press agency on March 4 of this year that in the Seventh Plan highest priority should be given to development of infrastructural sectors to secure uninterrupted growth in agriculture and industry. After listing some sectors in this regard, the press agency reports him as saying that a meeting of the Commission might be called within a month to concretise new proposals in regard to infrastructure and other aspects of the Seventh Plan 'so that' *a more result oriented plan carrying greater credibility with the people could be formulated' (italics mine).*

Economic survey

The Economic Survey for 1983-84 released a few days prior to the presentation of the Union budget for 1984-85 calls for full utilisation of the large capacities created in many areas "through relatively small investments in modernisation and upgradation of existing plants" and "from small projects in many areas, which do not tie up very large volume of resources and may be more efficient and more suited to local planning and implementation capacity". The Survey asks for the full exploitation of these opportunities in the Seventh plan period if we are to make maximum use of the available resources. In somewhat of an understatement it adds: *"More generally, the degree of discipline in plan formulation and implementation needs to be greatly improved"* (italics mine). The survey also makes a number of concrete suggestions for plan improvement some of which I give below :

A more effective way of import-saving and foreign exchange saving is to restructure investment away from sectors which are heavily import-intensive and to reduce the growth of consumption in areas where we are dependent on imports.

Improved profitability in the public sector and stepping up of the level of investment in areas like irrigation and power.

Need for utmost vigilence on expenditure and continuous concerted efforts to increase investment and improve productivity in critical areas.

Measures for increasing productivity and investment and curbing non-essential consumption to be high on the agenda for 1984-85 and beyond.

Adjustments in credit re-distributive policy to include reduction in interest on advances for fertilizer, retail trade, procurement of pulses and oil seeds, farmers, professionals, and self-employed belonging to Scheduled Castes and Tribes and professional and self-employed women.

Strengthen the flow of credit to the agricultural sector, particularly small and marginal farmers.

Pay close attention to the functioning of infrastructure sector and the performance of public sector.

Need for continued efforts at modernisation and quality consciousness to deal with certain weaknesses in the industrial structure.

Critical importance of improved export performance in the years ahead.

The Economic Survey is an anonymous document which is the work of a government department. Its suggestions for the needed approach to the Seventh Plan bear evidence of knowledge of the deficiencies in the current planning process, at least as much as members of the Planning Commission and vocal non-official spokesmen on planning. Without becoming frivolous, I would suggest that the Survey should be compulsory reading for the Union Council of Ministers, who are the ultimate decision making body in matters relating to planned development. I presume it is already in the reading list of members of the Planning Commission and the Economic Advisory Council to the Prime Minister.

It will be seen therefore that there is not much that an outsider like myself can suggest by way of new directions to Indian Planning, which is not already contained in the many reports of the Planning Commission or the statements of its members or of concerned Ministers. Nevertheless, having been an interested observer of the Indian economy for now more than fifty years and also worked for some time as a temporary civil servant (on deputation from the University) a member of the Planning Commission and of the Union Cabinet, I would like to place before you some suggestions for a new approach to Indian Planning, even though the suggestions may be neither new nor more than repetitive of what others, better equipped than myself, have already been saying.

Suggestions for new approach

I should like to begin with the objectives behind the planning effort; and can do no better than quote from the Report of the First Five Year Plan, which was published more that 32 years ago. I quote : "It is no longer possible to think of development as a process merely of increasing the supplies of material goods; it is necessary to ensure that simultaneously a steady advance is made towards the realisation of wider objectives such as *full employment and the removal of economic inequalities.* (italics mine) None of these objectives can be pursued to the exclusion of others; a plan for development places balanced emphasis on all these. Development, thus conceived, is a process which calls for effort and sacrifice on the part of the entire body of citizens. For such effort and sacrifice to come forth, psychological conditions have to be created which provide an incentive to all to give of their best."

I shall take off from there. The objectives of planned development should be such as to create the psychological conditions needed for evoking the necessary effort and sacrifice on the part of the entire body of citizens. Let me take it down to the Sixth Plan which is still in operation and to the Seventh Plan which is yet to be formulated.

The Sixth Plan places the removal of poverty as its foremost objective and listed a number of allied and other objectives. They also listed major areas of effort required to fulfil these objectives. These also need to be mentioned in this lecture as they form the old approach to planning, which, with some additions of my own, I am re-christening as the needed new approach to Indian Planning. These are :

a significant step-up in the rate of growth of the economy;

strengthening of impulses of modernisation;

a progressive reduction in the incidence of poverty and unemployment;

a speedy development of indigenous sources of energy;

improving the quality of life of the people in general with special reference to the economically and socially handicapped population;

strengthening the re-distributive bias of public policies and services in favour of the poor;

a progressive reduction in regional inequalities;

promoting policies for controlling the growth of population;

promoting harmony between the short and long term goals of development; and

promoting the active involvement of all sections of the population in the process of development.

The major areas of effort required to fulfil these objectives have also been spelt out in the Sixth Plan. These include conservation of energy and efficiency in energy use, a minimum needs programme whose coverage is so designed as to ensure that all parts of the country attain within a prescribed period nationally accepted standards, reduction in inequalities in income and wealth, reduction in regional inequalities to cover the pace of development and the diffusion of technological benefits, voluntary acceptance of the

small family norm for reducing population growth, protection and improvement of ecological and environmental assets for harmonising the long term with short term goals of development, and appropriate education, communication and institutional strategies for securing peoples' involvement in the process of development.

The familiar resemblance between the objectives mentioned in the First Plan and the Sixth Plan should be clear for any one to see, though naturally being later in time, the Sixth Plan spells out in more detail what was implicit in the First Plan. That is why I have been albergic to all the talks by eminent intellectuals of alternative approaches to Indian planning, as if the entire approach followed so far, including objectives and strategies, has to be discarded and a new approach adopted which is not linked with the past and totally different from it.

What has been wrong with planning so far has not been its conceptual or logical or technical content so much as in its implementation, its lack of cohesion with social factors, and the impediments imposed by political, social, administrative and cultural forces rather than strictly economic facotrs. What is needed is not an exclusively new approach to replace the old but a reorientation and modification of the old with some additions to which shall be referring during this lecture.

I shall now deal with the additions to or modifications in the old approach in order to make what I call a new approach or new direction to Indian Planning.

New direction to planning

To begin with, the new approach should take due note of two major undesirable features that have accompanied India's planned economic development, namely, the widening rural-urban dichotomy, and the increasing difference between the consumerist life styles of the affluent minority and the poor majority, which has led to the creation of the dual society in India on which I have been dilating now for some years.

The objectives of Indian planning must specifically include, and in the forefront, the creation of an integrated Indian society where the distance between high and low is within the limits of psychological tolerance, and the high is within the reach of the low, with self-effort accompanied by appropriate training in skills and equal opportunities of access to assets, technology, credit and the other facilities required for a significant improvement in economic well being.

The strategy for achieving this must include not only a universalised basic needs programme but also equal opportunities in education and in income generating activities, unhampered either by hereditary or environmental constraints. It must also include both a ceiling on incomes of all kinds with flexibility in fixing its level and severe restrictions, if not a complete elimination of conspicuous or vulgar consumerist life styles. A national incomes policy with an egalitarian slant and an effective ladder is a must for inclusion in Plan objectives.

Emphasis on physical targets

There should also be a change in the way in which targets are fixed by the Planning Commission. In spite of the known ambiguities and handicaps associated with financial targets, emphasis still continues to be laid on financial rather than physical targets.

It is true that physical targets are mentioned quite prominently, but there is no clear indication of the link between physical and financial targets. Annexure 4.3 (pages 57-58) to chapter IV of the Sixth Plan document gives a classified statement by different heads of development of the targeted expenditure under public sector outlays, but there is no similar statement of physical targets, let alone any statement putting them both together to show the physical targets that correspond to the financial targets. It is difficult to find out from the Sixth Plan document to what extent expenditure under different developmental heads is the causal factor for targeted outputs and capacity, the role of other factors in achieving the targeted results, and the measures planned to make these factors effective and operational during the plan period.

The mid-term appraisal of the Plan published in December 1983 is also not helpful in the matter. There is no overall statement of expenditure incurred on public outlay under different developmental heads corresponding to the targets set out in the Annexure in the Sixth Plan document to which I had referred earlier nor of course is there any overall statement linking achieved expenditure with realised physical targets. Annexure I to the Chapter on 'Industry and Minerals' in the mid-plan appraisal gives details of physical targets actually achieved or estimated under different industrial heads, while Annexure II gives similar figures of expenditure but under different Ministries or Departments and not under the industrial heads dealt with in Annexure I.

It is not possible, certainly not for an outsider like myself, to link expenditure incurred with the physical targets achieved during the mid-plan period. Targets constitute the basic framework of Plan programmes and they require much clearer exposition in terms of the projected link between financial and physical targets in both the Plan and its Mid-term appraisal. The whole subject needs to be examined in depth at the technical level; and this could be done by the Economic Advisory Council to the Prime Minister and then discussed at a seminar organised appropriately by the Institute of Economic Growth (two of its former directors are members both of the Planning Commission and the Economic Advisory Council), under whose auspices I am delivering this lecture.

I would also suggest that Plan targets fixed by the Planning Commission in macro-terms should deal not only with the G.D.P. or N.D.P. and size of Plan outlays but also with the distribution of the expected additions to the NDP among the principal economic categories in the country by both industrial origin and income classes. Targets should also cover per capita income as that would clearly bring out the effectiveness and inadequacies of plan policies and programmes on population growth. They should also

include the desired changes in the consumption pattern of the planned output in addition to the national output of goods and services during the plan period. These additions to the target approach would make the Plan more meaningful to the common man and also more indicative of its social justice content.

Capital equipment and investment policy

The second set of suggestions I want to include in my new approach to Planning (they are really not so new) relates to capital equipment and investment policy. It is useful to remember that the additions to capital equipment projected for the Plan period constitute only a fraction of the existing stock of capital equipment. Also additional investment for capital creation during the Plan period is not identical with the additional capital equipment created, as part of the investment gets implemented only as works in progress at the end of the Plan period, while a part of the newly created equipment is the result of fructification of investment made in the earlier plan period or periods. But there is no information on their comparative magnitudes.

Similarly, of the additional output created during the plan period, only a part would be due to the additional capital equipment created by the additional investment, while a part will be accounted by the capital equipment created as a result of the fructification of investment made in earlier periods, and the remaining part would be due to better maintenance and repairs and replacements of the obsolescent stock of capital equipment existing at the beginning of the plan period. The last component could be either positive or negative depending upon the efficiency of maintenance and the offsetting of obsolescence.

Thus, neither the additional capital equipment nor the additional output emerging during and at the end of the Plan period is either wholly or unequivocally linked with the additional investment outlay projected for the Plan period. It is necessary to bear this in mind when planning the investment outlay and postulating its justification in terms of additions to output and to capital equipment during the relevant plan period. The functional composition of the investment outlay and its time-distribution in terms of expected results in additional equipment or output is therefore as important as its macro-magnitude in projecting its effect on the rate of economic growth during the Plan period. And this must be borne in mind when planning the investment policy for any defined Plan period.

The Planning Commission should therefore spell out the details of the investment it proposes for the Plan period by sub-magnitudes and in terms of both outlay and expected results in addition to output or equipment. There would be two broad categories, namely, increased efficiency from investments already made, and the balance of outlay that would result in completed or uncompleted new equipment emerging during the Plan period.

The first could contain two sub-categories, namely, investment in repairs and improved maintenance of existing equipment, and investment needed for maximising utilisation of the under-utilised capacity in existing equipment. The second would include two sub-categories, namely, investment resulting in completed new equipment during the period, either by completing uncompleted equipment from earlier plan periods or by creating new equipment, and that resulting in uncompleted equipment that would spill over into the subsequent plan periods or periods for their completion. The following would be the schematic presentation I propose of the Plan outlay on investment.

Total investment outlay

Existing completed or uncompleted equipment			New completed or uncompleted equipment	
Repairs & better maintenance of completed equipment	Replacement in part or whole of existing equipment due to loss or damage or obsolescence.	Completion of existing uncompleted equipment	Completed new equipment	Uncompleted new equipment.

[Note : Equipment includes both construction and machinery.

It is only when we get such a statement of the proposed investment outlay in the Planning Commission's report and in its mid-term appraisal that meaningful judgements can be made on its impact on actual as well as potential economic growth. It is necessary to add that no such statements are to be found in the reports of the Planning Commission, either in the Five Year Plans or Annual Plans or Mid-term Appraisals. My new approach would emphasise the importance of including such a statement in the forth-coming Seventh Plan and in subsequent Five Year Plans, Annual Plans, and Mid-terms Appraisals

(To be continued)

Technology transfer in developing countries-II

G.V. Joshi and Paul A. Rego

In part I of this article the author explained the channels for technology and benefits of transfer of technology to less developed countries. Here the author discusses the difficulties associated with the transfer of technolgoy, critically examines the case of so-called 'Intermediate Technology' and shows how the Japanese experiment can serve as a model for the developing countries which seek to achieve development through technology process

THE MODERN TECHNOLOGY, its critics say, is not an unmixed blessing. They highlight the difficulties associated with the assimilation and adaptation of technology of the advanced countries. The most fundamental difficulty arises from the fact that the technologies developed by the advanced countries are not well suited to the factor endowments and the state of development of the developing countries. The advanced technology is capital-intensive and as such, it is irrelevant in the developing countries experiencing the scarcity of capital and abundance of labour. Expressing this view, E.F. Schumacher observes, "That a technology devised primarily for the purpose of saving labour should be inappropriate in a country troubled with a vast labour surplus could hardly be called surprising." Robert Solow maintains that many of the advanced technologies cannot be transferred to the developing countries. This is due to the reason that the advanced technologies are evolved in an environment quite different from that of the LDCs. More or less in similar tone, Ghanshyam Singh has observed that the advanced technology can raise the living standards of the people only when its application is conditioned by the institutional framework, structural transformation and scientific infrastructure of the recipient country.

Heavy conversion costs

The difficulty of fitting the advanced technology in the LDCs is quite serious. There is enough evidence to show that only fully-trained and competent scientists and engineers are capable of assessing the merits of the latest technologies developed abroad, and making wise choices on which technologies to import. But the developing countries are facing the problem of paucity of men with critical skills. Therefore, they are compelled to incur heavy technological conversion costs whenever they have to fit the imported technology to the native environment.

Another but equally important problem, as P. Streeten and S. Lall opine, relates to the cost of advanced technology. One of the United Nations documents notes that technology should be made available to the LDCs at a very low charge because the transfer supposedly does not involve extra costs. The DCs in turn say that they cannot accommodate this demand because the technology is privately held and national governments cannot control the price at which it is sold. Indeed, the problem of transfer price is high on the agenda of international issues for developing countries. Within the UNCTAD, developing countries acting in the guise of the Group of 77, have proposed a code of conduct regulating the transfer of technology. One section of the said code asserts that all countries should promote the transfer of technology at a price favourable to the LDCs. The New International Economic Order (May 1, 1974) also emphasised that the LDCs should be given access to the achievements of modern science and technology on "improved terms."

The developing countries, being under strong internal pressures, have adopted protectionist policies with the object of promoting the growth of domestic industries. But the protectionist policies hamper technological transformation in a number of ways. For instance, under protective umbrella, these countries tend to start a wide range of industries—right from steel and cement to heavy electrical equipment. This necessarily results in spreading thin, the scarce and critical technical and managerial skills over a wide range of processing and manufacturing industries. Consequent thereupon, the modern technologies cannot be handled and the technological absorptive capacity is all the more strained.

Serious allegations

Further, there are many allegations against the MNCs. One of the most serious allegations is that they transfer obsolete and out-dated technology to the developing countries. Summing up his impressions of the Diesel engine plant run by the Joint Indian—American Kirloskar Cummine Company, the American economist J. Baranson (1966) said that many of the techniques described for the Poona plant were adapted from methods used twenty or thirty years ago at Columbus, when production volume was much lower, labour was cheaper and techniques were in an earlier stage of development.

The MNCs, it is found, adopt such tactics which tend to perpetuate the dependence of the LDCs on the advanced countries for the supply of technology. As already made clear, the main suppliers of technology have been mostly MNCs oligopolistically organised on a global scale whose main source of strength is technology protected by institutions of private property rights. The monopolistic position bestows upon them advantages in the process of the technology transfer; they consolidate it fairly easily given the weakness of buyers. Irrespective of ownership-mix (i.e., mode of transfer) the technology transfer is forged as an instrument to exercise control on production and marketing decisions of the technology recipient to subserve the global strategy of multinational framework. The point for emphasis is that the behaviour of technology suppliers is likely to be one of maximising surplus flows and to perpetuate the conditions of dependence.

Thus, the critics point out that the application of advanced technology is likely to produce some growth-retarding effects in the LDCs.

Intermediate technology

Considering the unwanted repercussions of advanced technology Schumacher has strongly advocated the development of 'intermediate technology' in the developing countries. His contention is that unemployment and urbanisation and the associated evils are the direct consequences of thoughtless application of modern technology in these countries. The primary task of the LDCs—and also of the givers of foreign aid—is to go straight into battle with the twin evils of mass unemployment and mass migration into cities. Any strategy of industrial development in a developing economy must be able to meet the following requirements :

(1) Work-places must be created in the areas where the people are living now, and not in the metropolitan areas;

(2) These work-places must be cheap so that they will not involve an unattainable level of savings and imports;

(3) The production methods must be simple;

(4) Production should be largely from local materials for local use.

These four requirements, according to Schumacher, can be met only (a) if there is a regional approach to development, and (b) if there is a conscious effort to develop what might be called an 'intermediate technology.'

Despite its theoretical soundness, the idea of intermediate technology cannot take us far. Schumacher himself has admitted that it is not possible to arrive at any simple and clear-cut definition of intermediate technology. He merely states that, 'Intermediate technology must be appropriate to the country in question.' How to judge the appropriateness of a technology ? Westphal has contended that there is no any objective test for intermediate technology. There is no one set of specific identifiable characteristics of a technology which make it 'appropriate' out of context. Besides, the development of intermediate technology itself involves considerable inconvenience. The local development of technology to satisfy a local need is more chancy particularly when consideration is given to the risk-reward structure operating in the developing countries. On the other hand, an imported technology may be assumed a sure thing. Risk is minimised. Therefore, it has an appeal of its own.

International action

Moreover the critics of the advanced technology have not considered the simple fact that the intermediate technology, however useful it might be, cannot be an effective substitute for the advanced technology. Otherwise, why should the countries like India have a special interest in encouraging UN efforts to promote international action to harness science and technology from the point of view of developing countries ? A spokesman for the LDCs once said, 'We need technology and capital from outside which is being channelled through transnational corporations. Like it or not, this is a fact of life.' Further, it may be added here that the planners of the developing countries need not be unduly obsessed with the problem of choosing technology. Hoelscher's words can always linger in their ears, 'It is not the kind of technology but rather the kind of problem to be solved that is important'. If the advanced technology can solve a problem, there is no reason why it must not be transferred to the developing countries.

Thus, it becomes clear that intelligence lies not in condemning the advanced technology. On the con-

(*Continued on page* 22)

Poverty and population

S.K. Sharma

If India is to be saved from a Malthusian trap of population explosion a minimum threshold level of consumption of basic needs such as food, clothing, shelter and other related matters must be provided to the poor in order to make a breakthrough in the elimination of absolute poverty. Only with the achievement of this level of consumption, people realise the implications of a rapid population growth, the author states.

A RAPID POPULATION growth accompanied by less than proportionate increase in per capita foodgrains production and uneven income distribution (failure to provide adequate productive employment) makes poverty and malnutrition persist in India. Thus, an attempt to study a nexus between poverty and malnutrition and measure their quantum and intensity would mean a critical study of population growth, foodgrains' production and its distributional aspects.

Poverty and malnutrition are interrelated. Greater the extent of poverty, greater the degree of malnutrition among the people. Poverty is both a relative and absolute concept which varies from country to country and region to region. It is revealed that malnutrition is largely among households who are not only poor but suffer from other social disadvantages and discriminations. Further, they have limited access to basic needs like safe drinking water, sanitation and health and educational facilities, since they are consigned to urban slums, rural ghettos. Because of extreme poverty and their tenuous link with the rest of the economy through inadequate uncertain opportunities and uneven income distribution, it always happens that any shortfall in aggregate foodsupply leads them to decrease the consumption level of foodgrains. This leads them to nutritional deficiency which has a bearing on the health status of these people. That is why one finds that the life expectancy of people inhabiting urban slums and rural ghettos is much less than the average all India level.

Income-calorie relationship

With the introduction of income-calorie intake relationship of different income groups, the extent of poverty and hence the extent of malnutrition may be measured. In this context, relating the income level with poverty it can be stated that in absolute terms, poverty line is defined as the minimum income level at which existing expenditure pattern would satisfy nutritional requirements; and the population which is consuming below the nutritional requirement is termed as malnourished population. According to the U.N. estimate, daily per capita calorie requirement for India is 2210 calories.

In India on the basis of family household expenditure in 1977-78 the poverty line was defined as Rs. 65 per capita per month for rural areas and Rs. 75 for the urban areas. These figures in 1979-80 prices are Rs. 76 in rural areas and Rs. 88 in urban areas. According to the above estimate, the percentage of people living below the poverty line is 48.4 in 1979-80. The Sixth Plan with income distribution via basic employment creation among the vulnerable section expects to reduce the percentage of people below poverty line from 48.4 per cent in 1979-80 to 30 per cent by 1984-85. Implicit is the assumption that the per capita income of the lowest strata of people will rise. But so far nothing substantial is visible. Even if somehow the Sixth Plan succeeds in its target, some 215 million people will be below the poverty line which is a siz-

able number. Therefore, malnutrition as a consequence of poverty will not disappear even if we achieve some redistribution of income.

P. Visaria could show that in India, top third of the population as high as 57.6 per cent in rural areas and 28.9 per cent in urban areas have intakes exceeding requirements by more than 30 per cent. In the bottom third 39.3 per cent in rural and 47.2 per ecnt in urban areas have intakes falling short of requirements by more than 30 per cent. If the energy requirements mean anything at all departures from these norms to these extent should mean visible ill-health for these people. On this count, it is stated that the average calorie requirement as determinant of nutritional status does not give a true picture. It is argued that the process of governing variations in daily energy balances in human beings is not yet fully understood and a satisfactory theoretical framework for it is yet to emerge.

It is a fact that a sizable section of poor people suffer from malnutrition. It is also a fact that malnutrition is often limited to rural ghettos and urban slums where there are limited access to safe drinking water, sanitation and health and educational facilities.

Who suffer most ?

From nutritional point of view, the vulnerable sections that suffer most from malnourishment are children and pregnant or lactating women. Data indicate that weight-gain during pregnancy is lower in poorly nourished population groups. Indeed when conditions dietary inadequacy exist, the nutritional status of mothers is expected to be reflected in birth weights. Although birth weight is influenced by many factors, a high prevalence of low birth weights (below 2500 grams according to WHO) is indicative of short or long terms poor nutrition of women of gestation age and is associated with high infant mortality. It is estimated that there are some 30 per cent live births below 2500 grams in India.

Per capita food production

Food, health, education, sanitation, water supply and housing constitute basic needs of people, but even more than the others food is essential for day-to-day survival. While, the scarcity of food often has more severe consequences manifesting itself in malnutrition and in cases of acute shortages, in sickness, starvation and premature death. The experience of India with regard to population growth, food production and its per capita availability has been a battle against hunger. It also gives an indication of the progress India has achieved in feeding its teeming millions. Although, in absolute terms the growth of India's food production has been greater than that of population the margin between the two, i.e. the growth of food production per capita has been shrinking. There has been slow rise and sharp fall in foodgrain production over 1971. Only recently in 1983-84 it has jumped from 133 million tonnes in 1982-83 to 141 million tonnes. The foodgrains production had almost come to a halt of 130 million tonnes over 1978.

Although some studies have been made in this direction, one is basically interested in domestic supply and consumer demand of foodgrains taking into consideration the fact that one has to meet the nutritional requirement level. The most recent projection in this regard is by the National Committee on Science and Technology (1978). Food consumption models have been based on the intake of food materials to provide 2400 calories and 46 grams of proteins per day as recommended by Indian Council of Medical Research.

According to UN estimate, the Indian population by 2000 AD will be 1037 million under the medium variant. For this populations under the Model IV of NCST the requirement level will be 222.2 million tonnes. Taking a backward view of foodgrains production since 1950-51, one finds that the compounded growth rate during 1950-51 to 1971-72 was 3.5 per cent per annum and during the period 1971-72 to 1981-82 it was 2.6 per cent per annum. Further, during the period 1975-76 to 1981-82 it was only 1.4 per cent per annum. This shows the kind of diminishing returns in operation if further productivity is not increased. A realistic likely assumption for future growth in foodgrains production by 2000 AD will be around 178 million tonnes. This will fall short of requirement level by 44.2 million metric tonnes. Imports will increase year after year unless productivity of foodgrains is increased twice what it is now. The compounded growth of foodgrains production must be around 2.2 per cent and average growth of foodgrain production should be around 2.9 per cent per annum.

Under the existing conditions, unless steps are taken to reduce the existing inequalities of food distribution, the proportion of the undernourished in India cannot be reduced to less than 5 per cent of the population even if one increases the average supply to about 3000 calories per capita per day. In India, existing inequalities of food distribution is very large corresponding to a standard deviation of more than 700 calories.

Care should be taken to see that first of all this inequalities of distribution should be checked (be reduced to a standard deviation below 700 calories). With measures to increase food supplies through extension of high gravity technology to crops of high calorific value other than wheat and rice, intercropping and multiple cropping, greater uniformity of distribution is the sine qua non if the percentage of undernourished is to be brought to a sufficiently low level. Further a minimum threshold level of consumption of basic needs-food, clothing and shelter and other related matters must be afforded to the poor in order to make a breakthrough in the elimination of absolute poverty. At the minimum the threshold level people understand the implications of a rapid population growth. It will also hasten the decline of growth of population. Failure to do so will put India into a Malthusian trap. □

Saving tribals from exploitation

Y.V. Rao

While discussing the evolution of the tribal development administration in its historic perspective, the author says, protection of tribals from exploitation has been receiving utmost attention of Government at all levels. In the light of their development so far, the tribals can look forward to further improvement in the quality of their life which may help them join the mainstream of national development.

TRIBAL COMMUNITIES in India, generally, are simple in their socio-cultural life; they enjoy a more or less self-sufficient economy. They can be said to be located geographically as well as economically on the fringes of the vast agricultural, rural communities of India.

The tribal people are an integral part of Indian society enjoying complete autonomy in socio-economic spheres. However, with the advent of British rule, they found themselves exposed to a plethora of adverse situations. With the introduction of outside forces such as money-lenders, traders, forest contractors and petty government officials the tribals experienced problems of acute exploitation and helplessness. These factors ultimately led to turbulence and turmoil resulting in a series of disturbances and unrest among tribal groups.

Problems of tribals

The problems of tribals are manifold. Some of which that call for immediate attention are : (i) tribal economy that is not only unorganised but also non-monetised; (ii) their dependency on money-lenders to meet their requirements during lean periods which further entangle them in the web of poverty and misery; (iii) indifference to education leading to low enrolment and dropouts in tribal schools; (iv) displacement due to projects like irrigation, power, mining and industry.

Government policy

Soon after Independence and with the setting up of a Constituent Assembly, it was decided to incorporate special provisions for protection and development of tribals. Article 46 of the Indian Constitution provides, "The State shall promote with special care the educational and economic interests of the weaker sections of the people, and in particular of the Scheduled Castes and the Scheduled Tribes, and shall protect them from social injustice and all forms of exploitation". The primary objective of the government policy in regard to tribal people and tribal areas has been directed to preservation of tribal culture and social customs from erosion, safeguarding traditional occupations, protection from exploitation by the more sophisticated groups, and their economic and social development.

Plans and tribal development

Various efforts have been made during the plan periods for tribal development. During the First Five Year Plan certain important problems such as poverty, lack of roads and communication facilities, shortage of drinking water and irrigation, education and health were considered. During the Second Five-Year Plan, developmental programmes in tribal areas were divided into groups; viz. (i) communication; (ii) education and culture; (iii) development of economy and (iv) health, housing and water supply.

National Extension Service Blocks were demarcated on the basis of an average population of 25,000. In the most backward tribal areas. it was planned to set up 40 Multi-purpose Pilot Projects.

The Third Plan provided for expansion of tribal development blocks, aiming at intensive and coordinated development of tribal areas on the general pattern of community development, but modified to suit tribal conditions and supplemented by additional resources.

During the Fourth Plan period, the emphasis was laid on consolidation of gains already achieved and improvement and expansion of the services so that the process initiated in the earlier plans could be put on a more sound footing. An important dimension of tribal development in the Fourth Plan was to intensify protection to tribal population from exploitation by more sophisticated elements through legislative and executive measures.

An important initiative was taken by the government to select six Tribal Area Development Projects (TADPs) in late 1971-72 which were to be implemented by Tribal Development Agencies. The success achieved in these projects led the government evolve, in the Fifth Plan, a new strategy in the direction of a sub-plan intended to cover tribal areas having at least 50 per cent tribal concentration. The main objectives of the sub-plan were : (a) to narrow down the gap between the levels of development of tribal and non-tribal areas and (b) to improve the standard of life of the tribal communities. The sub-plans have been envisaged as integration of all efforts for development of the tribal people and their areas. The sub-plan areas have been grouped into 179 Integrated Tribal Development Projects as operational units. The programmes undertaken under the sub-plan include agriculture and allied sectors, irrigation, marketing and cooperation, education, health and other related programmes.

An important feature of the Sixth Plan is the formulation of project reports and programmes for primitive tribes; arrangements for monitoring and concurrent evaluation are also being strengthened for all tribal development programmes.

Organisational framework

The organisational framework for tribal development derives its basic structure from the Indian Constitution. The Union Ministry of Home Affairs is responsible for policy formulation and coordination of all tribal development programmes. It has certain amount of power in regard to allocation of funds in consultation with the Planning Commission.

The Planning Commission provides the needed analysis and technical support for national development plans including tribal development. As a part of Constitutional requirement, the government created an office of the Commissioner for Scheduled Castes and Scheduled Tribes in 1951.

Besides the Union Ministry of Home Affairs, other Central Ministries such as Ministries of Rural Development, Education and Culture, Social Welfare, Health and Family Welfare, Housing and Cooperation and Civil Supplies are also participating in tribal development.

The Commission for Scheduled Castes and Scheduled Tribes was set up in 1978 considering the magnitude of the problems faced by Scheduled Castes and Scheduled Tribes. The Commission is required to submit an annual report to the President detailing on its activities with suitable recommendations. It may also submit reports to the government at any time it considers necessary.

At the state level

The State Governments and Union Territories have separate departments to look after the welfare of the Scheduled Castes and Scheduled Tribes and other backward classes. In Bihar, Madhya Pradesh and Orissa separate ministries of Tribal Welfare have been formed as provided in Article 164 of the Constitution exclusively for tribal development.

A Cabinet Sub-Committee under the Chairmanship of the Chief Minister has been constituted in each State having sizeable tribal population for guiding developmental programmes in tribal areas. The Tribal Welfare Departments have been strengthened in all States and Union Territories. Besides the Cabinet Sub-Committee, a High-level Committee, with the Chief Secretary as its Chairman and the tribal development Commissioner, as Member-Secretary, has been set-up for speedy decision-making on inter-departmental problems.

Tribes Advisory Councils are functioning in certain States which advise on such matters pertaining to the welfare and advancement of the Scheduled Tribes in the State as may be referred to them by the Governor.

Tribal sub-plans

The Special Multi-purpose Tribal Block forms the basis of Tribal sub-plan which was converted into Tribal Development Blocks in course of time. Later, as it was observed that the Tribal Development Block was too small a unit for planning, coordination and implementation of long-term developmental programmes, a new strategy was evolved for tribal development in pursuance of which six pilot projects viz. Tribal Development Agencies were launched towards the end of the Fourth Plan.

The Tribal Sub-plan strategy being followed during the Sixth Plan is being implemented through Integrated Tribal Development Project. A sub-plan, part of district plan for predominantly tribal populated areas, covering several tribal development blocks is prepared. The sub-plan takes an integrated view of the problems of the tribal people—an outline of the various programmes, physical inputs, financial outlays, area and programme specific infrastructures in that given district. All activiies of various government, semi-government, financial institutions, etc. are integrated in the sub-plan so as to present a total picture of the tribal region.

The project authority, namely, Integrated Tribal Development Agency has been constituted for each ITDP with the District Collector as its Chairman, the district heads of departments as members and

the Project Administrator as the Member-Secretary. This authority brings in an element of collective leadership. The agency becomes responsible for alround development of the area.

After Independence a number of national and state-level voluntary agencies have been working for the promotion of the interests of the tribals. Their activities are mostly concentrated on education, medical relief and cooperation.

Financial investments in the successive Five-year Plans have progressively increased. In th new sub-plan, financial provisions are made from four sources—State plans, Central plans, Special Central assistance for tribal development and institutional finance. The new policy of financial integration has helped in escalating outlays substantially.

Training of personnel

Administration and technical personnel involved in the States and at the Centre have to undergo academic as well as field and technical training to equip themselves to discharge their duties effectively. The personnel dealing with tribals require special training to understand their problems and appreciate their customs before they embark on formulation and implementation of plans for their development. Based on the recommendations of various working groups, Training and Research institutions have been established at various levels. At the national level the NIRD endeavours to recommend steps to remove fault in the existing plans and programmes, and disseminate information on programmes to the target groups. At the state-level, there are 11 Tribal Cultural Research and Training Institutes.

Protection of tribals from exploitation and socio-economic development has received attention at all levels of government. The Five-year plans have made significant improvements in the life of tribal people. The strategy of tribal sub-plans have begun yielding positive results. Investments in successive plans progressively increased. In the light of th foregoing plans and activities we can look forward to further improvement in quality of life for millions of tribals and their joining the mainstream of national development. That is sure to usher in an era of a tribal population with a polished culture, keeping in tact its basic elements. □

Science helps Basohli shawl industry

Suraj Saraf

AN INTERESTING and instructive instance as to how scientific research could help even an apparently small but actually significant project helping the people economically has come from the Regional Research Laboratory, Jammu.

It underscores the fact that it is not only the spectacular research in basic science that the scientists should aim at, but that they must also look around to help solve the problems faced by different sections of people.

This interesting as also instructive story concerns a town Basohli in the hills, about 130 kms. east of the capital city of Jammu. Basohli had a tradition of shawl making in the last century which had become extinct. Efforts had been made to revive the industry in the post-Independence era. Basohli shawls had been quite a rage. However, they were a rough sort that did not fetch a high price, like the Kashmiri shawls, for their producers.

The problem was brought to the notice of the Regional Research Laboratory, Jammu, by the State Industries Department.

A team of the laboratory led by its Director, Dr. C. K. Atal and head of the Fur and Wool Division of the Lab., Mr. B. K. Wali, visited Basohli and made on the spot assessment of various cottage units and their products. According to Dr. Atal the problem was to evolve some simple and reproducible technology suited to local conditions to make Basohli shawls whiter, brighter and softer.

The task of evolving suitable technology was started which was also demonstrated to the shawl workers at Basohli. It won approval from state authorities as also from artisans. It was a simple change in the existing procedures for bleaching that did the trick for brightening as also softening the rough shawls.

Mr. B. K. Wali told me that bleaching was ordinarily done by either of the two methods viz., by reducing agents or by oxidising chemicals. However, the former did not remove all the contaminants that got mixed in the wool (in handling at various stages), and the bleaching effected by it was not permanent. On the other hand though the oxidising chemicals gave better result, it was risky method and if not carried out very carefully, it damaged the wool fibres.

The technology evolved by the lab. employed both the methods using oxiding chemicals first and reducing chemicals later. Not only that it obviated the risk of damaging the wool and got permanent and good bleaching, but what was still more welcome was that it also made the wool softer.

Softness of the wool depended on its peculiar chemical structure that in turn, depended upon the wool generating animals being reared under certain conditions. The best wool is obtained from goats reared in Ladakh heights. Kashmir finer fibres of wool are hand picked by the weavers to produce fine shawls and some of the coarser part of the fibres is rejected. However, the Regional Research Laboratory, Jammu, achieved the softness by applying suitable chemicals to the rough wool.

To improve the quality of the Basohli shawls further, a method for imparting good lustre to them was also demonstrated by the laboratory scientists. This involved the use of a caustic bath for a short period. A method for properly dyeing the shawls was also demonstrated. □

Social forestry in Orissa problems and prospects

Padmalochan Behera

Love of trees and flowers is ingrained in the nature of Oriya people and has found vivid expression in their literature and arts. As a major plank of development in the state, the author underlines the need to evolve social forestry programme by identifying its objectives, goals and its effects over a long term perspective.

THE SOCIAL and psychological profile of Orissa is suitable for the implementaion of Social Forestry Programme as the State has a long tradition of growing tress like neem, banyan and pipal. Great religious sanctity has been attached to the plantation and protection of the neem because the three deities—Jagannath, Balabhadra and Subhadra—are made from its wood. Love of trees and flowers is ingrained in the nature of Oriya people and has found vivid expression in their literature and arts.

A major development plank

Social forestry has been a major plank of development and a massive plantation programme has been undertaken in the State. From 43697 hectares plantation in 1980-81 and 56,458 hectares in 1981-82, the programme was to cover nearly 1,00,000 hectares in 1982-83.

The state government has recently launched a five year Social Forestry Project of Rs. 23 crores with the help of the Swedish International Development Authority (SIDA) which intends to establish 21,700 hectares of village woodlots in nine districts. It also aims at reforesting 35,300 hectares of degraded reserve and protected forest and barren hills. Apart from seedling facilities. the project will create permanent nursaries to expedite afforestation programme.

The poor are now being encouraged to start farm forestry under a new programme known as The Economic Rehabilitation of Rural Poor (ERRP). The government will meet all the expenses for four years, if a poor person wants to start planting cashew and sisal, and five years for coffee. If the beneficiaries have developed skill in Mulgerry or Tusser, the Government will provide the expenditure necessary for tree planting and equipment including training free of cost.

The Harijan and Tribal Welfare Department is also promoting horticulture—both Tusser and Mulbery—in tribal areas. A large scale horticulture plantation is being taken up to improve the tribal economy and weaning away the tribals from shifting cultivation. Coffee cultivation on commercial basis has been launched in Phulbani district to help the local tribals.

While an area of over 200 acres in Daringibadi has been brought under coffee plantation, it is proposed to launch 5,000 acres of plantation in Phiringia, Daringabadi and Pabaria areas in the coming years under NREP scheme. Coffee and pepper complex grown in this area is very lucrative.

It is desired to grow coffee supplemented with black pepper. One plant in each shade would provide a substantial income per acre. Besides, the cultivators would get regular employment round the year in the estate. They would also avail themselves of the opportunity of growing coffee in their private holdings with subsidy being given by the Coffee Board.

The Soil Conservation Department has a pool of trained and experienced coffee specialists who are rendering technical guidance to the interested tribal

growers. During 1981-82, the State Department distributed 10 lakhs coconut seedlings, 2 lakhs citrus plants and over 1.6 lakhs other plants and seedlings free of cost to over 1.16 lakh Harijan families.

Voluntary organisations

The voluntary organisations have also come forward to help. OXFAM, for instance, has started communal plantation programme in the villages near Tikarapara. The villagers have been able to plant jack fruit, mango, mohua, bamboo and myrobalan on 14 acres plot of communal land.

The National Social Service (NSS) volunteers of various colleges of Utkal and Berhampur Universities are taking part in the implementation of social forestry programme in the state. For instance, the teachers and the students of a local college have adopted the Kesharpur village to start a community forest. Besides supplying the necessary seedlings, the Forest Department has been rendering technical guidance for this new village forest.

Apart from this, many colleges and schools of the state have created "student forests" on vacant land in and around their institutions. These forests will help in the beautification of their institution. However, the money raised from these forests will be utilised for giving aid to poor students.

Panchayat forest

A "Panchayat forest" has been grown at Lapnga village of Sambalpur district. The entire village community is involved in protecting, controlling, managing and utilising this forest. The villagers have the multiple advantage of tree growing—food, fodder and subsidiary product. This forest has helped most of the poor peasants of the village out of their poverty. In addition, it has created conditions for the breakdown of caste and other socially divisive barriers. The "Panchayat forest" has been working as an instrument for a spectacular socio-economic transformation of this village with its focus on the poor.

Rationale of social forestry

Wherever the social forestry has been properly implemented it has made a visible difference to the lives of the affected people. The state has enough idle-land resources and waste lands at its disposal. They consist of roadsides, river and canal banks, sides of railway tracks, degraded and unused area of villages, schools, colleges, offices and hospital compounds, cremation grounds, etc. If plantation will starts on a large scale it can generate more employment for the poor. A cost benefit analysis conducted by an ecologist supports this point. If a sum of Rs. 500 crores is used for forestry, five million acres can be covered with trees every year. After the fifth year, a million and a quarter acres can be cropped.

Apart from 1,00,000 people who will be required for the purpose, an equal number will be employed in soil preparation, conservation and harvesting operations. In addition, the collection and processing of forest products will generate a large number of jobs. The total employment created will be around 3,00,000. The benefit from this investment if calculated in hard currency amounts to over a hundred thousands crore rupees. Though forest is a source of revenue, its real worth lies in being a source of livelihood for millions of poor.

In the coastal districts of Balasore, Cuttack, Puri and Ganjam, and some other forest hungry pockets of the state, the people burn cowdung as fuel for want of firewood. Social forestry can supply enough fuelwood. As the State is yet to be self-sufficient in food, it can use cowdung, a rich organic manure, to maximise food production. Social forestry will also provide adequate fooder to the cattle. This will benefit poor farm families who solely depend on the sale of milk.

Moreover, the social forestry programme expects to help in stopping and checking the shifting cultivation practised by the tribals in the districts of Koraput, Phulbani, Mayurbhanj, Keonjhar as this mode of cultivation has become "a supplementary form of industry" today. Even when a family of "Savaras" possesses cultivated fields in the plains, they sometimes have their own fields for axe-cultivation up on the slopes of the hills, where they raise special types of crops which are readily purchased. This form of cultivation is unfortunately destructive.

The social forestry programme can protect the destroyed hill slopes from wind and soil erosion. It can also be helpful in checking the droughts and floods frequently occuring in the State. The plantation of trees will increase the humidity, draw more water from the deeper layers of the soil and stop silting of riverbeds. As Orissa is at the threshold of industrialisation, there will be a growing need for packaging materials, timber and other raw materials for cottage industries.

Social forestry can help to raise quality of life, as the human need structure includes : survival needs (food, shelter, employment, (etc.); societal needs (social cohesion, peace, communityness); welfare needs (fair deal to the weak, the disable, the handicapped and the vulnerable), and psychic and cultural needs (provisions for recreational amenities).

Task ahead

However, Orissa's performance in this respect is not enough in comparison to other states like Karnataka, Gujarat, Tamil Nadu and Maharashtra. It is yet to get popularised among the rural masses. So the role of mass media is important here. Folk dances of Orissa like 'Daskathia' and 'Pala' should be organised in villages to convey the social forestry's message by explaining suitable anecdotis from the various religious and secular scriptures.

The State Government should evolve its social forestry programme by identifying its objectives, gold and its implications on a wider spectrum. Creation of a new department of Social Forestry would

be welcome. Besides helping in the implementation of the programme in the interior parts of the state, the department could be given the task of mobilising funds, providing market facilities for social forest products and regulating process of production incentives.

Voluntary organisations should be encouraged to take up individual projects. For an effective implementation of Social Forestry Programme, there should be a close co-ordination between the Agriculture and the Forest Departments and their research wings to develop appropriate seedlings keeping in view the geo-climatic condition of a particular region.

The social scientists, especially the economists and the sociologists, can help in identifying the areas by taking the socio-economic conditions into consideration for its implementation. They can provide bench marks and background data on which future social forestry programmes can be formulated.

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trary, intelligence lies in minimising its evils and mixmising its utility.

Japanese model

The historical experience of Japan stands in sound testimony to the fact that development can be attained by transferring and adapting the advanced technology. Before the Meiji Restoration (1868), this country had a technological base that was far behind that of developed countries of the west. The Meiji Government assumed the lead in pioneering new technology. It took the positive action of engaging foreign experts to instruct the Japanese in western methods of mining and maufacturing. The Japanese were also sent abroad to acquire western knowledge. To provide technical training on Western lines, schools and colleges were opened. Agricultural experimental stations were set up to assist in the adaptation of foreign crops to Japanese conditions and to promote improved methods of farming. As a result of all these policies and programmes, Japan. by the end of 19th century itself, came to possess a body of competent scientists and engineers who could expedite the rate of technological progress.

As and when required the Japanese adjusted and adapted the Western technology to suit the local needs. This was done in such a manner that the traditional skills of the people were not ruined. By the dawn of the present century, Japan began to set up heavy industries, e.g., (textile industry) by importing second hand technology. Additional workers were employed to repair and to keep these machines in order.

The Japanese Government established special institutions to provide finance to industries interested in effecting technological assimilation and adaptation. The combined effect of all these programmes was that Japan could march ahead on the road towards rapid industrialisation. Her industrial production in 1953 was over 40 per cent more than in 1935 and in 1957 it was well over twice as much.

Throughout all this, the Japanese gradually improved their technology, utilising limited but increasing amounts of mechanical power and relatively large but decreasing amounts of labour. That approach—bringing in modern technology piecemeal to supplement and modernise the traditional economy—was a source of considerable strength to Japan. Japan, we can say, has become a pace-setter for those developing countries which seek to attain development by effecting the transfer of advanced technology.

The advanced technology can be an instrument of economic development in the LDCs, albeit the problems that it creates. The Japanese experiment can serve as a guiding star for the LDCs which aspire to attain economic development by effecting the transfer of technology from the developed countries.

A case study

How could concessional finance help the poor ?

A. S. Rana

The poor will be able to derive maximum benefits from concessional finance facilities if banks and other concerned organisations relax the rigid eligibility concessions, eliminate delays in sanctioning loans and chalk out an effective follow up programme. The needy must be made aware of the various schemes which could help them to come out of poverty, the author says.

If we trace the history of banking system, the idea of a bank was evolved out of a feeling to help the poor. According to Encyclopaedia Britanica. "The original plans for Saving Banks were more than tinged with a spirit of benevolence and paternalism emanating from the more fortunate members of the community who wished to help the poor and at the same time relieve themselves of the burden of charity".

The Banking Commission in 1972 recommended that the public sector banks should take steps to help the poor to come out of poverty. The public sector banks adopted a Differential Rate of Interest (DRI) Scheme to advance loans to the marginal and small farmers, agricultural labourers, artisans and the needy at 4 per cent rate of interest.

This concession has further been enhanced by providing subsidies to the borrowers to the extent of 1/3 or 1/4 of the amount of loan depending upon their economic condition. Agencies like Small Farmers Development Agency (SFDA) and Integrated Rural Development Programme (IRDP) were set up to help the deserving persons with subsidies and recommend their cases to the banks under DRI Scheme. An attempt is made here to ascertain the impact and implications of concessional finance on the borrowers from weaker sections of four villages of Jahangirpur, Boria, Dhour and Silani in the Jhajjar Tehsil of Haryana, after interviewing 40 farmers who were advanced loans from December 1979 to February 1982.

Findings

The conditions regarding eligibility of the borrowers under DRI Scheme stipulate that the annual income must be below Rs. 2000 per family; the borrower has not employed any outsider; and in case of a farmer, he should not possess more than 30 kanals of irrigated or 140 kanals of unirrigated land. Such persons can get a loan to the extent of Rs. 5,000 as fixed capital or term loan and Rs. 1500 as working capital.

The study shows that none of the borrowers had taken loan to the maximum authorised limit of Rs. 5,000, and applied for the working capital for fodder, etc. Average loan taken for buying pigs, sheep and buffaloes was Rs. 2,500, Rs. 3,500 and Rs. 2,900 respectively. Sixty per cent of the borrowers were from Scheduled and backward classes.

Thirtyeight of 40 borrowers made the proper use of loan against which it was taken. However, these borrowers under the DRI Scheme have been suffering losses due to one or the other reason. Average loss suffered by each borrowers worked out to Rs. 1470 per annum. On an average, the loss suffered by them in case of piggeries, sheep and buffaloes amounted to Rs. 2,020, Rs. 1,140 and Rs. 359 respectively.

The report shows that no increase in assets was registered except the animals purchased with the loan. Rather the assets declined to the extent of deaths of fully grown sheep and pigs. Consumption standard of the people rose marginally only in case of buffaloes. None of the borrowers developed banking

habits and could come out of the eligibility conditions.

Poor loan recovery

Recovery of loans was found to be very poor as only 25 per cent of the loanees had deposited their loan instalments by the end of 1982. However, borrowers who had purchased buffaloes were found to be more or less punctual in depositing their instalments. They were mostly non-Scheduled Castes. In other cases, mostly Scheduled Castes, recovery was almost nil. They were finding it difficult to deposit the instalments, the simple reason being that they could not earn anything out of the investment. They were also found unwilling to take further loans as they were finding it difficult to return their previous loans. But the borrowers who had purchased buffaloes and deposited their due instalments, were found willing and eager to take more loans.

The study shows that the loanees experienced difficult conditions due to a number of obstacles faced by them. These obstacles can be categorised into : (1) personal obstacles, (2) institutional reasons.

Personal obstacles s Ignorance is wide spread and deep rooted as highlighted by the fact that 90 per cent of the borrowers did not know the rate of interest being charged from them and the amount of subsidies they were getting.

They also failed to make full use of the banking, medical and insurance facilities available to them. None of them took loan to the maximum authorised limit. The worker looking after one buffalo could also look after three, and so could be the case with pigs and sheep. The cost of labour was found high. As they did not feed the animals well, they fell easy prey to diseases. The loanees also did not approach the doctor in time. In most of the cases dead bodies of animals were buried and doctors were informed later on, for postmortum, etc.

They were also found wanting in pursuing their claim for the insured dead animals from the Insurance Company. They failed to do right things at right time. No proper arrangement for shelter in winter and rainy season was made, particularly in case of sheep. The loanees did not try to find better market for their products like wool, milk and small animals.

Institutional obstacles : This category of hurdles consists of wrong procedure followed for advancing loans and unhealthy attitude of doctors, banks and insurance companies. Banks did not pay the amount of loan directly to the borrowers but made payments to the persons from whom they purchased the animals. The beneficiaries could not exercise their choice in the selection of animals with the result that animals of poor quality were purchased at a higher cost. This mode of advancing loan followed by banks had been responsible for wiping out the benefits of subsidy and interest rate concessions.

Secondly, the dearth of medical facilities available for the animals, particularly for sheep and pigs led to a high death rate of animals. This loss was compounded by the indifferent attitude of insurance companies. Not even a single case was detected where the payment was made against the claim made after death of insured animals. Doctor charge not less than Rs. 100 per postmortum. Those who had got the postmortum done at a right time to recover the insurance claim were denied payment on the pretext of non-completion of this or that formality. Learning a lesson from others experience farmer shield away from making insurance claims.

Suggestion

These hurdles can be removed if some necessary steps are taken, both at personal and institutional levels.

The beneficiaries should acquire the knowledge as to how they could extract the maximum benefits from the available facilities. It is suggested that the intending loanees should be covered under the adult education programme which has to be integrated with their economic uplift. Adult education instructor can guide them in how to avail of full benefits of available banking, medical and insurance facilities. He can also help them in preparing economical viable schemes for them.

Institutional norms

As part of better institutional norms, the procedure of advancing loans has to be streamlined. The doctors, banks and insurance companies should treat the applicants on preferential basis. The amount of loan must be paid directly to the borrowers in cash to enable them to have a free hand in the selection of animals. The inhibitions cultivated by bankers that borrowers would misuse the loan is empirically not true, since the same could be done under the present system.

In two of the cases under study the loanees sold their buffaloes and used the credit for other purposes. The beneficiaries should be encouraged to recognise their real needs and banks should sympathetically consider their requirements. In addition, a helping hand by the insurance companies by way of streamlining the claim procedure will go a long way in mitigating the hardships encountered by the affected loanees.

Banks advancing loans must ensure the availability of shelter, fodder and grazing grounds for animals in the concerned area. Doctors may be instructed to visit the borrowers at least twice a month and make proper arrangements for the required medicines. Besides, the loanees should be encouraged to take additional loans for fodder and expansion of their economic activity so that economies of scale are fully enjoyed by making optimum use of labour, shelter and other factors.

Keeping in view the rising prices, amount of loan must be raised from Rs. 6500 to Rs. 9000 per loanee. At the same time eligibility conditions must be relaxed where size of family exceeds five members. It will ensure wider coverage of the weaker section under the DRI Scheme. □

Solar energy for rural areas

J. R. Meena

The utilization of solar energy can help in solving social, economic and environmental problems by preserving the forests and increasing agricultural productivity. The author says that utilization of solar energy can improve the quality of life in our villages by providing cooking, water pumping and crop drying facilities at minimum cost.

IN view of its abundance solar energy has maximum potential in our country. The sun shines for nearly 300 days of the year, on an average, in most parts of the country. The total solar radiation received by our land mass is about 6×10^{14} MWH per year. Most parts of the country receive as high solar insolation as 600 calories per sq. centimetre per day and thus the utilization of solar energy for possible applications which are discussed in the succeeding sections can be very effective.

Rural areas are predominantly agricultural economies : self-sufficient and relying heavily on non-commercial supplies including dung cakes, fuelwood and crop residues. In many villages, nearly half of the energy consumption is met from non-commercial fuels.

The rural areas need energy for the following activities :

Domestic use—cooking, water supply, lighting, water or space heating in hilly and cold regions, entertainment and communication.

Agriculture and allied productive activities—irrigation, drainage, pumping water for irrigation, drying, running farm machinery, fodder cutting, grain storage etc.

Transport sector—transportation of agricultural products, passengers, etc.

Small-scale industry use—cottage industry, cutting and sawing wood, pumping saline water in salt works, grain grinding, spinning and weaving, etc.

Social facilities—education, sanitation, medical care, public lighting, cultural pursuit.

Table 1 : Energy Sources and Devices for Rural-end-uses

End Uses	Energy Sources		Energy Devices
	Primary	Secondary	
1	2	3	4
95°—250°C heat cooking	Animal/Agro/Agro-wastes Energy Forests	Biogas Wood/charcoal	Gas burner Wood charcoal stove
Stationary mechanical work (water-lifting, milling industries, etc.)	Draught animals Human labour	Animal energy Human energy	Animal powered devices Pedal powered devices
	Wind		Windmills
	Animal/Agro-waste	Biogas	Biogas engine
	Energy Plantation	Wood/charcoal	Producer gas engine
	Grid/Microhydel/Genset	Electricity	Electric motor
	Wood	Methanol	IC engine
	Crops	Ethanol	IC engine

1	2	3	4
Mobile mechanical work	Draught animals Human labour Energy Forests	Animal energy Human energy Wood/charcoal	Animal powered devices Pedal powered devices Producer gas engine
(Ploughing, Transport etc.)	Wood Crops Animal/Agrowastes	Methanol Ethanol Biogas	IC engine IC engine Biogas engine
Light	Grid/microhydel/Genset	Electricity	Incandescent Fluorescent Lamps
Less than 95°C heat (water heating, drying etc.)	Wood/charcoal stoves Solar	waste heat —	Water heater Solar dryer Water heater
More than 250°C heat	Wood/charcoal	—	Furnace
(Pottery, brick making, smithy)	Animal/Agrowaste	Biogas	Furnace

For some of the above applications the utilization of new and renewable sources of energy seems to have tremendous potential in the foreseeable future. Several applications based on renewable energy technologies are mentioned in Table 2.

Table—2 : Applications based on New and Renewable Energy Technologies

Sector	Application	Present Commercial Fuel Source	Renewable Energy Source/ Device
Household	Cooking*	Coal/Kerosene/LPG	Biogas /Solar Cooker
	Lighting	Electricity/Kerosene	Biogas/Solar photovoltaic systems
	Water heating*	Coal/Kerosene/Electricity (urban households)	Biogas /Solar water heating system
Irrigation and Water Supply	Pumping*	Diesel oil/Electricity	Solar photovoltaic pump/ windmill/biogas or alcohol engine.
Agriculture	Ploughing	Diesel	Engines based on biogas, alcohol etc.
	Drying*	Coal	Solar
	Refrigeration (cold storage)	Electricity	Solar/Alcohol refrigeration systems.
Industry	Heat for rural industries e.g. brick making smithy etc.*	Coal	Biogas/Solar heating systems
	Milling, grinding threshing in small scale industries (Stationary mechanical work)	Electricity/Diesel oil	Biogas /Alcohol engine/ windmills.
	Water and air heating, low pressure steam	Coal/oil/Electricity	Solar Water and air heating systems

**Various non-commercial fuels, renewable energies, such as solar heat, and/or draught animal power are currently being used for these applications in varying degrees.*

Solar energy in view of its abundance has great potential for several applications in rural areas. Some of the applications that seem to be appropriate for use in village are : cooking, lighting, water pumping purification of brackish or saline water, refrigeration, water or space heating in cold or hilly regions, production of salt from sea water and small-scale electricity generation.

The possibility of utilizing solar energy for these applications is immense.

Cooking

Most of the energy consumed in rural areas is for food preparation. Cooking with solar energy is one of the promising and immediate applications which has great potential in rural areas. With the widespread utilization of solar cookers, it should be possible to reduce or eliminate the increasing pressure on forests, cattle dung (which is a high grade manure), and agricultural wastes. In India, efforts have concentrated on 3 main types of solar cookers, namely, simple hot box-type cooker, oven-type cooker and a cooker based on concentrating solar radiation by paraboloid mirror reflector which directly heats the cooking vessel. Keeping in view the cost, simplicity and social

convention, the first type of cooker has been found most suitable for widespread utilization in the country. This type of cooker can be used for cooking rice, vegetables, boiling dals and making other food preparations. As the present cost of such cookers appears to be high for the average rural poor, there is a provision of subsidy by Government or loan from banks for the purchase of cookers. Under the subsidy scheme, several thousands of cookers have been sold in various States and Union Territories of the country. The users are satisfied with the performance of the cooker and the demand for cookers has gone up considerably.

Water pumping

Water pumping is an area of great significance. For more than four centuries, canals, rivers, tanks, etc. have been in use for supplying water for irrigation and drinking purposes. Even today, many rural areas depend upon human and animal muscle power for lifting water for drinking water supply or irrigation. Age old techniques are still prevalent for water lifting. Utilization of solar energy for pumping water has a promising future. Both photovoltaic and thermal power water pumping system have been developed in the country. A number of solar photovoltaic water pumping systems have been installed for demonstration and field trials for drinking water supply or micro-irrigation. Solar thermal pumps are, however, still at an experimental stage, though a number of organizations in the country are engaged in R&D work in this area.

Food and crop drying

Food and crop drying is one of the most important and immediate applications of solar energy in rural areas. Solar energy has been used for the open air drying of agricultural crops for a long time. However, this method exposes the products to be dried to contamination by dirt, insects and rains, exposure to birds and rodents and, in areas or seasons of high humidity, to mould and fermentation. Improper and inadequate drying is one of the contributors to the problems of food losses in the country. As grain drying does not require very high temperatures, the use of solar energy for this purpose has considerable promise. Several solar drying systems in which solar heated air is blown through packed products in protected surroundings have been developed.

The solar drying technology is simple and its viability has already been demonstrated for drying of a variety of products. Solar kilns for timber drying have also been developed and installed for demonstration at different places in the country. The main problem in the widespread utilization of solar energy for drying purposes, however, seems the lack of manufacturing facilities and institutional mechanisms especially in rural areas where solar dryers have wider uses.

Desalination

There are many rural areas in the country where drinking water scarcity has been a chronic problem. In arid, semi-arid or coastal areas, there is abundant sunshine that can be used to produce potable water from brackish or sea water for consumption by humans or animals. The desalination technology is simple and small solar stills can be fabricated locally in rural areas. Besides its uses as drinking water, the distilled water can also be used in health centres and school laboratories in remote and rural areas.

Refrigeration

Cold storage facilities are much needed in villages and isolated areas for the preservation of foodstuffs, medicines vaccines, meat, fish etc. Solar refrigeration can provide an effective solution to preserve such materials in rural areas. Solar powered stores can be set up in remote rural areas even with the little infrastructure facilities available and because of good matching between cooling load and solar energy availability. A 10-tonne cold storage plant has been installed at Kasiya in UP utilising solar energy.

Water and space heating

The utilization of solar energy for water or space heating in hilly regions and cold areas also appears to have great potential. In villages where the value of hot water is becoming recognised as important aid to cleanliness and health, interest, in solar water heating system is growing. Solar water heating systems also have relevance for many agricultural tasks and for village industries such as handloom fabrics, sericulture, leather tanning and hand made paper. Also, in commercial establishments, there is a tremendous potential for solar water heating systems, especially in hotels, hospitals, guest houses and hostels. Such water heating systems for domestic, industrial and commercial applications are now available. Various large size water heating systems have been installed for demonstration in hotels, bakeries, hospitals, breweries, dairy farms, etc.

Another application of solar energy is for space heating and cooling. The country has a very broad spectrum of climatic conditions. In some areas, the temperature during winter months may go down below 0°C, while in other parts in summer months the temperature may range from 32° to 49[C. In order to make these conditions more comfortable, space heating and cooling is normally resorted to. The use of solar energy for this purpose may lead to considerable savings in the consumption of electricity in urban areas and fuelwood in cold or hilly areas of the country.

To produce salt by evaporation of sea water and inland brine is an ancient practice used in the country. It is one of the best direct uses of solar energy that is immediately available for exploitation wherever salt containing water occurs in conjunction with appropriate climate.

Electric power generation

It may be possible to use solar energy for small-scale electric power generation in rural and isolated areas. Solar energy is a natural source for decentralised

electric power generation, for domestic and collective uses particularly, in small scattered rural communities. Considering the current status of solar technology and the present high cost, the first major application of solar electricity will, therefore, probably be in arid or semi-arid regions and other isolated areas away from conventional electric grid. The photovoltaic conversion of solar energy directly into electricity is an area of great significance. The use of photovoltaic panels and cells has already been demonstrated for such applications as pumping water, lighting, T.V. and radio, communication etc. The major barrier in the large scale utilisation of photovoltaic systems is, however, their high initial capital cost. Special emphasis has been given to bring down the cost by way of improving efficiencies, technologies, and mass-scale production of solar cells.

The utilization of solar energy can help in solving social, economic and environmental problems by preserving the forests, stopping or slowing down migration of rural population to urban areas, making available communication and entertainment facilities and by increasing agricultural productivity. The widespread use of solar energy is expected to reduce or eliminate the dependence of villages on traditional sources of energy being used for centuries. □

(Continued from Page 7)

irrigation of plantations on hill slopes. This will also save power generated from big projects for urban consumption and other areas.

Women's lot

The development plans implemented so far—construction of roads and opening of schools—have adversely affected the life of the women. The burden of family work has increased. The decease in self-sufficiency and the increasing demand for money has encouraged menfolk to go out in search of employment.

School education makes hill boys useless for the hard life of the hills. As a result of this the whole burden of agriculture, household, animal husbandry and looking after the children and the old, falls on the shoulders of the women. Availability of fodder, fuel and water, facilities for dehusking, grinding and cooking will help in lessening their burden. A village development plan prepared by the women will be more practical.

One of the shortfalls of plans uptil now has been the neglect of local traditions. Local wisdom and traditions should be given top priority.

The utilmate objective of the plan should be to create self-confidence in the people through self-sufficiency. Self-confidence is the primary need of hill development. For this the planners should find time to live with the local people and share their struggle for life. From the combination of their knowledge and the wisdom of the hillfolk will emerge a practical solution to the problems of the hills.

Success Stories

Hard work pays

Sundaramurthy of Poondiankuppam village of South Arcot District is a small farmer. He had 5 acres of dry land. It was fortunate that Sundaramurthy came under the Agricultural Development Branch of Cuddalore Old town. With the timely assistance coming from the bank, he concentrated on growing groundnut. We made up the deficiency of the soil on the advice of the agriculture department. TMV 7 seeds (of 100 days duration) of groundnut was sown. The borewell gave the field the much needed water. With all this he got 4886 kg. dry weight of groundnut per hectare. This record production placed him second in Tamil Nadu in per hectare groundnut yield.He will also get Rs. 3000 as cash award.

V. Govindaswamy,
Field Publicity Officer,
Pondicherry.

Hindus maintain Muslim Tomb

Abdullian is a tiny border village in R. S. Pura Sector of Jammu district in J & K. The previous population, mostly Muslims, has migrated and now the village consists of 80 houses of Hindu Jats.

The village contains the tomb of a Muslim Saint. It is being properly maintained and looked after by the Hindu population. Shri Bhola Ram, the Naid Sarpanch who is about 80 years old, said that the tomb is visited by all on Thursday evenings. It attracts a very large crowd during the annual festival (Urs) when a fair is also held. That day presents a wonderful scene of communal harmony and brotherhood.

Interestingly, the village has no temple so far, despite its purely Hindu population.

(FPO-Jammu)

Welfare of Tribal Women

Balaji Mahila Mandali of Proddatur Block of Cuddapah district in Andhra is unique in many ways. The 15 members of the Mandali and their president Smt. Y. Nagaratnamma belong to the Scheduled Tribe called Erukula. The Mahila Mandali has been very active in uplifting the Scheduled Tribe women and involving them in the rural development schemes. Each member of the Mahila Mandali obtained a loan of Rs. 1000, a subsidy of Rs. 200 from the Women Welfare Department and Rs. 330 from the IRDP funds. With this amount they started Comb making and garments making. Now they have also started keeping milch animals and pigs. The Mahila Mandali is concentrating on helping the deserted and destitute among the Scheduled Tribe women. In all these activities, they are guided by the lady Village Development Officer working in Proddatur Panchayat Samithi Block.

(FPO-Cuddapah)

A Case Study

What helps plan family

T. Jaya Raj

Fertility knowledge is indeed fertility control. Population education is relatively a 'safe' and 'sweet' way to reduce the population growth. The Government must introduce the population education in school and college educational syllabi from fourth standard onwards, says the author.

FAMILY PLANNING is not synonymous with birth control. In a broader sense family planning is concerned with quality of life. In the context of family health, it is a way of helping families to be healthier and happier. With family planning pregnancies can be spaced.

The main object of the present study was to collect information regarding knowledge, attitude and practice of family planning among the respondents or the spouses in the reproductive age group in the Vilavancode village in Kanyakumari distinct of Tamil Nadu. The study also analysis the socio-economic status and demographic characteristic of the respondents

Methodology

The survey was conducted in a randomly selected 100 households—i.e., 14 per cent of the total households in village. The prescribed schedule was filled in by all the currently married male members residing in the house and having spouses below 45 years of age, or husbands of currently married women, aged below 50. The schedule was designed in such a way as to suit the various socio-economic and demographic characteristics of the respondents, knowledge of population problem practice of family planning and the knowledge about abortion method. The sample survey was conducted last year.

Demographic features

The sample covered 86.0 per cent literates and 14.0 per cent illiterates. Among the 100 respondents, 51 respondents belonged to Hindu religion and the others were Christians.

Occupational levels of the respondents showed that 31 respondents were agricultural labourers and the others belonged to non-agricultural sector category. The survey also revealed that 40 per cent of the respondents earned a monthly income of below Rs. 500, the rest above Rs. 500.

The salient demographic characteristics of the respondents were relatively high fertility and low mortality. Of the 100 respondents 55 had less than three children and others had more than this figure.

The survey revealed that all the respondents were found to have some knowledge of family planning. An analysis of the replies showed that all of them **had the knowledge of the following three family planning** methods : (i) Nirodh, (ii) Vasectomy, and (iii) Tubectomy. Only a few respondents had the knowledge of other family planning methods.

Desire for children

The desire for children on the part of the parents or would be parents is one of the important factors influencing the fertility of a population. Any change in desire for children is bound to affect the actual level of fertility. It is, therefore, important to find out the attitude of people towards family limitation.

The following tables clearly indicate the attitudes of the respondents towards family planning as influenced by religion, economic status, occupation, education and number of living children.

TABLE I

Religion and family planning attitude

Religion	No. of Respondents	In favour	Not in favour
Hindu	51	43 (83.31)	8 (15.69)
Christian	49	40 (82.04)	9 (17.96)

Figures in parenthesis show percentage.

TABLE II

Economic Status and attitudes towards family planning

Monthly Income	No. of respondents	In favour	Not in favour
Less than Rs. 500	40	32 (80)	80 (20)
Rs. 500—750	24	19 (77.80)	5 (22.14)
Rs. 750—1000	16	14 (87.5)	2 (12.5)
Above Rs. 1000	20	18 (90)	2 (10)

Figures in parenthesis show percentage.

TABLE III

Educational level and attitude towards family planning

Education of the Respondents	No. of respondents	In favour	Not in favour
Illiterate	14	9 (64.28)	5
Literate (able to read and write)	13	9 (69.23)	4
5 years of Schooling	17	15 (88.24)	2
5—8 years of Schooling	10	8 (80)	2
SSLA level	28	25 (89.28)	3
PUC level	3	3 (100)	0
Graduate and P.G.	15	14 (93.33)	1

Figures in parenthesis show percentage.

TABLE IV

Respondents occupation and attitude towards family planning

Occupation of the Respondents	Total No. of respondents	In favour	Not in favour
Agricultural labourers	31	24 (77.3)	7
Agriculturists	9	6 (66.6)	3
Teaching Staff	8	8 (100)	0
High and middle grade Govt. workers	27	26 (92.7)	1
Low grade Govt. servants	14	11 (78.5)	3
Businessmen	3	2 (66.6)	1
Others	8	6 (75)	2

Figures in parenthesis show percentage.

TABLE V

Number of living children and attitude towards family planning

No. of living children	No. of respondents	In favour	Not in favour
0	4	3 (75)	1 (25)
1	5	4 (80)	1 (20)
2	21	21 (100)	—0—
3	25	22 (88)	3 (12)
4	12	8 (66.67)	4 (33.33)
Above 5	33	25 (75.55)	8 (24.25)

Figures in parenthesis show percentage.

From the Table I to V it is evident that among the 100 respondents 83 respondents desired small family and also approved family welfare programme. Increase in age and educational status of respondents are seen to be two factors contributing to the awareness of the family planning.

Practice of family planning

The ultimate objective of family planning in the country is to reduce the birth rate from 39 per 1000 of population in 1970 to 25 by 1984. For this purpose 33 to 45 per cent of the reproductive couples will have to be protected from the risk of conception during the period.

The question of practising family planning methods arises only when the persons know of such methods. Hence the percentages are worked out on the basis of the number of persons who know each method. The following table indicates the measures of family planning methods among the 100 respondents of the Vilavancode village.

TABLE VI

Awareness practice of family planning methods

Sl. No.	Family planning methods	No. of persons knowing F.P. methods	Total No. of persons practising F.P. methods
1	Condom	100	15 (15)
2	I.U.D.	28	—
3	Oral Pills	57	4 (7.02)
4	Foam Tablets	13	—
5	Safe period	34	10 (29.42)
6	Withdrawal	43	—
7	Jelly/cream	8	—
8	Vasectomy	100	—
9	Abstinence	19	3 (15.79)
10	Tubectomy	100	13 (13)
11	Laparoscopy	8	—

Figures in parenthesis show percentage.

From Table VI it is evident that 15 per cent of the respondents were found to be using nirodh. It seemed to be the most acceptable method of family planning. Four respondents used oral pills; 10 respondents relied on safe period, three respondents practised abstinence and 13 wives of the respondents had undergone sterilisation (i.e. Tubectomy).

An analysis of the replies of the respondents revealed that most of them (73 per cent) had disapproved abortions 16 per cent had approved and other respondents have no idea about abortion.

Recommendations

It can be said that respondents were generally in favour of family planning and, if properly motivated, all couples who require family planning can be brought under fold.

In the light of my knowledge and the suggestions received from the respondents, I can make the following recommendations for improving the family planning programme.

Government must introduce the population education in school and college educational syllabi from fourth standard onwards.

'A satisfied user is the best propagator'. An association of satisfied acceptors of family planning may be formed in each Panchayat to discuss and solve their own problems and to popularise the family welfare programmes among non-acceptors.

A family planning education officer at district level must be appointed by the Government to propagate the message. For contacting newly married couples their names should be registered in a particular centre. The role of voluntary organisations should be revitalised by extending financial assistance for expanding their scope to include family welfare activities. The active involvement of local religious and political leaders should be ensured.

Recanalisation facilities should be provided in all major hospitals and the fact must be given wide publicity. □

Achievements of Kerala Civil Supplies Corporation

THE KERALA STATE Civil Supplies Corporation has recorded a marked improvement in its efforts to make available the essential goods and services at the lowest possible price throughout the State, since its inception in 1974.

The Corporation trades in 18 groups of essential commodities including rice, wheat products, pulses, green gram, tur dal, black gram, spices, chillies, coriander, vegetables, sugar, tea, coffee, cement, petroleum products and certain other commodities.

Through its wholesale and retail operations including festival markets, tht Corporation has successfully held the priceline, particularly during the festival seasons of Onam, Christmas, etc. when the prices tend to shoot up over normal prices. With the Corporation's successful participation during festivities prices are maintained and in some cases brought below normal. This has also resulted in stopping wide fluctuations in prices so much so that undue profiteering has been largely eliminated.

A big expansion underway

For the Corporation with such a good record of performance, there is no looking back. And that is exactly what it has planned to do—with scores of new programmes and projects for the benefit of the common man. As an important step in streamlining its operations the Corporation plans to build up its own central godown and office complex at Gandhinagar, Ernakulam. A Rs. 50 lakh multi-storey building will house the administrative departments and the central godown. Besides, a number of people-oriented schemes on the anvil are: processing units including a rice mill at an estimated cost of Rs. 1 crore and a wheat roller flour mill of 100 tonnes capacity; a Rs. 40 lakh factory for the manufacture of biscuits and similar food products; and self-employment scheme for Scheduled Castes|Scheduled Tribes intended to provide employment to about 200 persons—two each for a Maveli store—who will be provided with a cycle each for door-to-door delivery of essential goods. Other schemes include Mobile Maveli stores—3 specially converted buses for three major cities to supply essential commodities to the consumer; a floating Maveli Store to cater to the consumers of the water-logged areas such as Kuttanand; marketing complex in Corporation areas on the line of Super Market (Bazar) to sell a wide variety of products under one roof; an institute of Supply Management—a training centre to impart training to the staff and to other consultancy services; a comprehensive scheme for staff welfare including housing, recreation centres, promotion of sports and games, medical service, etc., and Civil Supplies Complexes in all talukas—these would include Taluk Supply Offices, storage facilities, bankig services, etc to offer better and prompt services to consumers.

Performance

The Corporation, started with a-paid-up capital of Rs. 1.71 crores, is wholly owned by the Government of Kerala. Its performance over the years has been remarkably successful. Its annual turnover during 1982-83 was Rs. 118 crores as against a turn over of Rs. 94.13 crores in 1980-81, and Rs. 10.58 crores in 1978-79. During a period of five years i.e. 1979-82, the Corporation has thus made substantial progress. The profits made during that period have helped wipe out all previous losses which were more than the paid-up capital.

The Corporation has been able to provide employment to over 1000 persons during its short span of existence. It was started with about 40 hands. □

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A key to rural uplift

Diffusion of technology

Chandrakant Bhatt

In whatever way the technology was taken to rural areas, it should be remembered that the simple over the complex, the low cost over the high cost should be chosen. The devices introduced should be sturdy, with low maintenance cost and easy to operate. Diffusion of technology on such broadline could contribute much in changing the rural scene.

APPLICATION OF FARM and non-farm technologies in rural areas call for integrated approach so as to create employment and additional income for the rural people, promote faith in development activities, faster scientific temper and progressive attitudes. This transfer and diffusion of technology for desired results, especially to lessen burden on land, could be achieved through appropriate planning and development. Once this process gets momentum diversification of industries, agro-based in nature, could come up soon.

Relevance of technology

It is said that technology should have human face, that is, it should be relevant to the needs of the people. It should also be relevant to their skills, aspiratons and perceptions, conforming to their ethos, culture and what not. What do we find in our rural areas ? The state of pattern prevailing now tells us that the rural people, the greater portion in the backward and remote areas, are underemployed or totally unemployed and during occasional work, their productivity is exceedingly very low. Some of them have land but too little to sustain a family of five, the average unit. Many of them have no land. It is high time that a determined effort was made to take modern science and technology to the doorsteps of a man in the village so as to withdraw too many on too little a source like land.

Technology for rural areas

This would lead us to a question as to what type of technology should be taken to the rural areas? This should not mean that technology should be primitive or of yesterday. The efforts need not be confined to relative simple one and import-technology in the high technology areas. It would be appropriate to have mixure of small, medium and large scale technology consistent with long-term interest. The combination should be such as may result in enhanced production and best productive use of man-power.

Over the years, the country has built up a vast infrastructure of research institutions, some doing specialised work in technologies related to rural areas. Here mention could be made of the Indian Council of Agricultural Research (ICAR) and the Council of Scientific and Industrial Research. Unfortunately the transmission process is not as smooth as it aught to be. To make this process reach the rural areas effectively, the Council for Advancement of Rural Technology (CART) is doing work. However here also much remains to be done to transmit technology to the remote areas as our planning body so often points out.

The growth and development of Gober gas plants and Dairy Development in Gujarat, to cite an example, have amply demostrated that given the modern tools and technology, the rural people have the native intelligence to make most effective use of it. This has also shown that the moral and motivation of the rural people can be substantially boosted up by transfer of appropriate technology.

Role of big business in rural development

It is in this context that the concern of big business houses in modernising and developing rural areas is found desirable.

In whatever way the technology was taken to rural areas, it should be remembered that the simple over the complex, the low-cost over the high cost, should be chosen. The devices introduced should be study, with low maintenance cost and easy to operate. Diffusion of technology on this broadline could contribute much in changing the rural scene.

BOOKS

An Illustrious son of Gujarat

Tribute to Ethics : Remembering Kasturbhai Lalbhai. Gujarat Chamber of Commerce and Industry, Ahmedabad, 1983. Pages 278.

KASTURBHAI was an illustrious son of Gujarat and an architect of Indian Industry. A remarkable man by any standards; and not an easy man to know; but one whose soul judgement and a peculiar kind of cautious darining contributed very substantially to the expansion of business and education in Gujarat. As the eye travels over the buildings of the Gujarat University campus and rests gratefully on the many trees that shade its roads, the mind remembers a man who created institutions to develop and train the mental powers of the generations to come. And these constitute his most befitting epitaph.

The book, under review, is neither a chronicle of Kasturbhai's life nor a biography. It provides flashes of various facets of his personality and assessement of his accomplishments by his contemporaries. The essays presenting these assessments are written by some of the most prominent persons in various walks of life who had come in close personal contact with him. Supplementing these essays are selections from Kasturbhai's writings and speeches.

This commemoration volume, under review, is divided into eight chapters, in two languages, four in English and four in Gujarati. It is brought out by the Gujarat Chamber of Commerce and Industry in the memory of their founder President, Kasturibhai Lalbhai.

Kasturbhai's pragmatic approach to the problems of industry and commerce was legendary and it used to be held in high esteem in the highest quarters of the country. Prime Minister Indira Gandhi rightly observed in her message—" Shri Kasturbhai Lalbhai was a man with varied interests. He was known to work hard and with concern for the economic development of our country. Begining with the textile industry, his interests spread to a wide range of modern industries including dyes, chemicals and pharmaceuticals. He also contributed to educational, cultural and charitable institutions and particularly noteworthy was his devoted work in times of natural calamities."

Get up is good. Visual perspective—thirty four photographs—adds to its value of reference.

S. K. Dhawan

Hiren Mukherjee on Bulgaria

In Dimitrov's Footsteps : Study Of Socialist Bulgaria by Hiren Mukherjee; pp. 135; price Rs. 60: Vision Books.

HERE is a book by a distinguished public man on a subject he obviously loves—the transfomation of Bulgaria. He has already published a study of Georgi Dimitrov, the father of modern Bulgaria whose mummified body lies in an underground tomb in Sofia and is what can be best described as the Rajghat of the Bulgarian capital.

Dimitrov set out to achieve in 15 to 20 years what other nations have taken much longer to build up. The result is a modern nation, dynamic and pulsating with life. Bulgaria today, is not merely an industrialised country, but is also blessed with the munificence of nature in its lovely holiday resorts and lush-green farms. It has found an able exponent of its achievements in Professor Mukherjee, whose rhetoric was a by-word in the Lok Sabha which he served with distinction for twentyfive uninterrupted years. Dimitrov's legacy has been passed on to Todor Zhivkov, a dedeciated nation-builder. The writer displays a perceptive and an analytical mind in bringing out the mentamorphosis that has taken place since the death of Dimitrov, Pro. Mukherjee has delved deep into Bulgaria's socialist history and the volume, despite its small size, is rich in references to the politico-economic policies and the manner in which they were shaped. Altogether, a useful book, not merely for students of history, but also for students of socialism.

S. Prasad

Indian Culture

A Panorama of Indian Culture by Dr. (Mrs.) Prabha Chopra (1983) Publications Division, New Delhi.

THE BOOK disseminates a variety of information of India's composite social and cultural aspects covering zone-wise all States and Union Territories in its historic perspectives. The information contained is authentic and provides a peep into the rich cultural heritage of the country with precise details of each region with its flora and fauna. A close scrutiny of the book reveals diverse customs, manners, dress, diet, games, festivals, music, religions, languages, dances, drama art, literature, demography, etc., of the people of each province of the country depicting very well their multi-racial and multi-lingual character thus maintaining the unity in their diversity.

Written in simple and lucid style the book is fully illustrated and is designed to take its message to the school going children. The element of wit and humour with a clarity of diction is very much therein.

The book is in the form of an interesting dialogue between a group of school pupils and their teacher, who conducts them to an exhibition on India and explains to them what is what in each of the pavilions of all the States/Union Territories by answering their respective queries. In short, it is a handbook of information for students of all categories.

M. Yunus Siddiqui

International Youth Year---1985

A CALENDAR OF events has been drawn up to observe The International Youth Year—1985 (IYY) as declared by the UN General Assembly in its 34th session.

The events include, among other things, celebration of National Youth Day, National Youth Week, holding of National as well as Asian Regional Seminars, organisation of National Integration Camps, National Exhibitions and National Sports Festivals in various parts of the country. There is also a provision for starting a National Youth Award Scheme.

Publication of compendium of Youth Activities, issuing of Commemorative Stamps and Coins will mark the celebrations of the year.

The states are also being, requested to take steps for the implementation of the programmes and the identification and formulation of new Schemes which would fit in with the overall objectives of the three themes of IYY—'Participation, Development and Peace'. □

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The Indian odyssey in space

THE JOINT Indo-Soviet Manned Space Mission, launched successfully recently, may become a turning point in India's space programme which has hitherto been limited to unmanned mission only. The launching of Soyuz T-II with Squadron Leader Rakesh Sharma and his two Soviet companions has marked the culmination of more than two years of hectic preparations. The venture was an off-shoot of more than two decades of collaboration between India and the Soviet Union in space science. It was on November 21, 1963 that a small two-stage rocket was launched from the Thumba Equitorial Rocket Launching Station in Kerala.

The scientific instruments available abroad Salyut-7, the orbiting Soviet Space Station, with which Soyuz-T-II docked, could be used for experiments in material sciences, biology, medicine, astrophysics, meteorology and remote sensing. The experiments carried out during the mission related to biomedical studies, e.g. studies on the formation and properties of metal alloys in weightless condition of space, and experiments on remote sensing.

An interesting feature of the Indo-Soviet flight was application of Yoga exercises by Indian cosmonaut Rakesh Sharma alongwith other conventional isometric exercises by the two companion Soviet cosmonauts in mitigating space sickness. Another experiment carried by Rakesh Sharma on board Salyut-7 involved melting and resolidification of silver-germanium alloys.

For remote sensing experiments, they carried a specially designed camera to photograph the Indian landmass. The photographs could be useful in developing photo interpretation techniques in forestry, land use mapping, cartography, oceanography and geology. Besides, they would be of help in locating natural resources such as underground reservoirs of water, oil, gas and minerals.

Another highlight of the flight was the inclusion of some typical Indian food preparations in the diet of cosmonauts in addition to the standard diet prescribed for them.

Preliminary results of medical tests on cosmonauts carried out after their return to earth have revealed that man can live and work in zero-gravity conditions for months without any major problems. Manned space colonies, after all, may not remain a distant dream any more.

The idea of a joint Indo-Soviet manned space flight was first broached during the visit of late Soviet President Leonid Brezhnev to India in December, 1980. Formal acceptance of the proposal was conveyed to the Soviet Union a year later. Two Air Force Pilots—Wing Commander Ravish Malhotra and Squadron Leader Rakesh Sharma—were selected out of 150 candidates in September, 1982. They underwent training at the Yuri Gagrain Centre in Star City, near Moscow. Rakesh Sharma was selected finally as the first Indian to be in space.

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The concept of well-being

Yojana

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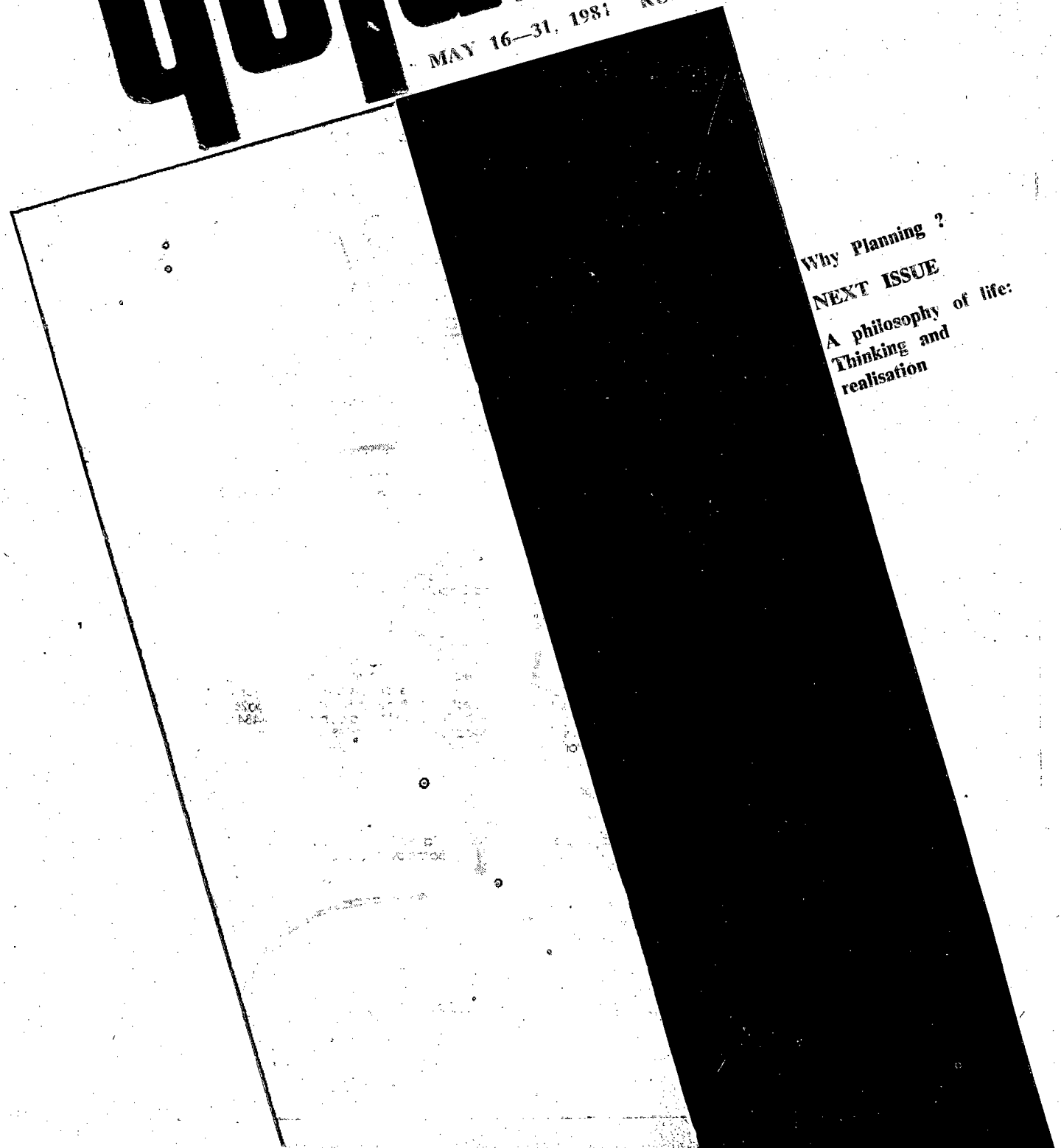

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The concept of well-being

Amartya Sen

If the notion of well-being is related to functioning-achievements and positive freedom, many economic issues come to fore that have been typically neglected in theoretical discussions as well as in practical debates on policy. A proper conceptualization of well-being is an important part of welfare economics. It is not just a theoretical exercise, says the author.

WHAT ARE THE foundations of welfare economics, viz., how to conceptualize the idea of well-being on which the rest of welfare economics depends? I argue that the two approaches to this question that are dominant in the literature of economic theory are both fundamentally inadequate. One approach identifies well-being with utility, and the other sees well-being as some idea of opulence. The former concentrates on mental reactions, while the latter focuses on commodities, incomes and other indicators of prosperity.

The "utility approach" makes well-being an oddly subjective notion. This is not only methodologically defective, it can also be very misleading for policy and action, because of the bias that is introduced by the mental scale of happiness or desire fulfilment.

The absence of unhappiness, and the lack of a strong desire for a better life, on the part of a deprived person, may often reflect nothing other than a defeatist compromise with a harsh reality. The exploited landless labourer, the insecure share-cropper, the overworked domestic servant, the abused housewife, may all come to terms with their respective predicaments in such a way that grievance and discontent are submerged in the necessity of uneventful survival.

The deprivations are muffled and muted in the scale of utilities. Discontent and disutility would not be tragedy in these circumstances, but a part of a creative reappraisal.

Inadequacy of opulence approach

The other traditional approach—that of "opulence"—concentrates on the commodities a person owns and on how prosperous he or she is. This avoids the subjectivism of the "utility approach", but it is alienated from people and their features other than possession.

While goods and services are valuable, they are not valuable in themselves. Their value rests on what they can do for people, or—more accurately what people can do with them. In its lack of interest in human beings, the opulence approach suffers from what Marx had called "commodity fetishism".

While the opulence approach is less fashionable among welfare economists (who are typically more influenced by the "utility approach"), the focusing on economic prosperity, commodity holdings, and opulence, is very common indeed among practical policy makers and planners. As a result, people often end up taking a back seat with goods getting all the attention and glory.

The basis of welfare economics should be, it can be argued, some idea of well-being that is neither incurably subjective (as utility has to be), nor firmly fetishist (as the focusing on commodities as such is bound to be). There are really two different notions that ask for our attention as proper concepts of well-being. One is that of "functioning" of a person—how does he or she live, what are the various things that the person succeeds in doing, etc. This is of course, a *bundle* of diverse personal achievements rather than *one* number (like "utility" or "real income"). But a bundle of achievements can be converted into a numerical index, if and when such a simple measure is needed.

What is positive freedom ?

The second idea—closely related to the first—is that of freedom, concentrating not only on what a person *does* do, but what are the various things that he or she *can* do. The capability to function is freedom in a "positive" sense—a sense that has been rather under attack in political philosophy under the influence of liberation traditions, which emphasize "negative" freedom (absence of restraint).

But positive freedom, it can be argued, has strong claims to being the right approach to a person's over-all advantage. The focusing on positive freedom, in fact, does have a rather distinguished lineage.

In the economic context, support for that perspective can be found in the writings of Adam Smith, on the one hand, and Karl Marx, on the other. Both of them were ultimately concerned with judging advantage in terms of positive freedom—what a person can do, can achieve, can experience. I believe that this is indeed the natural direction to go in the economic analysis of well-being and the social assessment of progress.

Functioning-achievements perspective

Some of the recent practical debates on policy issues in India as well as elsewhere—become easier to assess once the perspective of functioning—achievements is adopted, and positive freedom is valued as the crucial criterion of assessment. Take, for example, nutritional matters. Rather than concentrating on food intake figures only, it is important to work on direct observation of nutritional achievements, and this can be used both to assess general progress as well as for measuring inequalities between classes, income groups, regions, and sexes.

The high level of discrimination against women vis-a-vis men, and against girls vis-a-vis boys, in India in matters of nutrition can be examined more effectively with direct nutritional data rather than through attempts at using food intake statistics. It is very difficult to measure who eats precisely how much within the family, and attempts at observation tends to distort the pattern to be observed. But quite aside from this informational problem, it makes more sense anyway to examine nutritional status as such rather than food intakes, since intake figures are not themselves crucially important and have value only because of their impact on nutrition. That impact varies with a variety of parameters, e.g., metabolic rates, body size, pregnancy, maternity, etc.

The perspective of positive freedom suggests that we should pay direct attention to the ability to live without nutritional deficiency. Nutritional statistics should be part of standard welfare economics.

Another related issue concerns the basic ability to live rather than dying prematurely. This indicates that we should not only examine such information as life expectancy at different ages, mortality rates, morbidity, etc., as part of standard welfare analysis, but also pay attention to other indicators of social inequality related to these matters.

One such issue—crucial to any analysis of social well-being—is the so-called sex ratio giving the ratio of women to men in the population, reflecting (among other things) the relative changes of survival of women vis-a-vis men. The sex ratio tends to be around 1.05 or 1.06 in the rich countries, since women seem to have a biological advantage in survival. But in India this ratio is not only below 1.00 it has fallen from 0.972 at the turn of the century to only 0.935 now. This is about the lowest that can be observed anywhere in the world.

The sex ratio even in other poor countries are substantially higher, e.g., 0.96 in China and in South West Asia, 0.99 in Latin America, 1.01 in South East Asia, and 1.02 in Africa. The African women have—relatively speaking—a much better deal vis-a-vis men than Indian women, at least as far as life-and-death questions are concerned.

If the notion of well-being is related to functioning achievements and positive freedom, many economic issues come to prominence that have been typically neglected in theoretical discussions as well as in practical debates on policy. A proper conceptualization of well-being is an important part of welfare economics, but it is not just a theoretical exercise. It also has great practical relevance. Ultimately, practice draws its sustenance from theory.

A summary of the First Silver Jubilee, Lecture of the Institute of Economic Growth, Delhi University, delivered recently by the author.

Godmakers of Kishori

THREE GENERATIONS ago, the residents of Kishori village in Alwar District of Rajasthan discovered that the stone they quarried and sold for a livelihood, brought in more money if they chiselled it into sculpture. With calender pictures of gods and goddesses to inspire them, they took to idol-carving.

As their skills developed, they gave the iron-ore laden stone of their own village quarries and began "importing" the famous "Taj Mahal" marble from Makrana in Nagaur district, 200 kilometres away. The stone facilitated the sculpting of better statues, but it needed money to buy—and thus the middleman stepped in.

However two years ago, the State Bank of India, entered the picture and offered to help to those craftsmen who were keen to remain artisans. Each family was given Rs. 7,500 repayable in 36 easy instalments, to buy marble directly from Makrana. And their effort began to match their hopes.

Today, most of the 125 families living in Kishori are god-makers. But their own god is the State Bank of India, whose unsecured loans for material and tools enabled them to eliminate exploitation, and build a happy new future for themselves. □

The new approach to Indian planning-II

V.K.R.V. Rao

Our basic values have to be interwoven and inter-linked with the planning process. The objective of planning and national effort should be to integrate our value heritage into the growth structure and growth process, says the eminent economist.

EVERY ONE IS agreed that a major cause of the nation's slow economic growth and the increasing capital output ratio is the inability shown in making full and effective use of the resources in equipment already in existence in completed form (and in some cases in partially completed form) either by inadequate attention to operational efficiency or full utilisation of existing capacity. And yet there is a long-standing bias in our investment planning in favour of creating new capacity rather than getting the maximum results from existing capacity.

There is, of course, a rationale behind this bias, as planning is a continuous process and cannot be split up into self-contained five-year periods; and the long period is only a series of short periods integrated for continuity and avoidance of breakdowns and bottlenecks and slippage of linkages. That is why we have a Perspective Plan that figures in the Five Year Plan Reports, which constitutes the justification for new investments that, by definition, would be infructuous during the Plan period for which the outlay is proposed.

Maximum utilisation of capacity

While I am all for not ignoring the future, it is also necessary to remember the present, especially if we want public support and participation in planned development. It is necessary, therefore, to give high priority in investment outlay to maximising the efficiency of existing equipment, full utilisation of unutilised capacity, and completion of projects which have works in progress.

In the balance of the investment outlay, priority should be given to the quick maturing projects rather than to those of long gestation periods. Among the latter, as well as among the former which were mentioned earlier, high priority should be given to the infra-structural sector such as coal, power, steel, railways, communication and cement, and to the wage goods sectors like agriculture, with its foodgrains, pulses, oilseeds, fruits and vegetables, clothing, housing, and other consumer goods, and relevant inputs like irrigation, drainage, dry farming technology, fertilisers, pesticides, and seed of high yielding varieties.

The investment pattern given in the Plan should outline its composition in the manner mentioned together with anticipated physical results in terms of goods and services. The mid-term appraisal should follow the same pattern, which would assist both the Commission and the reader to arrive at a better evaluation of the working of the plan.

Decentralisation and participation

The plan should also make special mention of the strategy proposed for its implementation, taking account of previous experience in Plan implementation and new knowledge acquired from advances in management technology and the experience of other countries faced with similar developmental problems. Decentralisation and participation are two areas which play a special role in securing efficiency in implementation. I would content myself with a few Summary observations on the subject. These are :

Planning bodies with status and function similar to those of the Planning Commission in Yojana Bhavan should be set up in all the States and Union Territories; and Plan formulation, annual plans, projects monitoring, evaluation, and mid-term appraisal should become the joint responsibility of the Union and State Planning Commissions, and the work involved shared between them.

After completing their formulation of the federal and State plans, the respective Planning

Commissions should devote the rest of their time to monitoring implementation, identifying bottlenecks, gaps, wastes, inflationary impacts, and evaluating progress in development, with freedom to suggest re-adjustments and changes in priorities and outlays needed for implementation of the major and more high priority targets set out in the Plan.

Gram Sabhas should be set up at the village level, which should consist of all adults resident in the village and meeting in full assembly not less than 3 times in a year. These village assemblies should have no executive duties or financial powers, but should function as sounding boards for the relevance of plan programmes to their needs, the extent of implementation, the difficulties encountered in seeking full implementation, and what the villagers themselves can do to maximise the speed and efficiency of implementation by their co-operation and participation.

The administrative unit for local planning should be at the block level with necessary provision for finance, technical expertise, and administrative coordination, with the Block level officer instituting a two-way dialogue with an elected body like the block level panchayat for guidance in formulating the block plan, reporting to it on progress in implementation, and seeking its cooperation and participation in dealing with the difficulties faced in implementation.

The next higher unit in the hierarchy of planning units should be the district development officer (whose status and authority for both spending and coordination should be similar to that of the District Collector) and the Zilla Parishad which would be an elected body representative of the district as a whole in addition to special representation for the block level panchayats in the district. The relations between the DDO and the Zilla Parishad would be similar to those between the B.L.O. and the Block Panchayat.

The next higher authority should be a composite unit, that will include the State Planning Commission, the State Cabinet, the State legislature, the State level bureaucracy, and the State Development Commissioner, who should also have the powers of the Chief Secretary in respect of development coordination. There should be no intermediate body between the State and district planning authorities in respect of either plan formulation or expenditure or implementation. I am therefore totally opposed to the recent suggestion published by the Economic Advisory Council to the Prime Minister for setting up of an intermediate authority at the Divisional level. In my opinion, such a divisional authority would be a fifth wheel in the coach of Planning Administration and would only bring in more of the tardiness bureaucratic hurdles, and lack of popular cooperation, participation and administrative coordination that is being deplored so much today in plan implementation.

Human factor in development

The next suggestion I would make in my new Approach or New Directions to Indian Planning is in regard to the human factor in development. It is well known that the largest resource potential we have is our labour force. It is equally well known that its development is most inadequate, and largely skewed to the extent that it has been developed. It is true that it has brought the country a rich dividend in non-resident Indian remittances by the new export industry of scientific, technological, professional and skilled workers both to the developed and developing countries.

This human export industry, which in earlier days would have been deplored as a brain drain, is now hailed by people both in authority or otherwise and even receiving official incentives. This is because of the foreign exchange receipts it brings and, incidentally, the alibi it provides for lack of success in securing balance of trade in our commercial transactions. I would have been less dissatisfied with the skewed development of the human factor that has made this possible, if it had been used for domestic development and increased production of goods and services for the domestic market, which, in all conscience, we badly need in this country of low economic growth and low per capita national income.

For a vast country like India, expanding domestic market and increasing domestic production for domestic consumption is much the best way of spreading up the rate of economic growth and maximising the country's national welfare than to pin so much hope on export promotion and giving subsidies or other incentives for doing so. Of course we need some exports to get the foreign exchange necessary for financing our import needs of development, essential consumption, and foreign debt servicing. But these constitute only a marginal part of the resources needed for both these purposes.

Domestic resource potential

Of this the much larger part can be had from the full utilisation of our domestic resource potential for domestic production, for domestic consumption, along with import substitution, while for the smaller part, we should use only the real export surplus generated from domestic production; that will also be competitive because of the economies resulting from a large and effective domestic market. I am glad to find support for this view from such an experienced and able economic administrator, with the additional advantage of youth on his side, as Shri M. Narasimhan, in the first T. T. Krishnamachari Memorial address he recently delivered in Madras.

His main conclusion in that lecture was that enlargement of the domestic market and reduction of the cost structure are ways by which India can hope to achieve both successful import substitution and export growth, and a viable external payments position.

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Apart from the highly skewed development of our human resource factor, of which some part also gets lost to the country, the more basic failure is the inadequate use that has been made of our large human potential. Given good health, training in appropriate skills, character-building and creative-stimulating education, industrial discipline, economic opportunities, and adequate motivation, our human resource potential could rapidly get fructified and result in a rate of economic growth much higher than that envisaged by the Planning Commission or sober non-official economists who speak or write on the subject, amongst whom I venture to include also my humble self.

It is, therefore, that I would give high priority to an integrated and nationally extended and comprehensive programme for human resource development in the new approach to Indian planning. This should bring together, and in an integrated form, plan programmes for education, health, family planning, women and children welfare, and basic needs. I would suggest that the Seventh and subsequent Plans should include a major section that will deal with the outlay on human resource development as a whole and by its different sectors, and policies and programmes proposed for securing their full potential. The Mid-term Appraisal should also contain relevant data on achievements and obstacles under similar heads, so as to make it easier to evaluate the impact of human resources development on productivity and economic growth during the plan period.

Science and technology contribution

The next item I would include in the new approach would be on the role proposed for science and technology in increasing productivity, import substitution, export promotion, and total domestic output. The Plan should not only deal with outlays on R & D and general observations on the nature of the technology we should use for furthering development, but also give some idea of the physical targets in terms of additional output that such outlays are expected to lead to.

There is much talks of transfer of technology, intermediate technology, adaption, indigenisation and appropriate advance on imported technology, sophistication versus simpler technology, and promoting self-reliance in technology. But there is no classified evaluation by sectors of industrial origin, except for agriculture, of the impact of imported technology and their indigenous development and utilisation for increase in national productivity and output.

We all swear by science and technology and its important role for India's planned economic development. Scientists and technologists enjoy a high social and economic status in the country; their prestige is high, and there is great demand for their services not only within the country but also abroad in highly developed countries like the USA and West Germany as well as by international organisations.

But there is not available any concrete account, in quantitative and classified terms of industrial origin, of the contribution they have made in increasing output, reducing costs and bettering quality. There has been no national or objective evaluation of the contribution of domestic, imported, and indigenised science and technology to the growth, quality, cost reduction and diversification of India's domestic output nor has any linkage been demonstrated between physical achievements and financial outlays on R & D, data being available only for the latter.

To what extent have we attained self-reliance in the technological field, in what sectors and in what crucial items? Has the D.G.T.D. dicta on the availability of indigenous technology acted as an alibi for protecting non-competitive Indian technology and preventing needed technological imports? To what extent are the public and private sectors making actual use of the technology developed in our country by its R & D work or is the bulk of this work resting on R & D shelves in view of our native prejudice or diffidence about the use of indigenously developed technology? Have we followed the Japanese example in adapting imported technology to improve it and make it competitive with the products of the very countries from whom the base technology was imported? To what extent and in what areas should we go in for the import of advanced and sophisticated technology without affecting adversely either indigenous advance or domestic employment? What precisely is the role of science and technology, domestic and imported in India's planned development? These questions need to be answered in detail; and only the Planning Commission can do it.

All that I can say is that we have to go in for advanced and sophisticated technology in the interests of India's future, including eventual and competitive self-reliance and rapid economic growth, even if it means some difficulties in the short period, in respect of employment, labour reluctance, foreign exchange constraints, and the Indian bias for a traditional and backward technology that has a survival value because of our protected market.

Need for advance technology

The rest of the world is not standing still, not only the developed world, but even the developing world of South East Asia, China, the Middle East and Latin America, if not also some parts of Africa. Further, we are an open society and cannot escape not only the economic but also the social consequences of technological development elsewhere.

If this approach is accepted, we must go in for import of really advanced technology, and not the second-hand and dependence-oriented technology from collaboration arrangements with foreign capital or multi-nationals; and this should be done by outright purchase or royalty payments and not by joint production with foreign interests. Simultaneously we have to give the best possible opportunities and facilities to our own scientists and technologists to absorb the new technology, adapt it to our local conditions, and improve upon it by their own research.

In this connection, help from non-resident Indians and persons of Indian origin resident abroad could be availed of by offering them suitable incentives, including the setting up of new science and technology centres they could service; only, care has to be taken to see that local scientists and technologists get full opportunities for participation, collaboration, and

indigenisation of the imported advanced technology, that is brought into the country.

Priority to population policy

Another item that needs emphasis in the new approach is high priority to a population policy that would effectively bring down the growth rate of our population and prevent our numbers from reaching the astronomical totals that eminent foreign demographers are forecasting. Indian planning does include a policy of family welfare that would voluntarily limit the growth of numbers, but it has not registered any markedly successful results.

I think that is because we deal with the problem in macro national terms and also give a restricted connotation to the word 'voluntary' in our population policy. For effective action on the population front, it is necessary to break-up the macro picture into component sectors with differing magnitudes of birth rates, and concentrate our strategy of arresting population growth on the areas and socio-economic classes with the highest rates of demographic growth.

Anti-poverty programmes and subsidised facilities for increasing income should be simultaneously accompanied by special emphasis on the small family norm, the need for raising the age of marriage, spacing of births and ceiling on the number of additions to the family. This should be done both by population education extension services and special, subsidised, and readily accessible availability of birth control facilities. If individuals can be identified for anti-poverty programmes in villages, there is no reason why they would not also be identified for special demographic attention by the number of their children, their fertility behaviour, and the age of marriage of their sons and daughters.

The extent to which a high rate of population growth nullifies the effect of development on per capita income and individual welfare, especially of the poorer sections of the population, should be clearly brought out through a national programme of population education through the existing large media of communication and which we propose to enlarge substantially on the T. V. front.

Motivation for population control has to be directed to individual families and women in the reproductive age group; and this cannot be done merely by concentrating on the macro-link between total population size and the dividends from national development. The cost of rearing children, giving them health, good education, and employment oriented skills should be driven home to individual families in simple and easily comprehensible language, using all the audio and visual technology available to modern communication media. Use should also be made of the traditional media for influencing individual and group behaviour such as folk songs, puppetry, stories and discourses. The number of children a family should have is no longer either an involuntary act or a matter of only individual concern.

Community's stake

The community also has a stake in limiting the number of children and it can effectively exert its influence, as has been shown by the communes in the People's Republic of China. In fact there is much that India can learn from the Chinese experience of successful family limitation, without having to adopt their social and economic system.

Incentives and disincentives have also to be used at least till such time as the degree of development reaches the stage of demographic transition, where limitation of birth becomes a tradition and a family habit. Reduction in infant mortality, nutritional and health welfare schemes for children, and women's literacy and employment programmes have all an important role in strengthening the motivation for limitation of birth. Birth control facilities should be easily accessible, made inexpensive, and accompained by proper medical after-care in case of sterilisation and IUD insertions.

Village communities in rural areas and mohalla residents in urban areas should be induced to take interest in the demographic behaviour of their members, and periodic discussions initiated on planning of their families. Community interest and assistance in neighbourhood habitats can have as much salutary influence on demographic behaviour as incentives and disincentives or mass media education.

Political will required

In a multiple society like India, where non-economic and irrational factors influence sub-groups of the population in favour of increase in numbers, it is only a strong political will and a great deal of both tact and firmness that can make family planning successful on a nationally comprehensive scale. In any case, the new approach should give a decidedly more important place to family planning in Plan programmes, not only in terms of financial outlay and physical facilities, but also of programmes and policies directed to high fertility groups and areas in the country. Continuous data should be maintained for small geographical units like blocks, villages, wards and mohallas; and appropriate educational and incentive action taken in cases of deviation from targeted reduction in birth rates.

The Indian economy just cannot afford to let population grow at its present rate or delay realisation of the small family norm. This is possible only when a micro approach on a nationally extensive scale is taken to family planning, as against the present macro approach which stops at the States and the nation as a whole.

Erosion of value system

The new approach should also take account of the erosion that has taken place in the value system in the country and what can be done to arrest this trend and, in fact, reverse it. While there are many factors behind this phenomenon, one should ask the question to what extent, if any, planned economic development has itself contributed to this decline in basic values. Have the controls, licensing, and discretionary powers given to Government at its political and bureaucratic levels in the name of planned development led to the growth of corruption, nepotism, law-avoidance, tax evasion and the proliferation of black money?

If the answer is in the affirmative—and many persons in the country would be of that view—then should we

abandon the attempt at planned development as some people are beginning to suggest in muted whispers and closed drawing rooms? Or can we formulate a system of controls that would be based on objective criteria that would bar discretionary decisions, or replace physical by financial controls as is being suggested by some knowledgeable persons including those in authority? Have the incentives given by Government for better performance by industrialists, farmers, export promoters, small industrialists, and new entrepreneurs led to a fallout in terms of leakages, corruption, profiteering, and a mentality of dependence instead of one of self-reliance? And can we avert this fall out without affecting the accompanying increase in production?

The pertinent questions ?

In other words, can we have a system of production and performance incentives that will not also lead to a fall in moral standards? Then again, do the production and consumption subsidies that we use in our planned development also have a fall-out effect in terms of deterioration in moral standards; and if so, can we devise a subsidy system that will serve its purpose of increasing production and furthering social justice which can be implemented in a way that will avoid such a fall-out?

There are eminent men of known integrity and national commitment who have been talking of the need for freeing private enterprise from all shackles—they, of course do not show equal enthusiasm for stopping aid from Government—as the way, not only to maximise production, but also to restore moral standards.

While not doubting their honesty, have they taken into sufficient account the prevalent standards of business morality, neglect of national priorities when in pursuit of maximising private profit or indulging in consciousness among the people against the prevalent increase in economic inequalities?

Has nationalisation and expansion of the public sector to commanding heights led to a better work ethic, greater resource mobilisation, better management of the national economy, and a noticeable rise in mass welfare? How do we fit in the public sector and nationalised economic activity with the ethical standards and basic values that lie behind the vision of a socialist society; or have we been only dreaming when we identified a socialist society with maximum welfare, social justice and a self-reliant and self-accelerating economy. Is the alternative of capitalist development or what is euphemestically called people's capitalism, any better either in maximising mass welfare or in preserving ethical standards. Is a mixed economy the answer and does Indian experience support such an answer? Is it possible to devise a workable system of mixed economy that will be free from the evils of Government controls associated with socialism or of the greed, selfishness, vulgarity in consumption, and an unequal society associated with capitalism? Where do we go from here in formulating a new approach to Indian planning?

Quite frankly, I am unable to answer these very pertinent but vexing questions on how we can improve the normative base of planning not merely in words but in implementable policies, programmes and plan outlays. All that I can say is that whatever ideology we adopt as the base for our development, they will not work unless they are also based on a basic system of moral and spiritual values, giving our society the needed normative structure. These basic values include discipline, sharing, egalitarianism, social justice, uplift of backward classes and regions, ban on conspicuous and vulgar consumption, propagation of self-reliance, not only at the national level but also in a micro manner in local areas and in families and households.

I would end by reiterating what I had said a few months earlier from the same platform on the occasion of the Silver Jubilee of this Institute. I quote : "In short, we have to build into the growth process, the basic values of our Indian culture and heritage. The question is how do we build these values into the growth process, the growth pattern and the growth structure. It seems to me that the instruments for this purpose are communication, information, media, and education. The roots of the value oriented development should be in India's composite culture, in India's unity in the midst of diversity. Our basic values have to be somehow or other interwoven and inter-linked with the planning process. This should become, in my humble opinion, the objective of planning and national effort, not only governmental effort but all non-official efforts; a whole big National effort, so that as much of our value heritage as possible gets integrated into the growth structure and growth process and thereby liberates up from a narrow preoccupation with savings, investment, science, technology, exports etc. All these latter are very important; but also important are values and how to put values into every aspect of planning, every aspect of growth, every aspect of industrial and economic and other kind of processes."

If we can do this, we will be giving an enduring reality to the new approach to Indian Planning. □

Spinning centre helps tribal women

BORJOLAI IS A tribal village under Jirania Block of West Tripura district. Over one hundred tribal families live in and around the village. Most of them are small farmers, the rest being the landless agricultural labourers.

Considering the backwardness of the village, the Khadi and Village Industries Commission, Agartala, started a Spinning Centre of New Model Cherkha at Boriolai in 1976 under its direct activities programme with a view to providing employment opportunities to the village women.

The local women find that along with the male members of their families working in the fields, they can also earn and meet a good part of their family need by their earning through the Commission's Spinning Centre. And now more than fifty tribal women are working in this Centre during their leisure time and each of them earns Rs. 150 to Rs. 200 per month. □

Why unemployment among the skilled?

Mohan Bhatia

Though there has been a phenomenal increase in the number of institutes imparting specialised training, larger investments are required to be made to provide the gainful employment to the trained personnel. And to have full and fruitful utilisation of Indian scientific and technical manpower, it is necessary that their education and training be related to the needs of the society, the author adds.

TRAINED MANPOWER is a resource which cannot be created overnight. It takes quite sometime to establish institutes and impart training. Realising the importance of such a vital input in the development process, the Government of India's historic 'Scientific Policy Resolution', (SPR) states that "The wealth and prosperity of a nation depend on the effective utilisation of its human and material resources through industrialisation. The use of human material for industrialisation demands its education in science and training in technical skills. Industry opens up possibilities of greater fulfilment for the individual. India's enormous resources of manpower can only become an asset in the modern world when trained and educated.

In a way the resolution has led to the establishment of several educational institutions in the country with an aim of training adequate number of S & T persons in different fields. Presently, stock of the scientific and technical personnel in the country is estimated to be the third largest in the world. Unfortunately, not all the trained scientists and technologists are gainfully employed. There is growing unemployment among these personnel.

The trends in the establishment of training institutions, growth in the pool of S & T manpower and increase in their unemployment, establishes a case for the oversupply of these personnel. Apparently, India's trained S & T manpower is not being properly utilised. These trends and factors responsible for the same have been discussed here, keeping in view the aims and objects of SPR.

Growth of educational institutions

Ever since independence, as a result of various policy directions based on recommendations made by **the different manpower committees and commissions** and consequent increase in the financial inputs in the field of education, there has been tremendous increase in the establishment of institutions for training scientific and technical personnel.

Many new institutions of higher learning have been established to train manpower required for carrying out research, teaching and running industries. In 1947, there were only 25 universities. Now there are 135 of them including five Indian Institutes of Technology, Indian Institute of Science, Indian Agricultural Research Institute, All India Institute of Medical Sciences, etc., which are deemed universities. Education in engineering and medical sciences is mostly imparted in the colleges of engineering and medicine. Their number has also increased manifold since independence.

In the early years of independence growth of these institutions was minimal. In the early fifties, only 5 new universities, 14 new colleges of engineering and 11 new medical colleges were established. In the sixties there has been a steep rise in the establishment of new universities, colleges of engineering and

medicine. The increase in the number of engineering and technological colleges is phenomenal. In 1960-61, there were only 81 such colleges. Their number has risen to 640 in 1965-66. The number of universities has now reached 135,800 colleges of engineering and technology and 106 medical colleges. This among others may be attributed to the over enthusiastic implementation of part of the SPR, which aimed, among others :

(i) "To ensure an adequate supply, within the country of research scientists of the highest quality and to recognise their work as an important component of the strength of the nation," and

(ii) "To encourage and initiate, with all possible speed programmes for the training of scientific and technical personnel on a scale adequate to fulfil the country's needs in science and education, agriculture and industry, and defence".

With a view to considering ways and means of implementing SPR three conferences of scientists, educationists and technologists were organised by the Government in 1958, 1963 and 1970. In between the second and third conference a Round Table of Scientists was held in 1967 by the Prime Minister to discuss critical issues relating to the development of science and technology in the country.

There is no uniformity among the institutions of higher learning which differ from each other in the matter of admissions, courses, methodology of teaching etc. While most of them have selective admissions, there are some which have open door policy. Some of them emphasise basic research, others lay emphasis on applied research. Some institutions give preference to teaching over research and some on inter-disciplinary studies, new courses, professional courses, social sciences, humanities, engineering, medicine, etc. It may generally be said that in the sixties the growth of educational institutions was not properly planned which could have contributed to the present high rate of unemployment, among scientists and technologists.

Out-turn of the trained

The out-turn of graduates and post-graduates has increased very rapidly during the two decades covering the period from 1950 to 1970. In 1950, the out-turn in all the four categories of science, agriculture, engineering and technology and medicine was only 16,219; it increased to 40,756 in 1960 which works out to little over 150 per cent in the fifties. In 1970, the out-turn increased steeply to 1,39,782 which works out to little over 243 per cent in the sixties. Later the increase in the out-turn was minimal, only 30,000 in 1980. In the agriculture sector there has been, in fact, a decline by 1809 in the out-turn of B.Scs. in the year 1980 over the 1970 out-turn. In the case of M.Scs in Agriculture the increase is only marginal. However, in the case of Ph.Ds the increase is very steep, from 217 in 1970 to 450 in 1980.

It may be mentioned here that most of the students who go through the process of higher learning do so simply to earn a degree which is considered as a measure of educational achievement and thus qualily trained personnel add to the stock of country's social and political pressure on academic institutions for an increase in their intake capacity. These newly trained personnel add to the stock of country's S & T personnel and put a lot of pressure on the employment market. Since jobs cannot be created as fast as graduates there is urgent need to control the intake in these institutions.

In a developing economy, demand for highly qualified personnel in science, engineering and technology is quite high. In order to utilise country's limited resources and capital it is imperative to have sufficient number of trained personnel in different sectors of development. Also there is need to look into the qualitative aspects of S&T manpower. It is also equally important to create and support pools of excellence from which technical breakthroughs could emerge in future.

The total stock of S & T personnel at the beginning of 1980 has been estimated to be approximately little over 24 lakhs out of which approximately 19.50 lakhs are considered economically active. Not all the economically active S & T personnel are employed. Approximately 15 per cent of them are unemployed. Categorywise estimated stock of S & T personnel, economically active persons, and their unemployment position is given in the Table below.

Table-I

Estimated stock, No. of economically active persons, employment & unemployment of S&T persons in 1980

Sl. No.	Category	Stock	No. of Economically Active	Unemployment	Unemployment % to Economically Active
1.	Engineering Degree Holders	2,54,000	2,21,400	15,700	7.09
2.	Engineering Diploma Holders	3,78,600	3,29,400	65,500	19.80
3.	Medical Graduates	1,78,500	1,55,300	10,100	6.50
4.	Dental Surgeons	11,600	10,100	200	1.98
5.	Nurses (B.Sc.)	2,200	2,200	..	..
6.	Agricultural Graduates	98,800	77,100	8,800	11.41
7.	Veterinary Graduates	22,300	19,400	700	3.60
8.	Science Graduates	9,61,900	7,50,300	1,54,300	20.57
9.	Science Post-Graduates	2,78,900	2,71,500	10,600	4.87
10.	B.Sc/B.Ed	2,13,200	1,66,300	24,800	14.90
	Total	24,00,500	19,49,000	2,90,700	14.90

Source :-Report of the Committee on Scientific and Technical Manpower, New Delhi, Deptt. of Science & Technology, 198 1 p. 26

The strength of medical graduates in the Table covers only those having M.B.B.S. qualifications. It excludes those holding similar qualifications in indigenous system of medicines, viz., Ayurveda, Unani, Siddha and Homoeopathy. Categorywise their stock in 1978 has been estimated as under :

Ayurveda	1,19,361
Unani	10,269
Siddha	1,559
Homoeopathy	26,000
Total	1,57,189

The stock of practitioners of indigenous system of medicine is little more than that of the medical graduates. Further most of these personnel are employed in the profession. This not only reflects on the popularity of these systems of medicine but also emphasises continuing need of trained personnel in these systems because most of them work in the rural areas.

Among other categories highest stock numbering 9,61,900 is of Science Graduates, followed by Engineering Diploma Holders numbering, 3,78,600. Lowest stock numbering 2,200 is of B.Sc. Nurses.

Increasing unemployment

The total stock of economically active S&T personnel in 1978 has been reported as 19,35,300. Not all the economically active personnel had been employed. In 1978 only 16,98,000 S&T personnel were employed, and the remaining 2,37,000 or approximately 12.2 per cent were unemployed. In 1980, the employment situation has further deteriorated, when the total stock of economically active S&T personnel have been estimated at 19,49,000. Out of which 16,58,000 were employed and remaining 2,90,700 or approximately 14.9 per cent were unemployed. Thus in a period of about two years, unemployment among scientists and technologists has increased by 2.7 per cent.

Apparently education facilities in certain areas of S and T have been over established without taking into consideration employment opportunities for fresh graduates. Additional employment opportunities could be created only by investing huge sums which the country can ill afford.

The increasing unemployment has made many young scientists, engineers and doctors frustrated who have changed their profession and looked for employment in administration, civil service, banking or tried to migrate. Either way, the country has been the looser. In the first case, their services cannot be utilised in the field they have been trained. In the second, their services are not at all available in the country.

India took the path of planned economic development in 1951. With it, manpower planning also assumed considerable importance. However, it was only 1970 Conference of Scientists and Educationists which recommended that the "Manpower planning should be integrated with overall national planning of goods and priorities". By then much harm had been done by the over zealous implementation of SPR—resulting in tremendous growth of educational institutions and out-turn of S&T personnel and consequent unemployment.

It may be mentioned here that not all the scientists, engineers, doctors etc. trained are economically active all the time. There is always some time gap between graduation and securing a suitable employment. Further, some of the trained S&T personnel who are active at one time may not be economically active at another time. For example, female science graduates may not be economically active after marriage. They may return to economically active category after their children have grown up. There may be many science graduates who are employed in the Civil Services, Banking, Management, etc. As such not all the qualified S&T personnel are employed in the profession they have been trained. Moreover, many though employed in their field of specialisation may be engaged on a routine job and contributing little to the advancement of knowledge. No wonder the total number of S&T personnel engaged on Research and Development is much less.

Working for new knowledge

Those who work on R&D contribute most to the generation of new knowledge and socio-economic development by the application of results of research in the production system. The total number of S&T personnel engaged in R&D is much less as compared to the overall size of S&T manpower. Total economically active stock of S&T manpower in 1980 has been reported as 19,49,000. Out of these only 1,84,096 are employed in R&D institutions, which works out to only 9.5 per cent.

As on 1st April, 1980, only 1,84,096 S&T personnel were employed in R&D institutions. The number of S&T personnel engaged primarily on R&D activity is only 64,876 which works out to only 35.2 per cent. Nearly one third of S&T personnel working in the S&T institutions are engaged on administrative and non-technical activity and nearly same number on auxiliary scientific and technical activity. On an average it can be said that for every R&D scientist there are 2 supporting scientists working on auxiliary and administrative services in research institutes. This ratio will vary from institution to institution depending on its internal organisation, job classification, and nature of research, etc. The lower percentage of scientists working on R&D may be due to the fact that most of the scientists employed in research institutions are not Ph.Ds as is clear from the following Table. Through Ph.D is not a must for carrying out research, it does, however, initiate one in the research process prior to one's employment.

Table III

Educational qualifications of personnel engaged in R&D as on April 1, 1980

Sl. No.	Name of the Institute	Ph.Ds	Post Graduates	Graduates	Diploma Holders	Others	Total
1.	D.A.E.	644	1,343	1,621	495	97	4,200
2.	C.S.I.R.	1,469	2,300	1,675	273	476	6,193
3.	D.R.D.O.	181	2,565	2,301	1,723	128	6,898
4.	I.C.A.R.	990	1,940	259	200	713	4,102
5.	I.C.M.R.	126	227	73	10	20	456
6.	Space	225	861	993	656	902	3,637
7.	Other Institutions under the Central Govt.	1,236	3,555	5,184	2,429	2,804	15,208
8.	State Govts.	991	3,990	2,260	263	1,507	9,011
9.	Private Sector	791	2,384	4,500	1,850	2,056	11,591
	Total	6,653	19,165	18,866	7,899	8,713	61,296

Source : Research & Development Statistics, 1930-81, New Delhi, Deptt. of Science & Technology, 1982. pp. 70-71.

Conclusion

It is now generally accepted that the SPR's aim "to encourage and initiate, with all possible speed, programmes for the training of scientific and technical personnel on a scale adequate to fulfil the country's needs in science and education, agriculture and industry and defence," has been implemented with over enthusiasm resulting in phenomenal increase in the number of institutes imparting training in science, engineering and technology and outturn of trained personnel in these fields. However, little effort has been made to match the supply of newly trained scientific and technical personnel with the demand for their employment in industry, agriculture, defence, education, etc. keeping in view actual investments in various sectors. So much so that there is unemployment among the scientists, engineers and even doctors in the country. There may be many who are underemployed and are working in fields other than those in which they have been trained. This characteristic of S&T manpower needs to be probed further.

The reasons for this state of affairs could be many. The Plan projections for manpower might be fairly reasonable. Agencies responsible for the task of providing training facilities have gone ahead to achieve the Plan targets. However, to employ gainfully the trained personnel there is need for proportionate investment in various production sectors as projected in various plans. Apparently, the actual investments in the production sectors have fallen short of the Plan targets. If this could have been noticed in time and corrective measures taken immediately, the present unemployment of 14.90 per cent could have been much less, if not completely wiped out. It is, therefore, imperative to keep a constant watch over the situation and carry out relevant studies and introduce corrective measures, as and when necessary.

In order to have full and fruitful utilisation of Indian S&T manpower, it is necessary that their education and training be related to the needs of the Indian society. How best the individuals trained in various fields are able to put to use their S&T education; and how useful is their education to the society at large are some of the vital points which need to be explored and studied in detail.

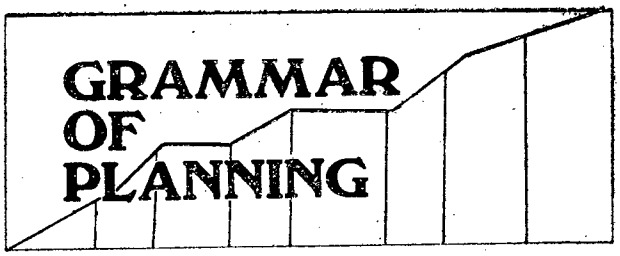
Cage makers get bank aid

Villagers of Unsani in Howrah district are traditional cage makers. For generations, they have been making cages to earn a living.

Of late, they were finding it increasingly difficult to obtain enough raw materials to ply their trade. They wanted to purchase bamboo, canes, threads and varnish in sufficient quantities so that their work would not be interrupted and their margin of profit would be slightly higher. As in the case of other artisans, they too were hampered by shortage of capital.

When their plight was brought to the notice of Unsani of Branch of the State Bank of India, it decided to extend its assistance.

The Bank gave loans to 51 selected cage makers of the village. Interest rate was very low. Loans varied between Rs. 200 and Rs. 300. This helped them stock enough raw material. They have now become a little more sure of themselves. And their loans are being rapid regularly. □



Why planning ?

P. R. Dubhashi

"Planning, a method of the modern scientific age, is an orderly arrangement of the future." It stands for the triumph of reason over superstition, of understanding over ignorance, of organised initiative over fatalistic helplessness. Planning has now become a distinctive characteristic of modern society and economy ?

It was Sir Harcourt Butler who said at the beginning of the century that "we are all socialists now". With much greater justification can it be said, in the last quarter of the century that "we are all planners now" While there may still be many people who would not call themselves socialists, they may not hesitate to call themselves planners.

This is because planning has now become synonymous with the method of the modern scientific age. When the word planning is used in this sense, it simply has its universal connotation, namely, planning is "an orderly arrangement of the future". Instead of leaving the future to be decided by the vicissitude of circumstances, the method of planning is used as a deliberate attempt to understand the forces that shape the future and to mould them in such a manner as to facilitate emergence of the arrangements for the future which would be more consistent with our own goals and desires.

Triumph of organised initiative

Planning stands for the exercise of will as against helpless surrender to our own environment. In this sense planning stands for the triumph of reason over superstition, of understanding over ignorance, of organised initiative over fatalistic helplessness.

With modern technology and organisation, man's ability to understand the circumstances which influence his life and to shape them has enormously increased; that is why, planning has become the handmaid of technology and organisation.

It is thus rightly expected of every modern man or an institution or organisation to plan for the future. It is in this sense that the planning has become a distinctive characteristic of modern society and economy. To the extent to which planning has become a part and parcel of organised social acition, the society could be described as modern and progressive.

John Kenneth Galbraith in his *The New Industrial State* has drawn attention to the significance of planning in the new industrial society. Modern technology requires a massive and inflexible commitment of resources to the introduction of innovation in the process of production of goods and services. It is impossible to make such commitments without meticulous and detailed research and planning not only regarding the production of particular goods or services but also their marketing.

In the words of Bauchet : 'Long before new requirements arise, means of satisfying them must be considered and a research programme initiated, the results of which may take as long as five years to mature. All Western countries draw out their forecasts and programmes in the sphere of energy for about twenty years. The supply of energy at normal prices depends on investments made more than fifteen years ago. This applies equally to iron and steel industry, the chemical industry and all other rapidly expanding branches with a growing volume of investment. All these industries require investment of larger and larger sums further and further in advance of the anticipated date of production."

A technique of modern management

Planning has become a passport to success of an enterprise. It has become the first and most important technique of modern management. Absence of planning is absence of preparation and therefore the path of failure. Because of the interdependence in growth, forecasts cannot be confined to single firms or sectors of the economy but are undertaken on national and international scale as well.

This is, however, not the sense in which economists use the world planning. Planning in the universal sense of the orderly arrangement of the future need involve no controversies. Planning on the other hand, has been a subject of fierce controversy in the past and continues to be so even today because of the special meaning of planning as understood by the economists, social thinkers and policy makers. In that special sense, planning stands for replacement or supersession of planning by individuals or private institutions with planning by the state. Planning thus stands for an economic system which is an alternative to free economy and *laissez-faire* policy.

The objective of the planning by the state is to influence, alter or redirect decisions by individuals or private institutions, by consumers, producers and workers so that they can conform to the pre-determined preferences or goals set by the planners. It is planning in his specific sense that constitutes the pandora's box of controversies between economists, social thinkers and parties belonging to various schools of thought, various isms and various political, economic and social systems.

Moreover, though adherents of different schools of thought, or isms, or economic philosophies repose their trust in planning, they do not mean the same thing when they talk of planning. Indeed there appear to be as many concepts of planning as the various schools of thought which talk about planning.

Thus one school of thought would look upon planning as a method of overcoming the shortcomings of capitalism or the market economy. They would like to keep the basic mechanism of the market economy in fact. But they would use planning not to end but to mend the market economy, to set right its defects or oberrations. They would like to combine planning with the market mechanism or a free economy.

On the other hand, the socialists would like to end the market mechanism and the private ownership of means of production. The latter would be socially owned and planning becomes a method of management of the socially owned means of production.

For breaking poverty circle

Finally, for the developing countries for the world, planning stands for a method of breaking the vicious circle of poverty and bringing about economic development and social change as speedily as possible.

Thus, the concept and rationale of planning would depend on which school of thought is talking about planning. All that is common to these different concepts of planning is what has been mentioned above as the universal idea of planning, namely, orderly arrangement of the future.

While a wide variety of people believe in planning, though in different senses, there is still a group of thinkers who do not believe in planning at all, who consider that management of economy through planning is an impossibility, is not practicable and is destined to fail. Among these are Ludwig Von Mises and F.A. Von Hayek.

Every economic system has to provide answers to the fundamental economic questions. These are, what to produce, how much to produce, for whom to produce, how to produce, when to produce, where to produce and why to produce. The last perhaps is the most important of all the questions because it deals with the fundamental problem of economic motivation.

Man an economic animal

The whole of economics, as it has evolved from the days of Adam Smith, the author of *Wealth of Nations,* stipulates that man is an economic animal and is governed in his economic decisions, whether as consumer, producer or worker, by the fundamental motivation of economic self-interest.

Each as an independent economic agent, tries to get maximum satisfaction at the minimum sacrifice of economic interest. This maximisation process involves marginal adjustments. The consumer tries to maximise his satisfaction by ensuring that the marginal satisfaction of spending the last unit of money on various commodities is the same. The worker tries to maximise his satisfaction by equating the marginal dissatisfaction of additional hour of work with the satisfaction from goods and services derived from the additional wage earned. Finally, the entrepreneur or the producer tries to equate the marginal cost with marginal profit in trying to optimise his production.

These decisions of every individual governed by economic motivation provide answers to the basic economic questions as though they were mere by-products. Thus the answer as what to produce is governed by the demand of consumers which in turn depends on their income, the scale of preference and the relationship between price and demand known as elasticity of demand. The answer to the question how much to produce and for whom to produce is also governed by the same conditions affecting the level of demand.

Market economy

The market economy is supposed to be ruled by the sovereignty of the consumer. It is the pattern of consumption that governs the pattern of production and provides answers to the question what, how much and for whom to produce. The market mechanism or the price mechanism simultaneously decides the allocation of resources in the processes of production in such a manner that the pattern of production conforms to the pattern of consumer demand. Indeed, the distribution of income, the pricing of products and of all factors of production are simultaneously determined by the same mechanism.

There is a continuous tendency towards equilibrium which ensures parity between costs and prices, productive contribution of the factors of production and compensation to them, demand and supply of goods and services and demand and supply for factors of

production. Any imbalance between costs and prices and demand and supply of goods and factors of production is corrected by the equilibrating tendency of the market which were described as the 'invisible hand' by Adam Smith, the founder of economic science.

In such a free, perfectly competitive system of market, there could be no undue profits, no exploitation of consumer, the worker or the producer, no permanent surplus or deficit commodities and no persisting unemployment because each of these imbalances would set in the correcting forces into motion. Thus, the market mechanism would ensure an optimum utilisation of the resources of the economy and an optimum scale of production.

In what way production ?

The questions where to produce, how to produce and when to produce are also settled in a similar fashion. The question as to where to produce is the subject-matter of the economic theory of location, developed first by Alfred Weber and subsequently by other economists. Industries or enterprises will be pulled, on one side, by proximity to raw materials and, on the other, by the proximity to the market for the finished products. The balance of both these factors would be decided by comparing the marginal cost of trasporting raw material with the marginal cost of transporting the finished products.

If transporting the raw material like sugarcane is more costly, then the factory will be located near the source of supply of raw materials. On the other hand, if the raw material is economically transportable proximity to the market for finished product will tend to decide the location near big consumer centres, i.e. cities. The same considerations of balancing the comparative cost will govern whether the goods will be produced within the country or imported. The law of comparative cost is an international extension of the law of the market economy.

The questions as to how to produce and when to produce are decided by balancing the marginal sacrifice of savings with the marginal product of investment. The marginal sacrifice of savings is measured by the loss of satisfaction caused by the postponement of consumption, while the marginal productivity of investment decides the returns that follow the postponement of present consumption for increasing the future flow of goods and services. If the marginal sacrifice of savings is greater than the marginal product of investment, then the decision would be in favour of a production process which will be less capital intensive. On the other hand, higher productivity of investment would lead to the choice in favour of a more elongated process of production requiring investment of resources in capital goods or long gestation production process.

Thus, the market mechanism ensures maximum satisfaction to the consumers, maximisation of profit to the producers, optimum allocation of resources as also full employment of resources. This is not in consequence of any central direction of the economy but a by-product of the maximisation process in which individual consumers, workers or producers participate, each deciding by himself and none able to influence the economy as a whole.

If the market economy is such a paragon of perfection then what is the need for planning the economic affairs rather than leaving them to the market forces ? The answer is that market mechanism can deliver the goods only if certain assumptions are fulfilled.

The market economy never functioned in a perfect manner as envisaged in the theoretical model. In practice, economic aberrations developed not in a marginal or in transient manner but in a structural, chronic and persistent manner which led major economists and social thinkers to question the fundamental assumptions regarding the working of the market economy and the adequacy of the capitalistic economic system to deliver the goods.

Internal contradictions in capitalistic economy

Already Karl Marx had predicted that the capitalistic market economy would collapse under its own weight due to internal contradictions. But Marx was looked upon by the orthodox economists as a heretic who did not belong to the regular line of economists, whose teachings did not form part of the economic textbooks and who found a place only in the textbooks on the history of economic thought.

But, economic, realities cannot be wished away by constructing elegant economic models ! Economists were forced to consider the major evils of the capitalistic market economy namely, monopoly, inequality, unemployment and neglect of productive and social considerations.

The entire rationality of the market mechanism rested on the assumption of a free competition between the innumerable producers and innumerable consumers.

But, in practice, this assumption goes by the board mainly because of the operation of the law of increasing returns to scale and indivisibility of investment, plan and machinery in many sectors of the working of the modern economy. Such were the advantages of large scale production and organisation, that it was found in the evolution of the capitalistic economy, that in areas as diverse as steel, motor cars, food products, fertilisers, etc. small units could not survive inevitably leading to the emergence of few gaint enterprises dominating the entire production if not a single firm monopolising it. Prof. Galbraith has vividly described in his New Industrial State how some 500 monopolistic enterprises in America virtually control the entire economy. In public utility enterprises, like railway and electricity, monopolies were found to be inevitable. Thus monopoly, oligopoly and monopolistic competition happened to be the rule rather than the exception.

No unmixed blessing

But the emergence of monoply can hardly be an unmixed blessing because while it gives the advantages of large scale operation at the same time it enables the monopolists to hold the consumer and

the community to ransom. Indeed the monopolist dethrones the consumer and usurps his place as the sovereign of the economy. The consumer is at the sweet will and mercy of the monopolist.

Once the monopoly emerges, many other evils may follow. The monopolist could create artificial scarcity and boost prices. He may spend excessive amount on advertisement to bamboozle consumer and force him to fall in line with what the monopolist wishes. He may indulge in product differentiation without any real substance. He could limit production and boost prices and profits. He could indiscriminately exploit the natural resources.

A source of inequality

Monopoly leads also to the concentration of all means of production and fruits of production in few hands. In other words, monopoly is the biggest source of inequality. Of the many undesirable consequences of inequality is the distortion of production and channelisation of resources in directions which could be considered as of low social priority. Thus, since the purchasing power is concentrated in few hands, the luxuries of the few exert greater pull on the production system than the dire necessities of many.

One of the advantages claimed by the market economy is that it adjusts the production prices to the pattern of consumer demand. But this so-called advantage of the market economy becomes a major evil, if the consumer demand itself reflects economic inequalities where food for the pet dog of the rich receives higher priority than the food, shelter and clothing for the poor.

These two evils of monopoly and inequality in fact lie at the root of the evil of unemployment. The capitalistic economy traditionally suffered from the occurance of business cycles. The economy moves in the cycle of prosperity and depression.

During the period of depression a large number of people were thrown out of employment. The worst shock to the economy came with the great depression of 1929 which shook capitalism to its foundations and called for an agonising re-appraisal of the conventional economic analysis. The latter would have us believe that the depression in the economy was caused by the fall in profit of business which in turn was caused by rise in costs. The remedy was, therefore, to cut down the costs, i.e., cut down wages and reduce interest rates. The policy of cutting down wages however served to deepen depression and it required the genius of John Maynard Keynes to evolve new economics which taught that the depression was caused by fall in effective demand which in turn was caused by the collapse of purchasing power.

The remedy would lie in supporting the effective demand through a programme of public investment and a comprehensive programme of social security. The funds for such an investment programme would be found by transfer of funds from the affluent to the indigent which would also serve to increase the propensity to consume and boost up effective demand.

Concept of welfare economics

The apologist of the market economy some time tend to confuse productivity with profitability. Monopoly, scarcity, and immobility may encourage business activities which are profitable, but they would not be necessarily productive and socially desirable. Moreover, the profitability criteria take into account private costs and benefits and not social losses and gains.

It was Pigou who introduced the new concepts of welfare economics based on an accounting of social benefits and costs. Housing and transport congestion, excessive pressure on public services, like water and sanitation, environmental pollution through generation of smoke and industrial wastes and effluents, are social costs which the market economy fails to take note of.

Thus planning came to the fore-front in western economies to mend the evils of capitalism if not to end the system itself—the evils of monopoly, unemplopment, inequality and social costs. In the words of Barbara Wootton, "By its very nature, the market is incapable of registering preferences which cannot be reflected in the consumer demand for particular articles, e.g., preference for full employment, social values, etc. These can only be promoted by deliberate planning and not by any commercial market". The agenda of such planning needed a public investment programme and a series of physical and monetary measures, a set of subsidies coupled with progressive taxation, public consumption programme, and social insurance. Though the details may vary, these have become the essential ingredients of planning in the western economies.

A wind of change

After World War II, planning assumed new significance in the Western countries. It become "a sign of the 'wind of change' blowiing through the traditional capitalistic structure". Of all the western European countries making use of planning, France emerged as the outstanding.

Their system of "indicative planning" tried to reconcile planning with market economy, freedom of choice for the consumer and businessmen with centralised direction, and consultation with capital and labour with parliamentary democracy. Planning not only became increasingly important for achieving significant growth rate but also proved to be indispensable for the establishment of price, production and manpower policies for public and private enterprise. "Thanks to the increasingly precise methods of econometric analysis and investigation, planning in Western countries has become more and more a sophisticated exercise".

Planning thus brought about a significant qualitative transformation in the capitalistic economic system without destroying it. It changed the market economy from a mechanism working blindly under the forces of demand and supply into a purposeful forward-looking organisation. It has provided a common framework of operation for different partners in the

(*Contd. on page* 24)

Where India in non-ferrous metals ?

P. K. Sahoo, P. R. Soni & T. V. Rajan

Non-ferrous metals play a very important role in modern civilization. India is meeting its home demand by indigenous production to the extent of about 28% for copper 34% for lead, 44% for zinc, and 65% for aluminium. Here the author discusses production, consumption and import in recent years, and future plans for production of non-ferrous metals in India.

ALL NON-FERROUS metals can be classified in two groups, namely, common and rare metals. Aluminium, copper, zinc, lead, cadmium, nickel, tin, magnesium, and manganese are in large scale production today the world over and have firmly established their place in modern engineering and are known as common metals. The rest of the large family of non-ferrous metals fall in the category of rare or uncommon or special metals.

Among the common metals our resources in terms of ores are considerable with respect to the two metals; aluminium and manganese. However, with respect to other common metals the reserves and production are not adequate.

The development of the rare metals has been slow for number of reasons. The natural supply or abundance in the earth's crust may be small. Even if fairly prevalent, the concentration in accessible deposits may be so low as to require handling and processing of huge amounts of material in order to extract even small quantities of the desired element in either compound or elemental form. However, in the recent time, many rare metals have assumed considerable importance because of their suitability for special applications in diverse fields e.g. uranium, thorium and zirconium in nuclear power generation, titanium and beryllium in aeronautics and space engineering and silicon and germanium in electronics. Demand of these metals have stimulated establishment of special technologies for their large scale production.

Position in Aluminium

Aluminium is the most abundant (8.13 per cent) of the commercial metals and is third in abundance of the elements in the earth's crust, following oxygen (46.59 per cent) and silicon (27.72 per cent). Today, it is of great worth particularly due to its applicability in air-craft construction.

Aluminium industry in India covers period of about 35 years. However, its development had a quite rapid pace and today it has become the primary non-ferrous metal industry in the country. In 1982-83, India produced 2,08,174 tonnes of aluminium against the installed capacity of 2,50,000 tonnes. Per capita consumption of aluminium in India is 370 gm. The highest production was 2.14 lakh tonnes in 1978-79. The imports of aluminium have shown steadly rising trend : from 33000 tonnes in 1978-79 it rose to an estimated 1.3 lakh tonnes in 1980-81.

The Planning Commission has provided Rs. 900 crores in the Sixth Plan for the proposed Orissa

Table–I

Production, Consumption and Import of Aluminium in India

(Tonnes)

Year	Target	Actual Production	Consumption	Import
1978-79 . .	2,10,000	2,16,000 (101.9)	2,49,000	33,000
1980-81 . .	2,50,000	2,00,400 (80.0)	3,30,400	1,30,000
1982-83 . .	2,60,000	2,08,176 (80.0)	N.A.	N.A.
1989-90 . .	5,70,000	..	..	..

Note :—Figures in brackets show the ratio of production to target expressed as percentage.

N.A.—Not Available.

Aluminium Complex with total cost Rs. 1,242 crores, including a foreign exchange component of Rs. 167.50 crores. The complex will consists of a bauxite mine with an annual capacity of 2.4 million tonnes, an alumina plant with 8,00,000 tonnes capacity and an aluminium smelter to produce 2,18,000 tonnes. A National Aluminium Company has been formed to manage the affairs of the complex. The alumina plant and aluminium smelter are scheduled to be commissioned in Sept. 1985 and Feb., 1986 respectively.

Copper a basic metal

Copper has certain basic properties of the metal viz. high thermal conductivity, excellent electrical conductivity and good formability. Copper is also used as an alloying element with many metals to provide good mechanical properties. It can be joined by brazing and soldering, it has good corrosion resistance and can be accurately electro-deposited. The natural resources of copper are unique in the sense that they are excellent hosts of many other valuable elements. The by-products from copper metallurgy form an impressive list including nickel, cobalt, molybodenum, gold, platinum, silver, selenium, arsenic, sulphur etc.

Copper as an industrial metal has gained considerable importance in the Indian industrial scene. While the demand for copper metal has been steadily growing, the indigenous production has not come up to expectations. Some of the problems include lack of deep hard rock mining expertise, non-availability of latest mining machineries and explosives etc., and low grade copper ore distributed in small pockets over wide areas. The total probable reserves of copper ore in India may be of the order of 366 million tonnes with 1 per cent copper content. A substantial portion of these reserves is located in the Singhbhum area of Bihar, and Khetri and Dariba in Rajasthan.

TABLE-II

Production of Copper (Blister)

(Tonnes)

Year	Target	Actual Production	
1976-77	36,000	23,715	(65.9)
1978-79	32,300	23,700	(67.8)
1980-81	27,000	25,400	(94.0)
1982-83	37,000	27,000	(73.0)
1989-90	86,000	..	

Note :—Figures in brackets show the ratio of production to target expressed as percentage.

In respect of blister copper, the production target has been lowered from 36,000 tonnes in 1976-77 to 27,000 tonnes in 1980-81. However, the target has been set somewhat higher in 1981-82. The production had nearly stagnated at around 22,000 tonnes till 1979-80. In the subsequent years, the performance of the copper industry has been satisfactory, per capita consumption of copper is only about 160 gm. whereas in Japan it is about 15.14g. Copper production in India is expected to increase to 85,000 tonnes by 1990 but even then it will be meeting only 55 per cent of the demand. A large percentage of the domestic requirement is being met through imports.

The Government is aware of the problems of this industry and action has been taken to improve this situation through intensive training of personnel, expansion of old mines and development of new mines, development of machines manufacturing capability, and import of essential material wherever necessary. Hindustan Copper Limited proposes to step up production to 65,000 tonnes as against the projected demand of 1,17,000 tonnes by 1984-85 and to 85,000 as against the demand for 1,57,000 tonnes by 1989-90.

Zinc produced since ancient times

Production of zinc in our country dates back to thirteenth century. But demand of zinc in India constitutes only 2.5 per cent of the world demand. Country's demand for zinc prior to independence was being totally met through imports. Today, India produces and meets about 45 per cent of the country's zinc requirement. Zawar Mines, the chief source of raw materials for zinc, are situated 25 miles south east at Udaipur City. Attempts to establish a smelter at Debari, near Udaipur, Rajasthan, began in 1957. The installation of zinc smelter by Hindustan Zinc Limited at Debari in 1968, had only made the beginning towards realising the ambitious goal of substantial self-sufficiency of this metal. Presently, at Debari about 19,000 tonnes per annum zinc is produced against the installed capacity of 45,000 tonnes/year. Good quality reserves of zinc and lead are also available at Rajpura-Dariba (Bhilwara). Recently very rich (combined zinc-lead content of about 15 per cent) deposits (53.00 MT) of zinc and lead have been found in Rajasthan at Agucha.

TABLE-III

Production Consumption and Imports of Zinc in India

Year	Target	Actual Production	Consumption	Imports
1976-77 . .	48,000	27,033 (56.3)	99,380	N.A.
1978-79 . .	67,000	64,402 (96.1)	1,16,290	61,000
1980-81 . .	80,000	44,000 (55.0)	N.A.	35,000 (Provisional)
1982-83 . .	72,000	51,970 (72.20)	N.A.	N.A.
1989-90 . .	1,79,100	..	..	..

Note :—Figures in brackets show the ratio of production target expressed as percentage.

The first metal extracted

Lead was the first metal which was extracted by man. Native metallic lead is extremely rare. It was the extraction of the lead-silver alloy from silver bearing lead ores which became the main object of early metallurgy and the subsequent separation of lead and silver resulted in development of technology of extraction of lead in course of time. The properties which are responsible for the importance of lead are its excellent corrosion resistance, good electrical

and electro-chemical behaviour, high density and softness. As a result, this versatile metal has many applications.

For storage battery grids it has been found superior over other materials. Lead is also used in anti-knock compounds, solders and cable sheathing for certain ranges of power cables. Lead is used traditionally for plumbing and pigments.

In India lead is produced at Visakhapatnam (Andhra Pradesh), Tundoo (Bihar), and Sangipalli (Orissa). The production of lead has fallen short by a wide margin against installed capacity except in 1980-81. Due to the industrial importance, the consumption of lead is on the increase and indigenous production has not so far been able to keep with the growth of consumption as seen in the table. As compared to industrialized countries 1.3 kg., the per capita consumption of lead in India is only 70 gm which is even lower than average value of developing countries (150 gm.)

TABLE IV

Production, Consumption and Import of Lead in India

(Tonnes)

Year	Target	Actual Production	Consumption	Imports
1976-77 . .	8,000	6,181 (77.3)	50,560	N.A.
1978-79 . .	14,000	10,475 (74.8)	N.A.	27,000
1980-81 . .	14,000	14,900 (100.0)	N.A.	55,000
1982-83 . .	15,000	14,801 (100.0)	N.A.	N.A.
1989-90 . .	58,500	..	..	..

Note :—Figures in brackets show the ratio of production to target expressed as percentage.

Production of secondary metal through the organised sector takes care about 20 per cent of the total lead consumption in the country. The total installed capacity of secondary lead in the two plants of Indian Lead Pvt. Ltd., is 22,500 tonnes per annum which exceeds the current installed capacity of 18,000 tonnes per annum for primary lead production in the country. Besides, there are small scale secondary lead producers in the country who do not come under any organised sector.

Cadmium an alloying agent

Cadmium is mainly used for electroplating, salt manufacture, batteries manufacture of storage, as an alloying agent in dentistry and as a solder metal. It is also used in artificial Jewellery. Due to these uses, the demand of cadmium in world market is high and consequently it has become expensive. Cadmium occurs mainly as the sulphide minerals in association with zinc and lead ores in many small quantities with other minerals.

In zinc and lead ores, the cadmium content is about 0.4 per cent. Thus it is a valuable by-product from zinc smelter. In India cadmium is produced by Hindustan Zinc Lmited at Udaipur and Visakhapatnam, and by Cominco Binani Zinc Ltd. at Alwaye. In 1982-83 India produced about 123 tonnes of cadmium. Annual world production of cadmium in recent years is about 19,000 tonnes.

The Yellow metal

According to a study, the above ground gold stocks in the world are estimated to be around 93,000 tonnes. Of this amount, 45 per cent is with monetary authorities, 35 per cent is in jewellery and other industrial uses, and the balance of 20 per cent exists as investment and hoarding. Out of this 4,700 tonnes are believed to be held by India, in the form of jewellery.

The cost of mining gold depends primarily on the grade of the ore. The higher the grade, the lower is the cost. There are other factors like depth of the mine, labour and technology which are responsible for the cost of extracting gold.

The production of gold in India is mostly from Kolar mines, about 1.7 tonnes per annum. The total gold produced from mines till now comes to about 790 tonnes. The residual ore reserves at Kolar now available are about 35 million tonnes. The chances of finding any new gold field in India with substantial reserves outside the existing belt appear to be remote. The Geological Survey of India (GSI) and the Minerals Exploration Corporation Limited, however, have not given up hope.

The GSI has taken up a programme on priority basis in the northern part of Kolar Schist belt in Karnataka and in southern part of the Schist belt in Chittor District of Andhra Pradesh. In addition, there is search in Hutti Maski Schist belt in Raichur district in Hosur-Yelishirur blocks, in Gogad gold field in Dharwar district of Karnataka. Investigations initiated in Raigarh district of M.P. have located a gold bearing gravel zone of two metre thickness. The crash programme for exploration of gold has been launched as the proved gold reserves in the Kolar and Hutti fields are expected to sustain the mining operation for only the next 15 to 18 years at the present level of production.

Endowed with rate metals

India is endowed with significant resources with respect to quite a few rare metals and a considerable amount of expertise had already been gained in various areas related to metallurgy of these metals like underground mining for low grade ores, physical beneficiation of beach and minerals, hydrometallurgical processing, pyrometallurgy, vacuum induction, arc and electron beam melting. The future development programmes in the field of rare metals should take into consideration the factors like availability of raw materials, the level of the relevant processing technology, the domestic requirement and feasibility of exporting either the finished or semi-finished product at competitive prices.

In the present Indian context, the rare metals can be broadly divided into four groups. The first group consists of those metals, e.g. titanium and beryllium for which the raw material resources are abundant.

In the second group, we have those metals which have somewhat limited resources but processing technology has already been developed satisfactorily on a pilot plant scale and considerable domestic demand exists. It would be advisable to set up industries for these metals, based partially on import of raw ores or concentrates. Simultaneously, emphasis should be laid on exploration, mineral beneficiation and metal extraction programmes. Metals like niobium, tantalum, molybdenum and tungsten come in this category.

The third group is composed of metals which are in very low concentrations in association with the ores of other relatively abundant metals. These metals have considerable concentration in by-product streams and in metallurgical wastes, from where they can be recovered. The possible recovery of gallium from the Bayer liquor in the aluminium industry, and of selenium and tellurium from anodic slimes in the copper industry are illustrative examples. Efforts should be made to pursuade the industries concerned to give serious consideration to this issue.

Lastly, rare metals for which neither raw material resources nor an indigenous technological base exists in the country, constitute the fourth group. In relation to such metals, a near total dependence on imports cannot be avoided for the present. Platinum is an example of this group.

Summing-up

The non-ferrous metals industries in India have recorded considerable progress over the last two decades and a half. The growth and development in production of aluminium has been significant. The progress in production of other base metals is taking place in stages. Demand satisfaction by indigenous production in 1980-81 was about 28 per cent for copper, 34 per cent for lead, 44 per cent for zinc and 65 per cent for aluminium.

Current position of availability of various minerals reveals some interesting facts. For example there are no extensive low grade ore deposits of zinc and lead owing to some basic geochemical reasons but it is somewhat different for metals like copper of which there are large resources of low grade ores. Fortunately, the outlook is much better in relation to aluminium.

Whatever the reasons may be the consequences of lag in the production of base metals output in relation to demand has been the continued dependence of the country on imports of all major non-ferrous metals in sizable quantities. With the rise in demand, a large and in many cases the entire portion of the increased demand is being met through import in face of the insufficient domestic supplies. There has been gross under-utilization of the capacity in the non-ferrous industries in India mainly due to power constraints. The time has come to seriously consider the mineral wealth available in the ocean beds, and to devise ways and means of exploiting this resource. Work in this direction has been started already.

The Sixth Plan envisages an outlay of Rs. 1260 crores for non-ferrous sector. In regard to aluminium the accent is on continuing schemes though a major new complex is envisaged in Orissa. A sharp increase in the production of copper, zinc and lead is envisaged by 1984-85 by completion of a number of balancing schemes.□

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economic system. The entrepreneurs refer to the plan when reaching their decisions. Plan provides them with long term perspective and they are less exposed to sudden temporary disruptions or violent periodical crisis. Planning has become a steadying factor in the working of the market economy.

Similarly, while the struggle of different economic groups to get a larger share in the economic cake, i.e., the class struggle, itself is not eliminated, planning has guided it in the direction of collective progress. Plan has imposed at least a small degree of collective discipline. Planning has become a symbol of "tenancy of different groups to strive for future prosperity through united action in the present". Indeed planning is a sure sign that capitalism is changing.

Following the French experiment, the British Government also set up Neddy (National Economic Development Council) in July 1961. In 1959, the Belgium Government established a Bureau de programmation to draft economic plans for 1965. Netharlands took to planning even earlier. As long ago as 1945, it set up a Central Planning Bureau, a research and planning centre, which makes forecasts and recommendations to government to ensure balanced economic developments for the country in the form of annual plans into which its long term projects are incorporated. Italy prepared a plan based on economic studies for the development of employment and income for the ten-year period 1955-64. In August 1962, the government appointed a National Commission to draw up economic development programme. Japan, though an Asian country, must be grouped with these western economies in terms of levels of economic development. It set up Economic Planning Agency and Council whose reports describing condtions required for the fulfilment of desired economic goals, become plans when approved by government. The agency produced several plans. Its 1961-70 plan called for national income to be doubled over the period at the rate of 6.5 per annum.□

(To be continued)

A socio-economic study

Poor are where they were

N.R. Hota

The study shows that the poor constitute 75 per cent of the total households of the village, with 50 per cent living below the poverty line. They are mainly agriculturists owning 1 acre or less of land and a few of them are artisans. The survey revealed that the fruits of development flow more towards the richer sections and non-agricultural sectors.

BAGGI IS A composite village with 111 households, inclusive of hamlers of Marer and Gharbasada, consisting of agricultural and trading families and a castewise distribution of Brahmins, Rajputs, Banias, Scheduled Castes and Scheduled Tribes. A method of random sampling was adopted, taking the household numbers from the Panchayat register, but it was suitably altered in the field, depending upon availability of the HOF and the need to cover representative samples from the different clusters of houses into which the village was divided. The samples thus obtained covered 22.5 percent of the total households, with a spread effect covering all clusters and all castes, agriculturists, artisans and traders, and landholders of all groups.

Most of the families in the village are agricultural in occupation and live off the land. Some of them work as agricultural labour (Juari) in the fields of others having more land, after finishing their own cultivation. A few families of rural artisans were seen, engaged in trades like blacksmithy, basket weaving, leather work etc. Some have found employment in the B.S.L. Project nearby, though the number is quite reduced after the closure of the project. Three persons from the village have found their way to the Middle-East, and are employed there in skilled trades like turners etc.

The women are mostly engaged in household work and also work as agricultural labour in own/others' fields. Out of a total number of 111 households, 55 households have been identified by IRDP as having an income of less than Rs. 3,600 per annum and hence below the poverty line. Thus about 50 percent of the families in the village are below the poverty line.

On the basis of income, the village can be divided broadly into three groups : (1) Higher income class (2) Middle income class and (3) Poor. The poor constitute about 75 percent of the total households, with 50 percent below the poverty line. The middle class constitute about 20 percent. The rich constitute about 5 percent of the total households. The rich households are mostly dependent on trade and business. The middle income groups own land between 2-4 acres and have one or two members in employment. The poor are mainly agriculturists owing 1 acre or less of land and a few of them are also rural artisans.

Except for the 5 percent rich trading class and few technicians employed abroad, the income of the village is derived mainly from agriculture and partly from local employment. The agricultural income is at subsistence level and did not appear to generate much surplus.

Expenditure pattern

The expenditure pattern is heavily weighted in favour of foodgrains and clothing. Since the village is situated in cold climate, a family has to spend on an average Rs. 1,000 a year on clothing. This was found to have led to short-term indebtedness in cases of a few poor families.

Foodgrains were purchased for 6-4 months a year, after exhausting the domestic production. Most of the families bought pulses, sugar, oil and ghee. Milk was available for 6-8 months to 50 percent of the surveyed families from their own milch cattle in small quantities and some sold a part of the milk to augment the family's earnings. The per capita consumption of

milk among the surveyed families was very poor. People ate meat or eggs very rarely (once or twice a month). Protein intake was thus low.

There was little expenditure on education, mainly for text books. Consumption of bidi, tobacco and alcohol was quite universal particularly among the Scheduled Castes. Expenses on social occasions like marriages, births etc. were high and often being obligatory, led to indebtedness.

Forms of savings

The savings of the village are in the form of gold, silver, brass utensils and cash. There was a general reluctance to disclose them except for utensils. Out of 25 households surveyed, only one had savings of Rs. 8,000 in the Bank in the form of a 6-year fixed deposit. Nineteen households disclosed savings in the form of gold, 9 in the form of silver and 9 in both. It is reasonable to assume that the savings came primarily from agriculture and was invested as such when a family had some surplus.

The local Bank and the post office were contacted to ascertain the savings pattern. The Bank had annual deposits are found as follows :—

Agricultural class	Rs. 2.00 lakhs
Traders	Rs. 3.00 lakhs
Others	Rs. 5.00 lakhs
	Rs. 10.00 lakhs (Average monthly rate—Rs. 83,333)

The small savings figures were obtained from the local post office for 12 months from September, 1982 to August, 1983. The average monthly level of these deposits are found as follows :—

Savings Bank	Rs. 28,287
Recurring Deposits	Rs. 11,670
10 Yr. C.T.D.	Rs. 2,427
Time Deposits	Rs. 4,072
National Savings Certificates	Rs. 39,671
Total	Rs. 86,127

This shows that the NSC,SB and RD are more popular and in that order. Assuming a very conservative rate of about 10 percent as the average rate of savings the total monthly income can be estimated from the figures at (1) and (2) above at Rs. 16.95 lakhs. Considering the fact that the agricultural families who were surveyed did not disclose any surplus or significant sale of agricultural commodities, one can perhaps assume that the bulk of this income and savings came from trade and business, employment and to a very small measure from agriculture.

Land distribution

In 1972 the H.P. Finance & L.R. Act was promulgated giving ownership of land to the occupancy as well as non-occupancy tenants, who were tilling the land. This right was non-transferrable for 10 years, without prior permission of State.

In 1975, State Government approved a scheme called 'Grant of Nautor Land to Landless & Other Eligible Persons', under which a person with annual income of less than Rs. 3,000 and with a holding of less than 5 bighas (1 acre) or a landless person, village artisan or agricultural labour was granted 'nautor' (newly reclaimed) land to the extent of 5 bighas (1 acre) by the respective Tehsildars.

Both these measures seem to have met with partial success. In Baggi village in particular, out of 25 housholds surveyed, two were found to be landless, one a migrant to this village from Chamba District and the other due to subsequent separation from his father. All the rest had either owned land prior to 1972 or had been granted some Nautor land during 1975-76. This scheme gave about 90 per cent satisfaction to the families owning no land or less than 5 bighas of land. Nautor lands were found from government lands or encroachments.

A limited success

The land distribution pattern in Baggi village shows that while 25 households hold 1 acre of land each, the largest number, i.e. 61 households, hold less than 1 acre, constituting almost 50 per cent of the total number of households in the village. The Nautor scheme can thus be said to have had a very limited success. Sooner, when the families will split, with sons becoming major, the situation will worsen, giving rise to new landless families or families with a pittance of land. It can be seen that the pattern of landholding is not supportive of any significant surplus from agriculture.

An interesting practice of agricultural labour called Juari system was noticed during the survey. This was initially explained to be a system of mutual help, in which, during agricultural operations, one family comes to the help of another on voluntary basis. Slowly, as one probed, one, however, found evidence of food and drink and even cash compensation being paid for such work. It is perhaps a disguised form of agricultural labour, particularly after the promulgation of the H.P. Relief of Agricultural Indebtedness Act, 1976, which prohibited any custom, tradition or agreement requiring work as a labourer by virtue of any debt from any person or a member of his family with the creditor or his family.

Rural indebtedness

The survey did reveal evidences of rural indebtedness. A small number of families had got loans under government schemes like I.R.D.P., an equally small number also reported to have taken loans from 3 creditors in the village, at a rate of interest of 5 per cent month or 60 per cent annum. This practice is not openly acknowledged in view of the law mentioned above, but appears to be in vogue in a limited scale. Shortterm indebtendness to shops in buying clothing etc. was also noticed in a few cases. Some resorted to loans from shops/relations, for meeting obligatory expenses on social occasions, like marriages, child birth etc.

Style of living

The houses were found to be at least 2-roomed, with or without a kitchen. A poor family cooked within the room, while the better off had a verandah or a separate kitchen for cooking. They were generally of brick or stone-in-mud construction with slated tiles used as roof. Cement plaster or paving was noticed in rare cases, where the household was quite affluent. Almost everyone had a cow-shed.

Almost everybody used electricity for lighting and firewood for cooking. Kerosene oil was purchased in small quantity for emergencies. Firewood was also free, collected from own fields or the neighbouring jungles. Three families had biogas plants, which were used for cooking, except for one case in which it was also used for lighting. Himachal Pradesh, incidentally, has the largest number of biogas plants in the country. Among 25 surveyed households, about 30 per cent families owned either a cycle, a transistor or a watch.

An agricultural village

Baggi is primarily an agricultural village, with a gross area of about 227 acres, and cultivated area of about 110 acres. The people mainly grow three crops a years paddy, maize and wheat. Paddy and maize are grown in Kharif and the entire lands are invariably put to wheat in Rabi. Almost every household grows a bit of pulses and vegetables for own consumption. Among the 25 households surveyed, irrigated lands were found to be 20.2 acres and drylands 29.3 acres, out of a total area of 55.4 acres, 6.1 acres being barren land. Thus the percentage of wet lands can roughly be taken to be 36.46 per cent of total land owned. There are a few small nallahs providing irrigation to some lands in the village and rest are dry or suitable for fodder cultivation.

The wet lands are used mostly for growing paddy and dry lands for maize in Kharif. All these lands are again put to wheat in winter. Thus the intensity of land use is almost 180 per cent. The village had almost as much area under wheat in Rabi as under paddy and maize together in Kharif.

The average yield in the village appears poor, except for rice.

Only two surveyed families indicated small surpluses of grain that they sold. The production of foodgrains was thus by and large used to meet their own requirements.

None of the 25 families surveyed have any orchard but some of them have a small number of fruit trees around the homestead plots, more or less aimed at meeting personal consumption needs. The elevation of Baggi was not sufficient for growing apples and the fruit trees grown were usually guava, plum and papita.

Fertilizer consumption pattern

The Indo-German Agricultural Development Project (IGADP) was launched in Mandi district during the period 1962 to 1974. The use of fertiliser consumption for Mandi District went up during this period from 200 tons in 1962-63 to 7793 tons during the year 1973-74. During 1963-64, the fertiliser consumption was 2000 tons and even taking this as a base year, the growth in consumption of fertiliser in the decade upto 1973-74, comes to about 390 per cent. During the subsequent period from 1974-75 to 1980-81, the fertiliser consumption in the district went up to about 9000 tons thereby showing an improvement of about 115.5 per cent. It is again from the year 1980-81 that the fertiliser consumption has stated showing a significant upward trend. Insofar as Baggi village is concerned, one found its impact in the general and widespread acceptance of the use of chemical fertiliser by almost every family. It was further seen that cow-dung manure was also used, according to its availability, in conjunction with chemical fertiliser.

The use of high yielding seeds by the district increased from the year 1963-64 to the year 1983-84. It shows a very significant increase from the year 1976-68 onwards in respact of maize and wheat, but in the case of paddy there is no significant change. However, farmers of Baggi village were not found to be buying much of high-yielding varieties of seeds from the outside and appear to be using mostly the existing range of high-yielding varieties locally grown and retained by the farmers. This appeared to result in the depressed average yields of paddy, maize and wheat.

None of the 25 households surveyed were found to be using plant protection materials even though the total area sprayed|dusted in the district has increased from 22,887 hectares in 1973-74 to 46,674 hectares in 1983-84. This may be due to high cost of spraying and marginal effect of such practices on improving yields.

Poor use of improved implements

The impact of use of improved agricultural implements was also found to be poor. Only 1 out of the 25 families surveyed was using an improved plough. The Baggi branch of the PNB was found to have financed 4 tractors and 25 threshers in Baggi Panchayat area, but out of 25 families surveyed, only one had a thresher in Baggi and only one family cultivated its fields through hired tractors. One was thus inclined to feel that there had been no significant impact of IGADP's extension efforts, followed by the IADP, in popularising the use of improved agricultural implements. A part of the reason could be the high costing of these products by the Agro-Industries Corporation, and the other the small and long-term improvement effects of these improved implements which were not easily seen by the farmers.

Bullock-carts were found to be non-existent. One rich Rajput family owned a horse for transportation purposes. There were 14 pairs of bullocks among 25 families. Seven families were without any ploughs and 12 families without bullocks. They hired ploughs or bullocks through the 'Juari' system.

During 1970-74, a milk plant was established under the IGADP at Chakkar with a capacity of handling 10,000 litres of milk per day with 5 chilling plants of 2,000 litres capacity per day. The dairy plant has been functioning in one shift during all these years, with an average daily handling of 9,000 litres to 2,500 litres of milk during the flush and lean seasons. No further chilling centres have been added though about 14 collection points have been added to the initial 50 collection points. The scheme has been running at a loss.

It was significant to find that there was hardly any poultry population in village Baggi. Among the 15 families surveyed, except for one or two families who had a few birds in the house, no poultry was found. This confirmed the general trend of failure of poultry development schemes in Himachal Pradesh due to (a) heavy cost of food which is transported from Punjab, (b) non-availability of rice polish in Himachal for poultry food at a controlled rate as in Punjab and (c) heavy imports of eggs and meat from Punjab at cheaper rates.

In the system of interdependence with the outside, the village appeared to buy more than it sold. It bought cloth, even foodgrains, various provisions and other necessities. The only ration outlet for the village is the Cooperative Society's store. It sold annually 240 quintals of sugar, 420 quintals of rice, cloth worth Rs. 25,000, and 560 fertiliser bags. No maize was procured from outside and wheat was procured in certain years of deficit only, not exceeding 300 quintals a year. In years of good production, one could presume maize and wheat to be somewhat surplus and to be sold.

How does IRDP fare ?

The IRDP scheme is being implemented in Baggi Panchayat also with effect from 1980. According to information available with B D O Sardar Block, 3 S C and 1 Rural Artisan families had received IRDP assistance during the year 1981. The R.A. had received Rs. 2,500 as loan and Rs. 500 as subsidy for umbrella assembling.

During survey, it was found that this family had still not been able to repay an amount of Rs. 1,134.00 out of the loan, since its business was not running as well as he had expected, due to dull market conditions. The other 3 families were marginal farmers and had received assistance for purchase of buffaloes, bullocks and cobbler's tools respectively. In 1982, 2 families of marginal farmers were given assistance for purchase of one buffalo each. In 1983 one S.T. family had been given assistance, also for purchase of one buffalo. The loan amounts varied between Rs. 2,700 to Rs. 3,000 with 50 per cent subsidy.

Among 25 families surveyed, 4 IRDP identified beneficiary families were located. One of them was a Rural artisan as mentioned above. His condition had not improved despite the IRDP assistance. Another was a woman who had purchased a buffalo in 1982 out of the loan and had since repaid the loan out of milk yield. She appeared to have benefited, living all by herself. A third case was of one villager who had filled the form 2 years ago but had not yet received any assistance. The fourth case had asked for a loan for sheep-rearing or bullocks, but did not avail of the loan for fear of inability to repay. Two cases of girls trained in tailoring came to notice. They were possibly trained under Trysem and are now in a position to stitch clothes for the family.

Bank loans status-wise

The PNB Branch at Baggi was found to have disbursed the loan assistance to beneficiaries in the local area as per table below:

While the loans for small scale industries, trading and transport (second group) went to the richer sections in the village, the loans for dairy, farm animals, land development and agricultural machinery (first group) went to small and marginal farmers. The per capita disbursement of loan in the first group is about Rs. 3,225.00 while the per capita disbursement in the second group is of the order of Rs. 55,000 during the period mentioned above. This shows that fruits of economic development are in a way going more towards the richer sections than the poorer and more towards non-agricultural (trading, transport, industry) sectors than the agricultural sector.

There is no cottage industry in Baggi, but a small scale industry for manufacture of cedarwood oil has been established, with an investment of about Rs. 45 lakhs and production capacity of 57 Kg of oil per day. It provides regular employment to about 24 local persons.

There are two business families with an annual turnover of about Rs. 40 lakhs. There are two other trading houses with an annual turnover of Rs. 10-15 lakhs and another two between Rs. 2-3 lakhs. There

(*Contd. on page* 34)

Village Baggi (including hamlets Martor and Gharbasada)

Year	Dairy	Farm Animals	Land Dev.	Agri. Machinery	SSI	Trading & Small Business	Transport
1980-81	4	4	..	..	3	4	
1981-82	8	..	1	2	4	15	4
1982-83	1	1	..	..	1	1	1
Total	13	5	1	2	8	20	5

India's maritime heritage

Captain G.S. Sen (I.N.)

The maritime history of India is in a way the maritime history of South East Asia. The sea area around the Indian peninsula was one of the few places where the embryo of oceanic activity and oceanic traditions developed at the dawn of history. This, it is believed, was due to the unique feature of the monsoon and the geographical position of the sub-continent which virtually occupies the 'centre of gravity' of the Indian Ocean.

ACCORDING TO Sardar K. M. Panikkar, the Indian Ocean has some of the features of a land-locked sea. Unlike the Pacific or the Atlantic, this ocean is "walled off on three sides by land, with the southern side of Asia forming a roof over it. The continent of Africa constitutes the western wall, while Burma, Malaya and the penisular continuations protect the eastern side. But the vital feature which differentiates the Indian Ocean is the subcontinent of India which juts far into the sea for a thousand miles to its tapering end at Kanya Kumari.

Asian and European literature, sculptures, frescoes and coins found in India and abroad, folklore, mythology and even the Old Testament bear testimony to the fact that during the pre-Christian era, dating as far back as 3,000 BC, i.e. at the down of Indus Valley Civilisation around Mohen-jo-Daro, Harappa and Lothal, there was considerable maritime activity between India and countries in Africa, Southern Europe, Western Asia and the far East. The link with Africa, however, dates much farther back to the Palaeolithic Age when some African Negritos, who had travelled to India across Gondwanaland, are believed to have settled in the Andamans after undertaking the first known oceanic voyage across the Bay of Bengal in primitive dug-outs.

Existence of sea-borne trade

Seals and potsherds portraying anchors, tools and kitchen implements found at many places between Southern Europe and the Far East and a huge dry-dock recently unearthed at Lothal in Gujarat confirm the existence of India's sea-borne trade with several littoral countries, especially Sumer, Egypt, Crete and Persia, between 3,000 and 2,000 BC.

Available works in the languages of the littoral States of India, the diaries of foreign travellers—Chinese, Arabic, Persian and European, evidence from archaeology—epigraphic, monumental and numismatic, and Indian and foreign art and literature also bear testimony to this.

The discovery of Indian teak in the ruins of Ur and a beam of Indian cedar in the palace of Nebuchadnezzar confirm the existence of sea-borne commerce between Indian and Babylon as early as 3,000 BC. The Rig Veda attributes the knowledge of ocean routes and sailing vessels to Lord Varuna. The Atharva Veda describes seagoing vessels of broad beam, strong rudders and faultless construction. The Ramayana contains references to the land that "grows the worm which yields the silken thread", i.e. China, and the Lohit Sagar, i.e. the Red Sea. The Mahabharata describes the naval activities of the Pandavas in adequate detail.

The 6th Century treatise, Vriksha Ayurveda, contains details of the types of timber used in ship building. According to the Greek writer Arrian, Admiral Nearchus made use of a fleet of over 800 Indian-built ships piloted by Indian navigators to transport Alexander's army of over 100,000 soldiers down the Indus and across the Arabian Sea.

Indian impact

The extent of India's influence on distant lands and sea-borne trade using ships built in this country up to the later decades of the 15th Century AD, is evi-

dent from a few little-known facts. These include a primitive compass used by Indian seafarers during ancient times, the fish machine, Matsya Yantra which consisted of an iron fish floating on oil and the fact that cotton went from India to Europe in the 5th century BC and to Japan in 800 AD.

Some of the places in South and South-East Asia have names of Indian origin such as Socotra which is a derivative of Sukhadhara (container or island of happiness), Sri Lanka which orignally was Swarna Alankar (golden adornment), Nicobar which was derived from Nak-dweep (the island of the naked).

Again the Indians are referred to as 'Klings' in Thailand and 'Telangs' in Burma and some other countries in East Asia because of the conquests of these countries by the Kalingas and Telugus. There is remarkable similarity between the Oriya and Thai scripts. The word 'calico was derived from the word Calicut which was once the focal point of India's maritime trade with the West.

The scriptures in a Buddhist temple in Japan, recited by monks even today, are in the 6th Century Bengali script. But for Davane, the moorish broker from Gujarat who piloted Vasco-da-Gama's ship 'San Gabriel' from Mozambique across the Arabian Sea to Calicut, the Portuguese would never have reached India and the course of India's maritime history would have been different.

Five distinctive periods

The maritime history of India can be divided into five distinct periods—the Hindu period extending up to the later decades of the 15th Century AD, the Portuguese period from the last decade of the 15th Century to the end of the 16th Century, the first British period from 1612 to 1830 and the second British period from 1830 to our Independence in 1947, and the post-Independence period from August 15, 1947.

Considerable maritime activity took place in the waters around India during the Hindu period. As described by Megasthenes, the royal shipyards of the Mauryas built seagoing ships of various classes. The Board of Admiralty of Emperor Chandragupta, Nao Parishad, controlled maritime trade, state shipping, port activities, levy of taxes and safety precautions at sea. Emperor Ashoka had a strong seagoing fleet and regular commercial intercourse with Syria, Egypt, Cyrene, Macedonia and Epirus in the 3rd Century BC.

Between 200 BC and 200 AD the Andhras carried out maritime trade with western Asia, Greece, Rome Egypt, China and some other Eastern countries and had even set up embassies in some of them. Roman coins discovered in India, especially in the South, establish the existence of trade between these countries even before the Christian era.

Large sailing vessels built by the Cholas, Pandyas and Cheras of South India and the Kalingas of Orissa were used for trade, passenger traffic and naval warfare. These ships were considered excellent for navigation across the oceans as their lower parts were reinforced with triple planks in order to fortify them against rough seas.

During the first decade of the 7th Century, a ruler of Gujarat sent his son with thuosands of followers in over 100 vessels to Java where they nurtured a new civilisation, immortalised by the temples and sculptures at Borobudur.

During the period from the 5th to the 12th Century, the Sri Vijayas ruled the entire sea area between India's Eastern seaboard and the Far East. Their cultural and commercial voyages took them to such far-flung area as Sumatra, Burma, the Malayan Peninsula, Java, Thailand, Indo-China, the Pacific islands up to Manila and some parts of South America. They also maintained political and commercial intercourse with the Cholas, Pandyas and Cheras.

About the same time, the rulers of Gujarat and Calicut maintained large fleets of sailing vessels for trade with Europe and West Asia. Later, as a result of jealousy between the Sri Vijayas and the South Indian empires and the consequent sea battles fought between their navies towards the end of the 10th Century, there was considerable weakening of their supremacy in the region. Mastery over the oceanic routes passed into the hands of the Arabs who thus became intermediaries of trade between Europe and India.

Marco Polo, who visited India during the 13th Century, saw large four-ship in India, some of which had as many as 14 water-tight compartments separated by reinforced bulkheads, 60 cabins below the main deck for berthed passengers and ten life-boats slung from the sides of each ship with falls and tackle, just as is found on modern ships.

The 14th Century traveller, Friar Odoric, saw Rajput ships of 1,000-ton burthen carrying 700 passengers. The 16th Century Venetian traveller Cesare di Fedrici eulogises the quality of shipbuilding in India and says that the Sultan of Turkey had several ships built at Dhaka rather than at Alexandria because he found them cheaper and better.

Arabs—a link with Europe

The Arabs, whose maritime activities were confined to trade and not suzerainty over the seas, acted as a link between India and the European markets where Indian merchandise was in great demand. This soon aroused the cupidity of the Iberian nations, Spain and Portugal, and some other Mediterranean countries and with that the quest for a direct passage to India began.

The Portuguese period began with the arrival of Vasco da Gama at Calicut in 1498. His expedition to India is not comparable to the feats of Columbus and Magellan. What makes it significant is the fact that the Portuguese were the first to lay claim to sovereignty over these waters and using them as an instrument of their national policy. To quote Panikkar again, "It may truly be said that India never lost her Independence till she lost command of the sea in the first decade of the 16th Century."

The Zamorins of Calicut whose navy, under the Marakkars, could bear comparison with the most formidable naval forces in bravery, navigational skill and naval warfare at that time, offered stiff resis-

tance to the Portuguese. But the latter's persistance, annexation of Goa and the surrounding area and mastery over the Arabian Sea ensured Portuguese dominance over the region for nearly a century.

Exploits of Maratha Navy

The exploits of the Maratha navy against the Mughals, the Portuguese and the British during this period, especially between 1664 and 1756 under the leadership of Tukoji, Admiral Kanhoji and other Angres that followed and earned a proud place for themselves and the intrepid Admirals in our maritime history. This was mainly because the great Maratha king Shivaji had realised the value of naval power and had adopted the doctrine 'Jalamaiva Yasya Balamaiva Tasya' (he who rules the sea is all-powerful) as the motto for his navy.

The Mughals had a fairly strong navy whose main wing was a fleet of ships and crafts operating from Dhaka which were used for operations in rivers and creeks for the protection of deltaic South Bengal from Magh (Burmese) and Feringhee (half-caste) pirates who had the support of the Arakan rulers. Besides, there were other ships used for trade and for carrying Haj pilgrims from Surat to Mecca. The Mughal Admiralty, under a Mir Bahar, looked after the supply of ships and smaller craft, recruitment of suitable personnel for these vessels, security of rivers and waterways and collection of port revenue. Shipping and shipbuilding, both ocean-going ond riverine, flourished during the Mughal days in Bengal, Kashmir, Lahore, Surat ect.

The first British period began with the ascendancy of British maritime power in the Indian Ocean which commenced with the arrival of a squadron of British warships and the establishment of the Honourable East India Company's Marine at Surat on September 5, 1612 which is regarded by some as the foundation day of the British Indian Navy. This nomenclature was changed in 1613 to the Indian Marine.

Bombay dockyard

The headquarters of Company's Marine was moved from Surat to Bombay in 1685 and in the following year, the name of the Service was changed to Bombay Marine. Ships for the Marine were initially built at the yard at Surat, set up in 1635, but in 1735 the present Naval Dockyard site at Bombay was acquired and developed as a shipbuilding yard. By 1775 the Bombay Dockyard was comparable to the best in the world and it was universally recognised that a Malabar teak ship built by the famous Wadia master builders at Bombay was superior to and lasted far longer than its best oak European counterparts.

HMS Trincomalee was built by the Bombay Dockyard in 1817. It is to the great credit of the expertise and workmanship of its personnel that this shipbuilt over 167 years ago, is still afloat and under sail under the name "TS Foudroyant"—an all-time record.

The second British period began in 1830 with the conversion of the Bombay Marine into a navy which assumed the title of Indian Navy. Between 1830 and 1863, the major engagements of the Service under its new name were the capture of Aden, soon followed by the capture of Karachi.

At the time of Independence, the Indian Navy consisted of four sloops, two frigates, one corvette, one survey vessel, four trawlers, 12 mine sweepers and a large landing craft wing. On January 26, 1950, when India became a Republic, the Service came to be known as the Indian Navy.

The British period also saw the decline and fall of Indian shipping as an inevitable economic consequence of political subjugation of India. As Mahatma Gandhi said in 1928, "The tragic history of the national village industry of cotton manufacture in India is also the history of the ruin of Indian shipping. The rise of Lancashire on the ruins of the chief industry of India almost required the destruction of Indian shipping".

Undaunted by these machinations, besides the construction of docks and setting up of port trusts at the major Indian ports, the first significant event, with which began the revival of Indian shipping in the last century, was the establishment of a line of steamers from Bombay to China and Japan by Jamshedji Tata in 1890. This was followed in 1905 by the Bengal Steam Navigation Company which went into liquidation in 1910 following a sustained rate war with British shipping companies. The Swadeshi Shipping Company was set up by V.O. Chidambaram Pillai, a disciple of Lokmanya Tilak, in 1906. Three years later the Indian Cooperative Navigation and Trading Company was founded.

Revival of Indian shipping received a shot in the arm when the Scindia Steamship Navigation Company Ltd. was set up on March 27, 1919 and the SS Loyalty, the first ship of the Scindias, sailed to UK on April 5 the same year unfurling the Indian flag on the high seas for the first time in modern history. This event led to the adoption of April 5 as our national maritime day after Independence. The first Indian Merchant Shipping Act was passed in 1923 and Bombay, Calcutta and Madras were declared major ports in 1921. The training ship, TS Dufferin, was established in 1927.

In 1930 Mahatma Gandhi put forth the eleven points epitomising the Indian National Demands. One of these points was Coastal Reservation. Vishakhapatnam and Cochin were declared major ports in 1933 and 1936 respectively. In 1937 the Scindias started the first Indian Haj service which survived a fierce rate war launched by the British.

The foundation stone of the first Indian Shipyard was laid by Dr. Rajendra Prasad at Vishakhapatnam on June 21, 1941 and the first Indian ship to be built at this shipyard, Jala Usha, was launched by Prime Minister Jawaharlal Nehru on March 14, 1948.

The necessity for creating an awareness of our maritime history and preserving our maritime traditions cannot be over-emphasised. It would, therefore, be worthwhile bearing in mind what Sumati Morarjee said in her Indian Shipping Through the Ages, "Our maritime history is not a matter of chance or of casual growth; it is a heritage, but it is a heritage that must be guarded jealously and studied carefully in all its phases". □

Review article

The romance of cooperatives

R.K. Parashar

COOPERATIVES BROADLY serve two purposes. Firstly, individual cooperators, by pooling their limited resources through the mechanism of self-help, with or without outside help, are able to improve their lot and achieve a viable position in their vocation. Secondly, cooperatives provide the vehicle thruogh which individuals can be approached collectively to bring to them the message of extension and its inputs, and to facilitate the marketing of their produce. Cooperatives are, thus catalyst of socio-economic development in a resource-scarce setting.

In the second-half of the nineteenth century, with the decay of the village community and the emergence of an alien system of administration and justice, the Indian farmer had to fend for himself. He sank in the quagmire of debt and, as a result, got caught in the vice-grip of the mahajan—the moneylender. The Finance Commission, 1901, therefore, attached the highest importance "to the establishment of some organisation or method, whereby cultivator may obtain, without paying usurous rates of interest, and without being given undue facilities for incurring debt, the advances necessary for carrying on business".

Manohar Singh Gill's book* on agriculture cooperatives is, in his own words, "a story of the life of the Punjab over the seven decades of the twentieth century". It is also an account of a success story of grafting of cooperatives on the highly individualistic social fibre of the State by the British.

The book brings out how, with the help of cooperatives and canals, the face of rural Punjab has been transformed by its hardy and enterprising peasants. It points out how about 1845 the British considered the Punjab to be "a poverty-stricken tract.., which would always be a burden upon the central exchequer as it would never be able to pay for its own administration." It goes on to observe that "it sounds odd today, but in 1849 the new masters of the Punjab found it as prone to famine as the rest of India"; that during the forty years reign of Ranjit Singh, the land was visited by severe famines in 1802, 1812, 1817, 1824, 1833 and 1837; and that four more were to occur during 1851-52, 1860, 1868-69 and 1877-78 "before the growing efficiency of the canal system put a virtual stop to them".

It also brings out how "the disappearance of families and the rise in the prosperity of farmer, was accompanied, strangely enough, by a sharp rise in the indebtedness to the emerging class of sahukars or moneylenders. "It notes : "A combination of covetousness and ultra-shrewdness on the part of the lender and ignorance and improvidence on the part of the borrower, soon helped the rapid impoverishment of the farmer."

In the process of tracing the development of agriculture cooperatives in the Punjab, the author draws attention to different drawbacks of the taccavi system, namely, inadequate funds, designed to meet short-term needs, often in times of distress; remorseless recovery of the revenue staff; and finally driving the peasant to the door of the moneylender. He highlights the benefits accrued to peasants by the Punjab Alienation of Land Act of 1901 which they today regard as the Magna Carta of their freedom. But for this Act, he notes, the Punjab might have long ceased to be the land of peasant proprietors.

Though the locale of the story is the Punjab, its sweep goes beyond. Gill talks of "the restless decades when the empire was sought to be overthrown"; goes into the womb of history centuries back; draws attention to the Mughal emperors, and above all to Ranjit Singh—a great king, and the only king the Sikh jats produced Raja Suraj Mal of the Hindu jats. And the deftly weaves all these heterogenous pieces into his story to lend it not merely romance but flow, swift and smooth.

We are inclined to believe that the real contribution of the book lies not in the fact that it tells us of the processes and debates, hopes and frustrations, and,

*Agriculture Cooperatives—A Case Study of Punjab, Manohar Singh Gill, Vikas Publishing House Pp. vi+560, 1983. Price Rs. 150.

above all, of set-backs and successes of agriculture cooperatives in the Punjab and how they were alien transplantations in the native soil and how the Punjabi genious nurtured them into an healthy institution which Jawaharlal Nehru considered as one of the three basic pillars at the base for the development of rural India; it lies in the lessons it may have for those engaged in similar endeavours in other States in India and developing countries in the Middle East, South East or elsewhere.

Overall, it is a book larger than the agricultural co-operatives it describes in detail with gusto and with the firmness of grasp that only a person with first-hand knowledge of the subject can have. On agriculture cooperatives, it is a source book written by one inspired. Its lessons are relevant beyond the confines of the Punjab. The Punjab comes alive in it in all hues of different seasons and at different hours of the humdrum day. A drab subject becomes an enchanting reading at the hands of this gifted writer.□

(*Continued from page* 29)

are a number of shops in the village, the break-up of which is as follow :—

Halwai	8
Vegetables	2
Pan, Bidi	1
Cloth	6
Karyana	8
Tailoring	3
Leather	1

The shops apart from the owners, engage one or two helpers and thus provide employment to about 50 to 60 persons.

Conclusions

During 1964-78, the BSL Link Canal Project had provided work to almost every family in Baggi village. With its closure, there has been considerable unemployment and a fall of about 25 per cent in the living standards of the people. This canal has passed through the village for which lands have been acquired, but it has not provided any irrigation to the local area. There is a proposal now to sanction a Baggi Lift Irrigation Scheme at an estimated cost of Rs. 302.70 lakhs to provide irrigation to an area of 2410 hectrares in Bahl Valley. If this Project is expedited, it will not only create employment for local people, but will also raise the foodgrains production in the area by about 5,000 tonnes.

There are about 300-350 houses in the abandoned BSL Colony in Baggi, with water supply and electricity available, lying as an uncared and unutilised resource. If some small scale industry or assembling unit can be set up there, it will provide considerable economic benefit to this region.□

Success Story

One Hut, One Light

The Electricity Department of Pondicherry is implementing a scheme called 'One Hut, One Light', under the Hut Electrification Programme. This scheme is primarily intended to improve the condition of hut dwellers, especially of Scheduled Castes.

Eligible huts for this scheme should have thatched roof and mud walls with a living space of more than 200 sq. ft. A concessional tariff is applied and only Rs. 2.50 is collected per month in advance from the beneficiaries of this scheme.

645 huts have been electrified so far. It is proposed to electrify 2500 huts during 1983-84.

(FPO-Pondicherry)

When both think alike

Shri Karam Singh of Village J.J. 3, Tehsil Padam Pur, Distt. Sriganganagar (Rajasthan) is only 35 years old while his wife is 30 years old. They have two sons aged 5 years and 6 months respectively. Shri Karam Singh is a mason by profession. When asked how he managed to have such an ideal family, he said that he was inspired by a film shown in his village which stressed the need and the advantages of spacing the family.

Shri Karam Singh's wife is no less progressive. When the second child was born to her, she expressed her desire for laparoscopic vasectomy. When her husband took her to the hospital, the Doctor tested her and advised against the operation as she had some health problems. Thereupon Shri Karam Singh offered himself for vasectomy. Shri Karam Singh hopes to give his two children good education so that they may prosper in life.

(FPO-Sriganganagar)

Our world and the people in it

WORLD POPULATION may reach 500 crores by 1988.

This is the analysis of the World Population Data Sheet (1983 edition—21st) prepared by the Population Reference Bureau of the United Nations Development Forum.

World population, according to the Report, was estimated to be 467 crores in mid 1983. The figure covers all member countries of the UN and all other areas which have populations of 1.5 lakh and above.

Although birth rates fell in some developing countries over the past 20 years, longevity rose.

The Report classifies world countries into two groups—More Developed Countries (MDCs) and Less Developed Countries (LDCs).

Birth rate in less developed countries is 33 per 1000 as compared to 15 per 1000 in more developed countries. Death rates are almost similar for the two—12 per 1000 for the former and 10 per 1000 for the latter. However, infant mortality is 93 per 1000 in the less developed countries as against 19 per 1000 in the others.

Women in the developed countries have less than two children during their reproduction lifetime. In the developing countries, women may be expected to have four to five children.

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