BULLETIN

MADRAS DEVELOPMENT SEMINAR SERIES

VOLUME VI No. 8 AUGUST 1976

74, SECOND MAIN ROAD, GANDHINAGAR,
ADYAR, MADRAS-600020.

MONTHLY BULLETIN

Vol VI No. 8

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EDITORIAL—SOME HIGHLIGHTS

I. General Economic Scene

State:

Fiscal: Further to the report on the State's fiscal situation in the former two issues (see Vol. VI pp. 188-189 and 253), in June, the government reports an improved fiscal situation due to: (a) economies and financial discipline in the departments of government, (b) better tax collection and action against evasion and tax loopholes, (c) the windfall from the VDS (see Vol. VI p. 130) under which Rs. 14 crores accrued to the State exchequer as a windfall income and (d) the much quicker response of the Union government to the additional emergency expenditure which the State government has had to undertake to meet the drought situation. The result is that the overdraft situation of the State is not being worsened and there is a likelihood that the State will end the year without a serious deficit.

Prices and Drought: May and June are the start of the lean season in the State, but prices especially of essential commodities have remained stable, with slight rises in Madras, Tirunelveli and Kanyakumari in foodgrain prices. The offtake from fair price shops did not increase. Following an understanding between the Civil Supplies Department and the Dhal Merchants Association, the prices of wholesale and retail black gram have been reduced by around 15 per cent. Similar understandings have led to a 10 per cent reduction in gingelly oil. By May 31, 6.51 lakh family ration cards in Madras city were renewed and the remaining 50,000 cards are being renewed in June. The card entitles the holder for the ration of rice and sugar from his registered shop plus 30 kg. of wheat per month from any fair price shop. A plan to establish model retail shops in Madras (180), Madurai (18), Coimbatore (12), each shop catering to 2,000 families is being launched—in addition to the 500 rural consumers societies, 10,000 fair price shops (7,500 of which are run by co-operatives), 1,473 primary consumer stores, 29 wholesale stores, 19 super markets and 76 mini-super markets. The regulation of hotel prices (see Vol. VI p. 254), involved inspection of 7,150 establishments in May, out of a total 10,950 and resulted in 976 prosecutions for violations of the regulation. FCI reports that by May 31, its procurement of rice in the Southern States had crossed 10 lakh tonnes, involving an outlay of

Rs. 150 crores in Tamil Nadu, Andhra Pradesh and Pondichery, which means that the rural areas have this season double the cash resources of the last season. The State government which procured 1.15 lakh tonnes of rice since March 11, had by May end a total stock of 8.3 lakh tonnes which is being transferred to the Union pool to save on investment, storage and administrative costs. This may be a short-sighted policy, for it will involve wasted months in requesting Union pool aid during the coming months, so that the normal practice of turning over to the pool surplus stocks should be followed. CSO statistics show a sharp decline in State prices from 304 in December 1975 to 286 in January for the State, with a similar decline in rural areas of food prices from 407 in November 1975 to 381 in December, from 362 to 343 in all prices. The relative urban prices in the State for November 1975 shows Madurai at 300, Madras at 315, with Tiruchirapalli at the highest at 317. On the drought situation in the State, out of the 6,300 bore wells to be constructed at a cost of Rs. 7 crores by September, 2,400 were completed by the end of June, and in addition to the 90 rigs operating, orders have been placed for 15 more rigs at a cost of Rs. 104 lakhs. In response to the request of the Tamil Nadu Water Supply and Drainage Board's request for Rs. 2 crores to the Union government for more drills, the Union government has sanctioned Rs. one crore and will provide the balance as the programme is executed. There has been a 2-3 week delay in the onset of the South West monsoon which has caused drinking water scarcity in urban areas, to meet which schemes in 9 municipalities in Tirunelveli district and additionally in the Coimbatore area have been sanctioned at a cost of Rs. 14 lakhs. For Coimbatore city, the greater Siruveni scheme will help to meet its perennial and serious water shortage. The delayed monsoon has also delayed water releases from Mettur to prepare the kharif crop. Towards the end of June, the inflow was only 1,382 cusecs, which resulted in a one foot increase in the level over a fortnight.

Power : For the first time since the summer of 1972, the State has not had a power cut during the summer months—May and June. Both Ennore and Neyveli are performing very well. In early June, Neyveli's power generation touched its capacity of 600 MW. Against the target of 620 million units for the quarter ending June 30, Neyveli provided 569 million units to the Tamil Nadu grid, at the rate of 9-10 million units per day, upto June 4. In fact, its April generation of 315 million units was the highest of any thermal station in the country. The price has however increased to 14.3 paise per unit from April 1, the price escalating with the escalating lignite costs. The additional power projects in the State's Fifth Plan include Tuticorin with its 2 units of 210 MW each, the first of which will become operational in 1978 and the second in 1979, the 35 MW Suruliar hydro-electric and the 110 MW Kunda IV to become operational in the next two years, and the 100 MW Pandiar-Punnampuzha which is currenly being executed. Further the line losses which increased from 17 per cent in 1971-72 to 22 per cent in 1974-75 are also being attended to with the 50 per cent increase in the budget allocation, along with the measures to reduce the theft of energy, pilferage, misuse of tariff, so that losses have now been reduced to 19 per cent. Also inventory control of the 1.2 lakh items of spares valued at Rs. 30 crores, management training of the staff, and specialised training for the engineer-

ing staff along with a successful drive to collect arrears which had mounted to 5 or 6 months non-collection of dues, so that in June collections amounted to Rs. 20 crores against a normal half of that amount,—are some of the improvements in the power system in the State.

For the country as a whole, there was a similar positive power situation. In 1975-76 power generation was 80,000 million units, a 12.5 per cent increase over the previous year, raising the total installed capacity by 9 per cent (against the IV Plan annual average of 6.4 per cent). Following early June rains, Maharashtra reduced the general industries power cut from 40 to 30 per cent and for continuous process industries from 30 to 25 per cent and relaxed restrictions on a number of users. The second generator of the Idukki plant started producing to full capacity, 130 MW, from June 8, while the first generator is still producing at half its capacity and the third generator will be commissioned in August. The third stage of this giant project is now being constructed, involving the building of 2 dams across the Kallar and Erattayar, and this stage will be completed in 1980. The foundation of the stage II Talcher Thermal Station valued at Rs. 72.26 crores was laid in early January, which will add two units of 110 MW each to the present 4 of 62.5 MW each. The first of the stage II units will be commissioned in July 1978. The Rs. 63.8 crores lower Jhelum Hydel Project to generate 105 MW by 1978 is now at a stage when the first phase will be completed by June 1977 for the generation of 35 MW. BHEL with the help of Soviet engineers has provided the needed generators and is supervising their installation. The delay in the South West monsoon forced power surplus Kerala to introduce a 50 per cent power cut from June 17 to June 27, when the rains began. The sale of surplus power to Tamil Nadu also had to be suspended. This points to some general problems in our power situation. Our power system relies too much on the monsoons. The improved availability of power in 1975-76 was due to good monsoons, leading to an 18.5 rise in hydel power with thermal stations performing at a low 45 per cent capacity. Tarapur is still in rodage, generating only 50 per cent of its rated capacity, and with the delay in the enriched uranium supplies from the US, this nuclear source is a doubtful source ; some areas like the North East are perennially short, and transmission losses are a high 20 per cent, Rajasthan being at the top with 29 per cent. There is the Fifth Plan target of 16.5 million KW capacity (of which 10.8 million KW is the IV Plan spill over) and with the cost escalation (20 per cent), poor management, monitoring, shortages and delays, there is a real danger that power will be the major constraint to the growth of the economy and the development of the people. Hence the need for continued emphasis on carefully planning, identification of priorities and full execution of plans.

Water, Land Revenue and Markets : The State government is urging the Union authorities to take a fresh initiative with regard to the Cauvery dispute with a view to resolving the many outstanding issues left, after the meeting of the Chief Ministers of the States concerned in February 1975 (see Vol. V pp. 197-198) The project for bringing Krishna waters is now moving forward with the 3 State governments concerned—Andhra Pradesh, Karnataka and Maharashtra having given their formal approval to the scheme. The State government sanctioned in June an additional outlay of Rs. 46.53 lakh for 78

new special minor irrigation programmes in the drought affected areas of the State. This is in addition to the Rs. 103.47 lakhs already sanctioned to complete ongoing works and initiate 43 schemes. The government is reviewing its plan to abolish Jamabandhi—the traditional system of the annual checking of village accounts and land revenue settlement. The pilot replacement scheme of auditing village and taluk revenue accounts in one revenue division in each district has revealed certain slackness among village officers and denial of opportunity to ryots to make representations and obtain relief on the spot in matters such as refunds of overpayments, encroachment penalties etc. Hence the continuation of the Jamabandi system is now under consideration. In June, the government issued orders grading the State's regulated markets into 2 categories,—those with a total annual revenue of Rs. 10 lakhs and above in grade I to which the societies in South Arcot, North Arcot, Coimbatore, Tiruchirapalli, Thanjavur, Ramanathapuram, Tirunelveli and Madurai districts belong, and those with an annual revenue of less than Rs. 10 lakhs to which Chingleput, Dharmapuri and Kanyakumari belong.

Transport : Southern Railways has on the basis of the past decade's development worked out a 15 year corporate plan involving customer oriented services such as container services, parcel expresses, mobile booking and street delivery services, and dieselisation and electrification of all mail and express trains. The freight traffic in coal, export iron-ore, petroleum products, cement and chemical main will increase by 125 per cent in freight net tonne kilometers, 56 per cent in passenger kilometres, and 219 per cent in suburban passenger kilometres during this period. Adequate rolling stock will reduce the time lag between the demand and supply of wagons and time bound schedules followed on all lines. 18 uneconomic lines will be restructured and economics introduced and staff training intensified. There is a current problem reportad by salt manufacturers at Vedaranyam because of inadequate or the wrong type of wagon allotment. The result is the hold up and some loss in the several lakhs of rupees of salt that has been moved or waiting to be moved. The open wagons in which some of the salt has been moved have resulted in damage to the salt and loss due to the rains. It is necessary that both sufficient number of wagons and covered ones are speedily allotted to meet the Vedaranyam situation. In June the Madras Harbour's medium speed bulk fertiliser unloading and handling project at the south quay was commissioned. It quadruples the daily discharge to 2,500 tonnes against the current 500-600 tonnes daily rate. It will handle also fertiliser raw materials like rock phosphate and sulphur. Savings on account of avoiding demurrage will be Rs. 22.50 per tonne and if 6 lakh tonnes per annum are handled can amount to Rs. 135 lakhs. The quay can handle 6.7 lakh tonnes of fertilisers and its raw materials per annum and will standardise bags and make mechanical stitching positive—adding to saving of Rs. 25 per tonne. The Fishing harbour (see Vol. VI p. 193) is now being expanded to take in 90 trawlers (instead of the initially planned 50), with a fish catch of 1.5 million tonnes per annum. To speed the work on the harbour which is to be commissioned in December 1977 the problem of the 2,000 encroachers and the discharge of the city's sewage waters need to be speedily solved.

MMDA and Housing: The first phase of the Madras Metropolitan Development Authority project for the integrated development of Madras City has been finalised to start in March 1977 with a World Bank loan of Rs. 45.9 crores. The total Metropolitan Plan will cost Rs. 500 crores. The first phase which will be completed in 1979 will cover: (a) Rs. 7.10 crores for house sites for the economically weaker section earning less than Rs. 350 per month; (b) Rs. 4.4 crores for slum improvement for 23,000 families supplementing and in some cases replacing the slower moving slum clearance programme, so that the main emphasis will be providing the slums with additional water points, public conveniences, roads and power; (c) Rs. 5.4 crores for PTC buying 285 buses and setting up 3 depots, 8 terminals, and 400 bus shelters; (d) Rs. 6.8 crores for road improvement projects including footpaths and pedestrian subways; (e) Rs. 2.2 crores for small scale industries to increase employment opportunities in the city; and (f) Rs. 9 crores to meet the immediate water requirements of the city on the basis of the survey now being made on the city's water supply and sewerage system. The government has also announced plans to provide sites and infrastructural services like water, light and sanitary facilities on the city's outskirts to allow people including slum dwellers to move out of the city and develop the outskirts. Also a plan is under consideration to move the cattle population of the city to dairy sheds and farms that will be constructed on the outskirts. Further the government has set up a committee to study the possibility of redesigning harijan houses under the Harijan Housing Corporation (see Vol. V pp. 577-578) in order to speed up the programme, to provide more houses at less cost and an improved environment.

Welfare: Following the Union government's decision to set up a special Directorate to look after welfare schemes for rural women in the Department of Rural Development for formulating schemes and programmes for improvement of the status of women in the rural areas, the State government which is the execution agency should set up in the Department of Rural Development and Local Administration a similar Directorate of rural women's welfare to develop programmes for the participation of rural women in modern agricultural production, nutrition schemes, population education and adult literacy. This will ensure participation of women in the new programme of Integrated Rural Development and in particular strengthen their role in child care, farm operations, poultry and animal husbandry. The Union Directorate could then be a facilitating and co-ordinating agency. Another development is the animal drawn water pump designed by the Punjab Agricultural University which not only overcomes the problems created by diesel shortage but doubles the amount of water lifted, as compared to the Kavalai currently in use by the farmers in the State. About 4,493 establishments out of the 10,950 are serving their customer the one rupee Janata meal, and to further extend this facility the government has constituted a committee with the Joint Commissioner of Civil Supplies as the Chairman to classify the establishments with a view to a strict implementation of the order fixing food articles prices in the State.

National :

Fifth Plan: The Fifth Plan is being finalised by the Union Planning Commission with (a) a mid term appraisal of the Fifth Plan to date, (b) revised end of the

plan targets on the basis of latest reassessment of resources, and (c) the broad contours of the Sixth Plan—1979-1984—on the basis of development needs and tentative projections based on present trends. For this three part work, the commission is completing discussions with the Union ministries and the State governments by mid July, so that a full meeting of the Commission followed by NDC may approve the plan document in August. The mid term appraisal is favourable in terms of control of inflation, food production and coal, steel, power production, and the public sector units generally. On this basis, for the balance of the Plan period, the attainment of the targets of the Fifth Plan will be the aim in agriculture, power and irrigation, with some lowering of the targets in coal because of the slackening of the domestic demand. In power there will be proposed a better balance between hydel and thermal plants, and the start of some projects to meet the increased demands during the early years of the Sixth Plan. On the financing of the Plan, during the first 3 years the total outlay has been Rs. 19,000 crores. During the remaining two years (1977-79) there will be a similar outlay not only in order that the original target of Rs. 37,250 crores (see Vol. IV pp. 8-15) is attained but also to reach the physical targets in the core sectors referred to above in view of the cost escalation which has taken place. In finance two elements may be noted. First the additional resources mobilisation target of the Fifth Plan—Rs. 6,850 crores—has been attained. Second against the gross aid estimate of Rs. 4,008 crores in the Draft Fifth Plan, the gross aid is now running at Rs. 7,000 crores, and against the net aid target of Rs. 2,243 crores, the actual net aid is double that. This means that the objective of self-reliance is somewhat far away. Last year's net aid was Rs. 939 crores and for this year the total aid commitment is Rs. 1,600 crores. It is likely that the total Plan outlay on both the public and private sector will be higher than the Draft Plan estimate.

Fiscal: The Union government computes that Rs. 170 crores will be needed this year to meet the consumption needs of the weakest sections, of which Rs. 115 crores will be provided by co-operatives, and the balance of Rs. 55 crores will have to be loaned by panchayats or States revenue agencies. The Union government will make a loan to the States to cover two thirds of the Rs. 55 crores for a two year term on the basis of the survey of the needs in each State by a Union team and the provision of the other one third by the State. Also a risk fund covering 10 per cent of this total Rs. 55 crores is to be set up to be shared equally by the Union and the State governments. This programme will ensure delivery of essential goods to the poor. Another fiscal decision promised at the time of the Union Budget presentation (see Vol. VI pp 193-196) to stimulate production was announced by the government in mid June to take effect from 1 July 1976 and remain in force till March 31, 1979, wherein a 25 per cent excise relief for excess production over selected base year production has been granted to 43 groups of items, ranging from coffee and tea to motor vehicles and tractors, with textile and paper also being considered for similar relief. The 43 items eligible for relief account for ¼ of the total excise revenue of Rs. 4,000 crores for this year. The relief will mainly benefit new units whose base year production is small and will compensate them for the higher capital costs they face. The Union government announced in mid June three loans

aggregating Rs. 473 crores open for subscriptions from July 1 to 3, against the Budget provision for a net borrowing of Rs. 535.06 crores (gross Rs. 810 crores). There is the usual provision to retain 10 per cent of excess subscription.

Prices and anti-inflation: Price behaviour continued rather ambivalently during May. The wholesale price index on May 29 stood at 292.7, a rise of 0.6 over the price reported in the last issue (p 309) on May 1. During May the index stayed around this level and declined slightly during the first week of June (292.2 on June 5). As at May 29 food article prices rose slightly—both wheat and rice, - with an increase of 4 points in industrial raw materials during the month. There has been a sharp rise in cotton prices by 7 points during May and by 76 points over the year. Raw jute also rose by 30 points during the year, while being stable during the month. Manufactures prices rose slightly, with intermediate products registering a 19 point rise during the year. The trend however is that while prices declined till March, there is an upward trend since April as noted in the Bulletin (last issue p. 308) the rises are in oil seeds, fibres and coarse grains. The Economic Times retail price index for greater Bombay also registered a one per cent increase in May—due to the rise in food prices, particularly fruits and vegetables. The factors making for price increase include the increase in money supply which increased by 155 crores during the month at Rs. 13,420 crores at May 28, the increased Annual Plan outlay referred to in the last two issues (pp 258 and 308), and the foodgrains procurement credit which at May 31 touched Rs. 2,060 crores. In addition the announcement of the government at June end to release first annual instalments of impounded additional dearness allowance from July will add to the demand side. The total amount of the first instalment will amount to Rs. 200 crores. There is need for continued vigilance on the price front, particularly as rural income have increased and the need to use all increases in income and production for increased capital formation. The RBI March Bulletin ascribes the control of inflation to the good monsoon and the bumper crop—a rather uncertain basis for any complacency.

Industry and Public Sector Performance: Industrial production has been picking up and with the March figures shows an increase of 10 per cent for the period January to March, as against the 1975-76 growth rate estimated at 5.7 per cent. The favourable factors accounting for the improved performance are industrial peace, improved and increased power generation, adequate coal supply, improved railway traffic and better production management. While the capital goods industry has picked up, the textile, the automobile, and cigarettes are still to show progress. With the major concessions to industry now in effect as announced in the budget (see Vol. VI p. 8-15), and use of aid to import needed capital goods and industrial raw materials, there should be further spurt in industrial production. This is not going to be easy and both the public and private sector units will need to be guided in the direction of increased productivity, while investments should be considerably expanded. Also capacity utilisation can be further improved. In 1975, 11.8 per cent of the units were using 90 per cent of their capacity, 11.2 per cent between 75 and 90 per cent, 37.1 per cent between 50 and 75 per cent and 27.5 per cent below 50 per cent. In this

regard the public sector unit performed well in 1975-76. 30 units worked too 100 per cent capacity use and 30 others increased their capacity use beyond 75 per cent. All the units record improvements in capacity use, ranging from 7 per cent to 188 per cent compared to their use in 1974-75. Hindustan Zinc performed at 147 per cent, BHEL Tiruchi at 140 per cent, Durgapur at 118 per cent, Coal India and BCC at 110 to 117, Hindustan Shipyard at 128, Hindustan Photo Films and ITT at 133, BHEL, Hyderabad at 134 and Hindustan Insecticides at 113 per cent. Where further improvements needed are in the units still working at 75 per cent and above or below, and these units must be helped to improve their performence.

National Production Front:

Steel: In May, Bhilai achieved a record production of 1.52 lakh tonnes of saleable steel, being 113 per cent of the target. Bokaro's production is running at the rate of 3,85,000 tonnes of ingot steel for the year. The 11 month period from July 1975 to May 1976 has been a good one for the industry, when production went up by 22.2 per cent compared to the previous 11 months, at 56 lakh tonnes. The plants averaged 104.9 per cent of their production target, with Rourkela leading at 121.6 per cent and only Bokaro and TISCO doing less than 100 per cent. For 1976-77 the production target has been fixed at 6.465 million tonnes, which is 7.27 lakh tonnes more than for 1975-76. Also the demand for steel has been picking up. For the first time in several months, the offtake from the steel plants during April and May amounted to 1.093 million tonnes, while the production for these 2 months was 1.044 million tonnes. The major part of the steel accumulation (about 58 per cent) is in bars and rods, while the demand has been mainly in the other sections. With the increased Plan outlay for the year, this trend for increased steel demand will be strengthened and production will be more and more tailored to meet the nature of the consumers' demand. The Rourkela steel water pipes plant was inaugurated in June and its product will be used for the Mathura refinery, as a result of which Rs. 30 crores in foreign exchange will be saved. HSL reports a lower profit at Rs. 25 crores for 1975-76 (compared to Rs. 48.24 crores for the previous year), due mainly to cost escalations and ploughing back some of the profits into the necessary investments. SAIL has also under study the manpower needs of the new plants. The expansion of Bhilai and Bokaro will require 11,000 trained scientists and engineers, and similar numbers will be needed for Vishakapatnam, Vijayanagar and Salem. The training institutes at Bhilai, Rourkela, Durgapur and Bokaro are adequate to train the needed future manpower. The details of the 25 year perspective plan for steel to establish a production capacity of 75 million tonnes (see last issue p 311) are being worked out from an office in Ranchi by a group composed of hand-picked persons from SAIL, MECON and Dastur. The target itself is related to the growth rate of the economy established at 8-9 per cent in the eighties and 6 to 7 per cent in the nineties, and is one part of a total world programme whereby similar efforts are being made by other steel producing countries—Japan increase from 120 million to 250 million tonnes, Soviet Union from 143 million to 300 million, and the US from 30 million to 75 million. To achieve our target, the government aims at ensuring full capacity use of existing plants,

expanding all the 5 existing plants including TISCO, and speedily setting up the new plants in the South and reducing the cost of production of steel both by internal and external action. The details of the plan will soon be announced.

Crude : In June, the move to switch-over from oil to coal gathered force. In earlier issues (see Vol V pp 584 and 658 and Vol VI p 80) the results of the study of the energy needs and use of 309 industrial units by a committee composed of IOC, NPC and DGTD to the effect that 20 per cent of the fuel oil consumed by these industries could be saved without affecting their efficiency were noted. Their annual consumption of 11.5 lakh tonnes of furnace oil could be saved, reducing the furnace oil import bill from Rs. 140 crores to a little over Rs. 100 crores. Following this study, Coal India has launched an action plan for phased substitution of fuel oil by coal to the extent of 5 lakh kilo-litres during 1976-77. During 1975-76, the substitution of 2.6 lakh kilo litres was achieved. The action plan involves discussions and agreement with the concerned industries, monitoring of the progress via feed-back on any technical problem faced by users. The Industrial group taken up for such partial substitution comprises, fertilisers, cement, chemical and textiles, pottery, distillery, glass, papers, metallurgical, and power houses. In this State such substitution this year is being effected in the Coimbatore textile mills and the Nilgiris coffee and tea plantations. The bottleneck is the availability of boilers which can use coal instead of oil and this is being specially manufactured. The State government in its turn has fixed a ceiling on consumption of petrol by vehicles allotted to various government departments from July 1, which is expected to save Rs. 75 lakhs in petrol consumption. On the production side, offshore drilling in Bombay High which was suspended in May because of the cyclonic weather was resumed in June and transport arrangements for the workers have been made via ship and helicopters to deal with interruptions during the monsoon. ONGC has finalised negotiations with a Dutch company for the laying of the submarine pipe-line for the transport of oil and gas from the Bombay high wells and the Bassein offshore oil fields to the three main land bases. The Electronic Commission is setting up a sophisticated offshore communications, instrumentation and telemetry system for communication between offshore and onshore linking. Also a large number of drivers are being trained by the Indian Navy for the Bombay High operations. ONGC also reports that the first phase of the seismic survey of the offshore Cauvery area has been completed at the second phase of delineating the located structures is now to be launched. The second phase will be completed by October and drilling will start by the end of the year. ONGC ran into oil in its fourth exploratory well at Karaikal which suggests the presence for oil in commercial quantities in the Cauvery offshore area. Also petroleum gas from Bombay High for use by shore industries will be available from 1978 and could be used as feed stock by Trombay Fertilisers and domestic users. The Union minister visited Europe in June to conclude long term cosultancy arrangements with European firms for more offshore operations and for purchasing the needed offshore equipment. The technique of open sea transfer of crude from large oil tankers—such as MT Kagali—has been developed at Madras, where the crude oil from Iran and Iraq in such large tankers are being transferred to Madras and Haldia refineries in small ships. The Union

ministry is in the process of restructuring the country's oil industry, 90 per cent of which is in the public sector. It is planning the complete take over of Oil India in which Burmah Shell has a 50 per cent interest as well as Caltex and Assam Oil. There are at present 8 oil companies engaged in refining and marketing—IOC, Bharat Refineries, HPC, Caltex and Assam Oil and two—Madras and Cochin are refining companies and Burmah Shell is a marketing company. The proposed restructuring aims at optimum use of existing investments and facilities and co-ordinating—of the companies. For all this, the Fifth Plan outlay for ONGC will go up steeply from the projected Rs. 420 crores to Rs. 1,088.41 crores.

Coal: The coal production target for this year is 103 million tonnes (against the Draft Fifth Plan target for this year of 108 million tonnes) and accordingly the Fifth Plan target has been reduced from 135 million tonnes to 125 million tonnes. This is joint decision by the Ministry and the Planning Commission in response to the demand by thermal plants and steel plants each being less by 5 million tonnes than had been forecast for 1978-79. Because of the 13 million tonnes pithead stocks, CIL is finding it difficult to expand production to 108 million tonnes, and in addition the major consumers also hold large stocks. Moreover CIL has to collect Rs. 90 crores from its consumers in dues, and hence the target reduction, which may be revised if there is a pick up in demand. With the introduction of large scale mechanisation in mines, particularly open cast mines, the percentage of dirt and extraneous matter in raw coal exceeds the prescribed 25 per cent limit and so CIL is planning to set up one coal preparation plant in each large open cast mine to eliminate extraneous matters and ensure consistent quality as well as a central magnetite plant to overcome the difficulties of washeries in using magnetite for washing purposes. Also the mines are being reorganised so that the existing 1,000 mines are grouped to form 400, the capacity of each being 5 lakh tonnes, along side of their modernisation and mechanisation. In this context of surplus production, some of the major new projects like Jayant in the Singrauli field in MP (capital outlay Rs. 95 crores) and Jhangra I and II in Ranigunge (Rs. 88 crores) are being held up for the present.

Iron-ore, copper and gold-ore: The 1975-76 production of iron-ore was 42 million tonnes, an increase of 16.7 per cent over 1974-75. The anticipated production for NMDC for the current year is 9 million tonnes, the total for the year of all units will be 43 million tonnes including 26 million tonnes for exports. With the new mines opening, NMDC's future production will rise sharply. Copper production for the current year is expected to be 36,000 tonnes, against 23,800 tonnes last year, reducing the gap between supply and the demand to an estimated 50,000 tonnes. To meet the rising demand which by the VI Plan is estimated at one lakh tonnes, Hindustan copper has a scheme in MP for production of 23,000 tonnes in stage I and an additional 20,000 tonnes stage II and the expansion of its 3 mines in Bihar and Rajasthan. The Draft Fifth Plan provides Rs. 45 crores for existing schemes expansion and Rs. 82 crores for new schemes, and for this year Rs. 14 crores. GSI has located some gold-ore shoots near KGF in Karnataka. Bharat Gold mines has also found similar ore shoots near Bisnattam area and in Mallappa area bordering on this State Similar finds in

the Anantapur district, Momandu multi-metal in Chingleput district are under investigation.

Cement : Cement is no longer in short supply and there is a case for abolishing the price and distribution controls and railway freight pooling, so that there can be a more rational location of cement plants, provided there is subsidising of freight and a quota to meet the needs of customers in the North East and other remote areas. This will lighten the burden on the majority of cement consumers who have to pay for the long distance haulage and the burden on the railways. It will also foster competition and produce economies. It will help in the construction of new plants, which will be located at demand points and where natural raw materials are available or can be transported. In April 1976 cement production was 15.13 lakh tonnes as against the 16 lakh tonnes target. This was less than the January 16.52 lakh tonnes and March 16.38 lakh tonnes, mainly because of the shut down in April and May for maintenance purposes. But the industry is performing well, 18 of the units producing at 100 per cent capacity.

Textiles : The government has under study a textile modernisation plan as noted in Vol. VI p. 204, which will have to be financed by the banks and the industry and will call for more intensive work by the research institutions. IDBI has a cell on the modernisation programme and will provide advice and assistance. One of the most urgent needs is to increase the managerial competence and expertise of the industry. The government also points to the increase in the capacity of spindles from 14 million to 18 million on the one hand, and to the decline in the yarn produced per spindle on the other. The story is the same in weaving. The licenses for new spindles and looms which have been sanctioned are now being taken up with normal speed. The government has delicensed the spinning industry upto 50,000 spindles per unit and hopes for an improvement in the situation. Prices of controlled cloth were reduced by the mills in June to speed their sales. The National Textile Corporation is investing Rs. 200 crores on modernisation of the 100 mills that have been taken over during the current plan period. NTC has brought down the monthly loss of these mills to Rs. 2.72 crores compared to Rs. 7.60 crores in April 1975, it hopes to break even by the end of the year. With the upward trend in cotton prices (referred to earlier), the textile commissioner has once more in June issued show cause notices to 80 mills as to why they had not submitted figures of stocks held by them. The rise in cotton prices is due in the main to the holding of large unauthorised stocks by some of the dealers and mills.

Small Scale Industry, and Bank Credit to Industry : The Census of small scale industries released by the Union government in mid June shows that: (a) the sector faced no recession in 1974 and 1975, in fact with 1970 as base = 100, its growth was consistent, 119.5 in 1971, 169.3 in 1974 and 188.7 in 1975, (b) its rate of growth was 10.5 in 1974 and 11.5 1975, while the general industrial growth was nil in 1974-75 and 4.5 in 1975-76, (c) in number of units, Tamil Nadu with 16,002 units stands first followed by Maharashtra (15,358), Punjab (13,675), West Bengal (13,131) and UP (12,851), while in the gross value of output, Maharashtra stands first with Rs. 529.47 crores followed by Tamil Nadu Rs. 321.7 crores, West Bengal (Rs. 270.2 crores) and Punjab (243.3 crores), (d) the

number of bogus units were found to be units which had been transferred to some other locality, (e) out of 2,400 products produced by the sector, 750 were exports valued at Rs. 150 crores, (f) the ratio of output to investment was 3.28 (three times that of the large scale sector) and employment at 21 persons for every Rs. one lakh of investment (four times that of large scale sector), and (g) in 1972 the investment was over Rs. 1,055 crores, employment 16.52 lakh persons and total production of 2,600 crores in this small sector, and in 1975 it was Rs. 1,450 crores, 22 lakh persons and Rs. 5,700 crores. The government on the basis of the report is increasing its aid to the small sector through development of entrepreneurs, backward regions, supply of raw materials for 2 shifts, 3 more SIS, 4 regional testing centres, marketing and tool room assistance and a rural artisan programme. The Union Industrial Development Department has reserved four additional items for the small scale sector —electric motors upto 10 HP, FIT motors 1/8 HP, tea chest ply wood and tyre retreading materials, thus increasing to 180 the items reserved for this sector. IDBI is also setting up a separate cell on industrial and technical consultancy service, to work with State governments to identify local entrepreneurial talent and develop a cadre of competent and dynamic entrepreneurs. To enlarge the number of such new enterpreneurs who do not have the resources to put up the minimum equity capital required by the Banks, IDBI would provide them with this aid. This seed capital scheme will enable the entrepreneurial ability of the weaker sections to be successfully used. It is also to provide through SIDCOs finance for promoting labour intensive projects in the backward regions. On Industrial credit, the RBI estimates that for 1976-77 investmental credit expansion by the banks would be around Rs. 2,000 crores—Rs. 300 crores for food grain procurement, Rs. 200 crores for fertilisers stocks and Rs. 1,500 crores for industrial needs. The last will be tailored to meet genuine needs, not for inventory and stock building, with provision to pull back if the credit is diverted from production. In industries facing recession, the banks will be allowed a nursing programme, allowing rescheduling of debt payments and adjusting and funding.

Automobiles and Sugar: During 1975, 36,037 heavy and medium commercial vehicles were produced against an installed capacity of 64,000 and licenses capacity of 1,03,000 vehicles, 6,630 light commercial vehicles, 8,171 jeeps against installed capacity of 13,000 and licenced capacity of 15,000 jeeps and 1,01,631 scooters against a total capacity of 2,48,000 scooters. With plans for establishing a public sector unit to produce heavy and medium commercial vehicles, the government has decided not to create additional capacities in this production area of commercial vehicles, three-wheelers and scooters and mopeds during the Fifth Plan. Any expansion in demand will be met by using the existing unutilised capacities plus the public sector unit that is being planned. The capacity created has led to export of vehicles in 1974-75 earning Rs. 795 lakhs with imports of specialised vehicles limited to Rs. 42 lakhs. Sugar production for this season is estimated to decline to 43.50 lakh tonnes compared to last season's 47.94 lakh tonnes, due to drought conditions in this State, the absence of adequate incentives, the low levy prices and the competition from khandasari units. The sugar industry pays an excise duty of Rs. 135 per quintal, while khandasari is duty free, and the latter has become a

major consumer of cane in the UP and is also so emerging in Maharashtra. Only Maharashtra has increased sugar production to 16.40 lakh tonnes against last season's 15.15 lakh tonnes. In all other States there has been a decline. This means that while the total domestic release of sugar will be maintained at 35 lakh tonnes, exports will decline from last year's 13 lakh tonnes to 10 lakh tonnes.

Fertilisers: The government has fixed the target for production of nitrogenous fertilisers at 19.5 lakh tonnes for the current year (compared to 15.35 lakh tonnes produced last year) and the production target of phosphatic fertilisers at 4.8 lakh tonnes (against last year's production of 3.2 lakh tonnes). There is a slight difference in the estimates of fertiliser consumption for the current year, the Chemicals and Fertiliser ministry placing it at 22.5 lakh tonnes against last year's 21.5 lakh tonnes, while the Agricultural ministry's estimate is 26 lakh tonnes. The recent reduction in phosphatic and nitrogenous fertiliser prices (see Vol. VI p. 267) should stimulate demand. The capacity use last year rose to 76 from 70 per cent in 1974-75, the nitrogen capacity being 2.82 million tonnes (up from 1.9 million in 1973-74), due to the 4 new plants commissioned in the last 12 months at Tuticorin, Gorakhpur, Mangalore and Namrup. The government has also decided to import 2.3 million tonnes depending on the stock position, production trends and the demand. In early June there was large stock of 2.6 million tonnes (1.8 million tonnes with the central fertiliser pool and 8 lakh tonnes with the fertiliser factories) valued at Rs. 433 crores, and involving interest payments to the banks at the rate of Rs. 50 lakhs. The government's perspective plan envisages an increase in NPK output to 10 million tonnes by 1984, up from 2.5 million tonnes this year.

Agricultural Production: The Union government estimates food grains production for 1975-76 (July-June) at 116 million tonnes, with rice kharif procurement being 5.9 million tonnes and rabi wheat procurement at 6.26 million tonnes by June 15. In addition 3,00,000 tonnes coarse cereals have been procured—with a total of 12 million tonnes of food grains by mid June. 10 States have exceeded their rice procurement target, Andhra Pradesh procured 12.3 lakh tonnes against its 10 lakh tonnes target, Punjab 12 lakh tonnes against 9 lakh tonnes target, Tamil Nadu 8.8 lakh tonnes (target 5 lakh tonnes), UP 7.41 lakh tonnes (target 5 lakh tonnes), Haryana 4.75 lakh tonnes (target 3 lakh tonnes), Assam 2.31 lakh tonnes (target 1.3 lakh tonnes), Karnataka 1.62 lakh tonnes (target 1.5 lakh tonnes), Orissa 2 lakh tonnes (target 1.75 lakh tonnes), Bihar 59,000 tonnes (target 25,000 tonnes), Jammu and Kashmir 41,000 tonnes (target 30,000 tonnes), Rajasthan 27,000 tonnes (target 10,000 tonnes). In this situation, some curious things are happening like smuggling of rice from UP to Haryana to take advantage of the latter's official price, as well as some serious issues such as that the farm output in the Punjab which has been rising at 5 lakh tonnes per year for the past 10 years may level off at 10 million tonnes per annum by the end of the seventies. As at mid June, in this year's wheat procurement, Punjab leads with 2.72 million tonnes, followed by UP with 1.53 million tonnes, Haryana 8.65 lakh tonnes, Rajashan 4.43 lakh tonnes, Madhya Pradesh 3.02 lakh tonnes and Gujarat 1.32 lakh tonnes. Food imports since January of this year have totalled 2.5 million tonnes by early June as against

the 1975 imports of 7.4 million tonnes. If the government's food buffer stock is established at 10 to 12 million tonnes, it will mean that a total peak level stock of 19 million stock will be needed. The total stocks with government at mid June is 16.5 million tonnes and with food imports, referred to earlier, allows for a buffer stock of 12 million tonnes. A major problem faced by Union and State governments, FCI and State Food Corporations is the lack of storage space. Every available space, railway yards, harbours, temples, schools, disused airports, army bases and palaces are being used and even in open spaces bags of food grains are stocked with polythene sheets. In this situation about one third of the wheat, rice and coarse grains allotted to the States and Union territories by the central pool has not been lifted and even what was lifted (14.64 lakh tonnes out of 22.68 lakh tonnes allocated) has not been sold because of the plentiful stocks with the farmers and in the market. It is therefore possible and necessary for FCI to use its experince with the crash plan to store the flowing in of food grains to develop a long term plan for silos, warehouses and other storage space which should be scattered all over the country near the producing and consuming centres—during the coming year. A start has been made with a Rs. 22 crores construction programme to provide 8 million tonnes of storage capacity in all. The spin off effects of this bumper harvest included rural purchasing power and employment. In Punjab Rs. 300 crores have been disbursed in rural areas for purchase of paddy, in UP Rs. 140 crores, in Haryana Rs. 90 crores, the overall additional resources in the rural area for this year for the whole country being between Rs. 1,200-Rs. 1,500 crores —(the procurement credit for the country having reached Rs. 2,060 crores by May 31, as noted earlier). A second effect has been increased rural employment, just in carrying the food grains to the procuring agent and storage place. In Punjab one lakh persons were given such temporary employment, in UP 40,000 daily labourers are employed, in Haryana 20,000 workers. Plans are underway for the coming kharif season. The most successful part of the kharif strategy has been the raising of nurseries and community nurseries in the States. To spread this practice universally the Union Government allocated Rs. 37 lakhs to the States and in June increased it to Rs. 57 crores. Teams are visiting the kharif states to ensure that all inputs—fertilisers, HYV seeds, pesticides from the Union or State godowns are promptly made available to the farmers. As a result of talks with the Chief Ministers, the Union government has added optimum utilisation of the available irrigation potential and resource to all round development of command areas to the kharif strategy, so that the unutilised irrigation potential (80 per cent) is more fully used.

Exports: In late June, the Union government released foreign trade statistics which showed that the exports for 1975-76 were Rs. 3,943 crores (up from Rs. 3,863.20 crores reported in the last issue p 315) which is an increase of Rs. 612 crores over 1974-75 exports of Rs. 3,330 crores. This 18 per cent export growth for the country for 1975-76 is particularly creditable when the world growth of exports for the year was only 4 per cent. It also is a 9 per cent increase over the target of Rs. 3,600 crores of exports set for the year. The imports for the year were as reported in the last issue (p 315) at Rs. 5,108 crores. The deficit is therefore not as large as forecast in that issue at Rs. 1,154.80 crores but is around Rs. 1,075 crores. On this score, there is

also some further hope because in the last 3 months of 1975-76 there is a declining trend in imports and if this persists—in food and fertilisers particularly—and if the exports are expanded there would be less of an imbalance this year. The good export performances were in sugar (57 per cent increase), engineering goods (13.3 per cent), silver (132 per cent), fish (90 per cent), iron-ore (38 per cent), leather and leather goods (27.9 per cent), iron and steel (310.3 per cent), handicrafts (20.5 per cent), cotton apparel (34.9 per cent) raw cotton (113.6 per cent), groundnuts (79.6 per cent) tobacco (17.9 per cent), coal (174 per cent), tea (4.8 per cent), and coffee (13.3 per cent). Cotton textiles exports for the year ending March 31 amounted to Rs. 376.67 crores against the previous year's Rs. 300.85 crores, with cotton piece goods and handloom ready-made earning about equal amounts and accounting for this performance. EEC has given Indian an ad hoc quota in textile which will amount to over a 10 per cent increase. Handicrafts which is to earn Rs. 250 crores as exports in two years time are also doing well as the designs are being adapted to suit the customers' taste and its market is expanding in EEC, Australia, Japan, Canada and South America. As a result of bilateral negotiations, the Indo-Soviet trade list is to be expanded to include new areas and items There is also the problem of shipping costs and one Conference proposes raising freight rates which could price Indian exports out of the world market. Against the demand of the India, Pakistan-Bangladesh, UK conference's decision to raise rates, it is incumbent on Indian shippers and businessmen to use Indian ships as one means of countering this strangle hold of foreign shippers. Continuing the good export performance of our silk exports in 1975-76 (Rs. 17.5 crores), silk exports in April fetched Rs. 1.72 crores (a 60 percent increase over last year April). Also sea food exports in April set a new record, increasing by 37.79 per cent in volume and 27.79 per cent in value over April 1975 exports. It was an export of 6,000 tonnes earning Rs. 75 crores. On this background, the Rupee continued hardening against the Pound and weakening a little against the dollar in June. The discussion on the Rouble-Rupee rate continued during June and a decision made to resume the discussion later in the year. As noted in the last issue (p 315), the country's foreign balances have continued to increase and at June 18 stood at Rs. 1,711 crores according to RBI's weekly statement. On this basis, the government is planning to repay the October 1974 Oil Facility drawing of Rs. 194 crores from the IMF which would reduce the country's outstandings on this account to Rs. 498 crores.

Aid: In June India signed an agreement with the Federal Republic of Germany for Rs. 132.13 crores. The major part of the loan will be on IDA terms—50 years maturity, 10 years grace and 0.75 per cent interest. The loan will be used to meet foreign exchange costs of agreed projects (Rs. 34.68 crores) and debt relief, liquidity assistance and loans to development projects will receive the rest. The projects to be assisted include Gujarat Fertilisers, Neyveli, Seamless Tube of BHEL and Tawa rural development in MP. Canada provided in June Rs. 41.40 crores of food aid for 2.25 lakh tonnes of wheat. Other Canadian aid to India is under review.

International:

Pakistan: In June, India and Pakistan signed an agreement for the restoration of

overflights, and of air links between the two countries. From the third week of July, air traffic between the two countries will be resumed. Towards the end of June, also an agreement for the resumption of rail traffic between the two countries was signed, and the railway traffic between the two countries—both passengers and goods—are to be resumed from July 17. From that date express trains will run between Amritsar and Lahore and the private sector in the two countries will be allowed to the trade with each other from July 15. Thus on addition to the inter-governmental trade between the two countries (see Vol VI p 140), there will now be growing trade on private account between the two countries which would be mutually beneficial. India and Pakistan have also decided to exchange Ambassadors and have named their representatives at the end of June to further normalise trade and exchange relations between the two countries.

Bangla Desh : There was also in June high level discussions between India and Bangla Desh on trade, the Farakka waters and exchange agreements. Bangla Desh will export 7,200 tonnes of newsprint to India, Thailand and Burma, India's share of this export being 4,000 tonnes. The newsprint mill at Khulna is using only one third of its capacity of 48,000 tonnes, and as it develops its markets abroad and at home, there can be fuller use of its capacity.

World Monetary Reform: As noted in the last issue (p 317), IMF sold 7,20,000 ounces of gold at $126 an ounce on June 2. It is interesting to note that bids for a total of 2,368,000 ounces at prices ranging from $126 to $134 an ounce were received, out of which the sales were effected. The proceeds are deposited in a Special Fund for low interest loans to poor countries. The Fund also reported in June a record level of purchases by its member states, amounting to SDR 4,635.9 millions between January to May 1976, which was equal to all purchases in 1975. The reasons for this are the heavy drawal by non-oil exporting countries under the Oil Facility which amounted to SDR 2,140.8 millions, bringing to a total of SDR 8 billion the Oil Facility drawn by 55 countries—about half being by industrialised countries. The other factor was the drawing on the liberalised Compensatory Financing Facility under which the developing countries encountering acute balance of payments problem draw $1,785 million in the five months. Whereas the balance of payments turned favourable in 1975 for the industrialised countries, the primary producing countries faced and increasing unfavourable balance of accounts. The other event in June was the fall in Pound Sterling by more than 3.5 US cents in early June, touching 1.7 against the dollar on June 3, with funds beginning to flow out of UK to Switzerland. On June 8, Britain's 10 major trading partners agreed to make a stand by credit of more than $ 5,000 million to the Bank of England through the Bank of International Settlements to defend the sterling. UK had spent $3 billion in defending the sterling rate and it is true that its present level is below its true value. There is a wider repercussion of these events. The viability of the system of floating exchanges is now in question. UK has had floating exchanges for over 3 years and is as much in trouble as when it had the system of fixed exchange. In the end, what matters is not fixed or floating exchanges: they are a mere supplement to such matters as control of inflation, increase of productivity and GNP increases. Meanwhile

there is a small improvement in the pound rate to the £1.75 for the dollar, but till it gets back to something nearer to the £2 4 position from which it fell, the UK and its partners will need to attend the real causes of this monetary uncertainty.

World Food Aid: The International Fund for Agricultural Development had an inauspicious start in June. The 3 day pledging conference of 80 countries resulted in contributions of $945 million, —$400 million OPEC countries, $530 million from industrialised countries and $15 million from other developing countries. This was a compromise over the OPEC countries condition that their contribution of $400 million would become effective only if the industrialised countries contributed $600 million. There were other political controversies which bedevilled the start, including a clause for the statutes to exclude countries practising racist policies. The three day 36 nation World Food Council meeting in mid June in Rome was similarly infructuous. It agreed upon the World Food Security system and the need for a 5,00,000 tonnes emergency grain reserve, towards which Germany pledged 30,000 tonnes. It established guidelines for identifying countries to be given priority in food aid as those with a per capita income of less than $500 a year or a projected annual food deficit of 5,00,000 tonnes. It did not deal with world trade in food grains, or with fertilisers, or the total quantum of annual World Food Aid (which the developing countries urged should be $8 billion), or the secretariat proposal for a 3 tier system to assure grain supplies at responsible prices in times of crop failure.

Second Decade and follow up of UNCTAD IV: The UN Committee on Development Planning meeting in early June, made a mid term assessment of the Second Decade and pronounced the results disappointing. Preliminary estimates indicate an average annual growth rate of 5.5 per cent for 1971-75 and sectorally a poorly balanced growth. This is less drastic than the World Bank appraisal which shows a per capita growth rate of 0.5 per cent for 1969-70,—0.5 per cent in 1974 and—0.7 per cent in 1975. The UN Committee also calls attention to the very disappointing performance on international aid. It refers to South Asia and mid Africa as depressed regions and raises the question whether there should be special funds, consortia or other institutions that would focus attention on these problems areas. Pointing to the industrial and technical manpower infrastructure of India and Pakistan it recommends special attention to their power needs and energy requirements, the possibilities of international food aid to alleviate the problems of poverty and unemployment that this group of countries faces, the need to speed their agricultural growth to open up their large domestic markets and encourage the export from these countries of their manufactures and semi-manufactures to the industrialised countries. This is imperative as they have reached the end of the road in import substitution, and need help in developing alternative sources of energy and the intensive development of their river valleys. IMF in its June report shows the recovery of the industrialised countries from recession as seen in the rise in the value of their imports to $145.5 billion in January-March 1976, with a lower rate of their export growth at $137.4 billion during that period, reflecting the lower import demand of developing countries. OECD reckons that the upward trend in imports will increase the current account deficit of industrial countries from $ 3 billion to $ 20 billion, and will to that

extent improve the balance of payments position of the developing countries. This analysis for both groups of countries is somewhat in contradiction with IMF report or UNCTAD forecast. UNCTAD is of the view that exports and terms of trade for the non oil producing countries will improve in 1976, but this means that their deficit which was $45 billion in 1975 will be merely reduced to $40 billion in 1976. IMF expects that with the recovery of the industrialised world, developing countries export incomes will increase and their call on the Compensatory Financing Facility will decrease. By the end of March, the reserves of the industrialised countries increased by $5 billion to $126.7 billion, and the OPEC countries maintained their reserve at $58.4 billion compared to $58 billion in December 1974. A series of preparatory meetings are being convened by UNCTAD from September to follow up the UNCTAD IV decisions on the integrated programme on commodities. On the common fund, a meeting will be held before March 1977. On institutional issues, a committee on economic co-operation among developing countries has been established. The Trade and Development meeting at ministerial level every two years will keep all these programmes under review.

World Inflation : The trend of world inflation was downward, with India and Singapore registering negative rates, according to IMF. In the industrial countries the inflation rate decreased to 8 3 per cent between April 1975—March 1976, compared to the 12 2 inflation rate during the previous 12 months period—the most successful being the US from 11 per cent in 1975 to 6.4 per cent in 1976 first quarter, Canada 9.3 per cent, Japan 10.2 per cent and Switzerland 3 per cent. OECD, however, warns that an average 7 to 8 per cent inflation rate will obtain in these developed countries during the second half of the current decade and might be higher if the governments allow their recovery to get out of control. It forecasts that economic growth for its member countries will average 5 to 5.5 per cent, ranging from 7.5 per cent for Japan to 3 per cent for UK during 1975-80. It recommends correct convergent domestic policies in order to keep inflation and unemployment under control at a time when their economies were growing at 5 to 5.5 per cent and world trade at 8 to 9 per cent. This was the purpose of the 7 nation summit—US, UK, France, Canada, Germany, Japan and Italy —at Puerto Rico in June and the decision to concert their policies to ensure growth with agreed domestic and trade policies. There was little discussion of the needs of the developing countries or a concerted programme of action to meet these needs at the summit.

Habitat : The UN conference on Human Settlements (Habitat) was attended by delegates from 140 countries at Vancouver, Canada from May 31 to June 11. Alongside there was the Habitat Forum attended by non-governmental organisations dealing with similar problems. The Conference provided an occasion for an exchange of ideas between countries and specialists dealing with the planning and maintenance of human settlements. Here again the developing countries are in the forefront: 101 out of 191 cities with a population over one million are in their territory and it is forecast that by 1985 they will have 10 out of 17 cities in the world, each with a population of over 10 millions. The Conference was held up by disagreements over political issues and did not come to any clear decisions. There was emphasis on the rural habitat

where most people in the developing countries level and discussion on urban planning, the role of human settlements in national development programmes, a call for UN Habitat fund to help developing countries with their human settlements plans, means of rationalising transport systems, and controlling pollution. It is doubtful whether the large expenditure in time and resources for this effort produced any commensurate results. A smaller gathering might have been more useful. The UN Centre for Housing, Building and Planning issuing the results of its first world housing survey points out that between 1975 and 2000 the urban populations of the developing countries will be 65 per cent of all urban peoples and will have trebled. Housing in these countries have worsened, piped water and electricity deficient. It recommends that in place of the current two, there should be 8 to 10 dwellings per 1,000 persons in the developing countries to meet their housing needs.

World Employment: The World Employment Conference called by the ILO met in Geneva with 1,000 delegates from 121 countries. The problem faced by the Conference was the current 300 million unemployed, and a further 700 million young workers who will be entering the labour market in the next 25 years. There was need for creating 1,000 million jobs and this can be done if national plans aimed not at a certain rate of GNP growth but at meeting the basic needs of its population. The strategies proposed are: for the industrialised countries to stop subsidising industries (multinationals) using abundant labour forces with low qualifications in the developing countries, stop importing workers from developing countries but build factories there, open up their markets to developing nations which can act as sub-contractors to the developed countries for socialist countries to improve their agricultural sector and open their markets to goods from developing countries: for developing countries, concentrate on production of basic goods, agrarian reform, stopping the brain drain, strengthen political and social democracy, develop better training programmes, stricter planning and more effective use of aid resources. The Conferrence approved 119 decisions calling on governments to remove poverty by the end of the century and for that to follow a policy to ensure full employment, regulate migration, improve technological knowhow and promote business activity: the conference, rightly, did not reach agreement on the role of transnational corporations in creating employment in developing countries.

Multinationals: The role of multinationals in developing countries which divided the ILO conference is a key issue. The problem is one control and profiteering. The OECD code of conduct for multinationals developed in June does not deal with this issue (see Vol. VI p. 210). It provides for: (a) no undue interference in host countries. (what is the permissible due interference one may ask): (b) no bribing of officials on those standing for public office except when it is "legally admissible": (c) taking account of the general political objectives of the host country including its plans for economic and social progress, employment, industrial and regional development and protection of the environment: (d) harmonizing conditions of work and investments by transnationals; (e) meeting the need for reinforced co-operation over direct international investment and consultation over any country feeling its interest is suffering: (f) consultation on

national treatment of multinationals: (g) multinationals heeding the host country policy on balance of payments and credit: and (h) for tax purposes multinationals must not fix prices which do not conform to those of free competition in order to modify tax bases in a way contrary to national legislation. If this is a reference to transfer pricing, it is as weak as the non reference to rates of profits, wages of workers, rapid labour turnover and the control of important sectors of the economy of the developing countries—which the code does not touch.

UNEP: The United Nations Environment Programme on World Environment Day on June 5 calls attention to the 25,000 people who die daily from water borne diseases, and to the 70 per cent of the world's population who are without safe water. This is a developing world problem and nothing is more urgent for its people as clean water. For this, there is need for improved sewage and sanitation which are lacking for the 1,000 million rural people whose water is thus contaminated. Its survey of 8 developing countries show that 90 per cent of child deaths is due to polluted water, that industry contaminates 160 cubic kilometres of water per year and a flush toilet contaminates 60 litres of clean water. There is general agreement and a call for action in its appeal for "a healthy respect for water on a global basis" and avoidance of careless waste and inefficient use of water as a crime against fellowmen.

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II. Agricultural Development

Paddy :

The government estimates, for this year, production of paddy at 65 lakh tonnes and cereals at 21 lakh tonnes. The Agricultural Department is bringing under paddy an additional 5 lakh acres in the districts of Coimbatore, Salem and Dharmapuri, which will increase the State's paddy production by 5.37 lakh tonnes. Government depots are supplying the farmers concerned with improved seeds fertilisers, pesticides along with training to the farmers in the use of these inputs. The government has also decided to give Rs. 130 crores as crop loans to small and marginal farmers this year (up from last year's Rs. 110 crores). These loans—both short term and long term—will be made to the farmers through co-operative societies which the small and marginal farmers are being asked to join as members. Twenty schemes have been formulated by the co-operative department to set up 600 co-operatives in the rural areas to supply farm inputs and essential commodities to its members at reasonable prices. This is particularly important in view of the conclusions of the Thanjavur IADP area survey of 5,900 farmers in 28 blocks which show that only 60 per cent of the farmers were members of co-operatives, that 20 per cent did not avail themselves of the credit facilities of the co-operatives because of the cumbersome procedures of the societies and their insistence of joint

sureties. Also the small farmers as well as women farmers did not have access to co-operative credit, and above all there was the demand that the credit should be available in time. As the plan to increase the co-operatives for the paddy farmers from the present 232 to 600 gets under way these lacunae in the co-operative credit structure should be filled in.

Other Crops :

The Department of Agriculture has launched a campaign in Chingleput district to raise pulses in the 5.28 lakh acres of kharif fallow. With the rains so far received and the oncoming monsoon, the short duration variety of black gram T-9 and green PS-7 and S-8 sown in June, will be harvested in September, before the onset of the North East Monsoon. In Thanjavur and Madurai districts, farmers have been advised to grow pulses on the bunds along with kuruvai paddy. The State's deficit in pulses production is serious—against a consumption demand of 7.4 lakh tonnes, last year's production was 2.6 lakh tonnes. With the extension of the pulses cultivation area by 1.6 lakh acres (in addition to last year's 22.64 lakh acres), popularisation of improved varieties, treatment of rhizobial culture and effective pest control methods, the targets for this year is 2.9 lakh tonnes. The Department has also programmed to bring 9.80 lakh hectares under groundnut cultivation, an increase of 20,000 hectares over last year, to increase groundnut production from 11.28 lakh tonnes to 11.71 lakh tonnes. For this, 4,300 tonnes of HYV seeds were distributed to farmers in time for khariff sowing in June—except for Coimbatore and Madurai where it starts in April. Also fertilisers and micro-mutrients have been spread, and Rs. 20 lakhs used for massive ground spraying in Chingleput, South Arcot, North Arcot districts to fight the red hair caterpillar pest. A special training programme for groundnut farmers has also been completed under this programme. Sericulture Development is being undertaken in the State with an allocation of Rs. 3.8 lakhs as one means of helping marginal and sub-marginal farmers in backward districts like Dharmapuri and an Assistant Director to be stationed at Salem will direct this programme. Also the government is undertaking a Rs. 10.5 lakh programme for massive spraying over 1,500 acres in Tirupathur area coconut trees which are affected by the black headed caterpillar. In Kanyakumari the root wilt disease affecting coconut trees has come over from Kerala and plans are under way to combat it in that area.

Research Results :

The government is setting up a new paddy Research Station for Kanyakumari distrist which has a different rainfall pattern and soil conditions from other districts. The Station will be initially located at the State Seed Farm at Tirupathisaram and will concentrate on developing paddy varieties and technology appropriate to local conditions so that the districts' paddy production can be rapidly increased. Research into control of paddy pests—stem borers, leaf and plant hoppers etc.—has indicated a rather simple and not costly way of controlling them by packing the insecticides in capsules and placing them at the roots of the paddy plant. This can be done also using a grease gun or a machine that can inject the insecticide in liquid form. Incidentally the Manila based International Rice Research Institute has rightly decided to discontinue using the IR prefix for releases of new varieties in the future both as a recognition and means of further encouraging national

programmes of rice improvement which have become so widespread and important that any effort at centralisation will only impede the massive ongoing research in rice. Dry farming research in the country centres around the FAO regional centre in Hyderabad, the Agricultural Universities in Punjab and Bangalore have received special grants for dry land research and in this State the Koilpatti station has come out with some useful recommendations for the black soil area covering Madurai, Ramanathapuram and Tirunelveli. One recommendation is mulching the soil with kambu straw which increases the jowar crop, and other recommendations relate to the use of hybrid jowar, Kovilpatti tall and growing MCU-6 and K-8 where cotton is grown. The Bellary station's findings apply to the red soil areas. They include sowing jowar in September after treating the seeds in carbofuran, sowing safflower and Bengalgram in October, with specification of the fertiliser dosage, the space in planting and the specific varities of jowar and safflower that should be used. As for fertilisers for dry land farming, which is a costly item and which the dry farmer cannot afford, the Tindivanam Research Station has demonstrated that potash can produce a higher yield and the more costly nitrogen and phosphorous fertilisers can be avoided. The precise dosage of NPK is also indicated for the various groundnut varieties of TMV-2, TMV-7 and TMV-9. The mango season this year has been a comparative poor one with the three mango pests—hoppers, sooty and mildew—attacking the trees both in the North and in Andhra Pradesh and other Southern States. Research on these pests suggests that the deformed flower bunches have to be lopped off and diluted sulphur spraying has to be undertaken at weekly or fortnightly intervals. In this State, soil testing facilities are being established at all research stations, starting with the Tindivanam station and four others, so that the local farmers can be advised as to the fertiliser dosage to be used and the suitability of raising a particular crop in local soil conditions. This is aimed mainly at the dry land farmers who farm about 70 per cent of the area in the State.

Tea :

Tea production in the South in January-April 1976 declined to 25.9 million kg. compared to the first four months of 1975 production of 32.5 million kg. April production was down by one million kg. at 9.2 million kg. compared to April 1975 but in May production picked up and the outlook for the year as a whole is good. Sri Lanka also experienced a decline of 9.4 million kg., while Kenya registered an increase of 2.5 million kg. in January and February. It is a little doubtful if this year's export target of Rs. 260 crores will be attained. For 1975-76 the provisional export earnings are Rs. 238.4 crores against the target of Rs. 240 crores. Prices in London have remained steady at a high 81 pence per kg., which is a 15 per cent increase. There is need, as pointed out in earlier issues, for more sustained promotional compaigns by the Tea Board, going beyond the five countries now covered to reach out to West and South East India and West Africa. The Tea Board's expenditure this year is Rs. 429.17 lakhs, of which Rs. 235.43 lakhs is for promotional work abroad. Its income is mainly derived from the cess of 4 paise per kg. of tea produced, which gives it an income this year of Rs. 203.80 lakhs and which should be raised to 6 or 7 per paise kg. So that it can reach a larger number of countries and country and consumer tailored programmes can be planned. The Tea Board

set forth a tea production target of 750 million kg. by 1985, starting from the current production base of 500 million to 510 million kg. There is need for intensification of tea production, improved marketing, and assistance in meeting the Fertiliser and cement of the industry.

Coffee :

Coffee production in 1976-77 is expected to be one lakh tonnes. The Coffee Board has launched a crash programme to increase production to reach the target of 1.20 lakh tonnes by 1978-79. A special experiment in the Yercaud Plantations in May showed that when coffee plants were in full bloom, honey production was doubled, and the quantity and quality of coffee seeds from plants subjected to intensive pollination by the bees were much better and higher. Hence honey farming is being developed in the coffee plantations as a mutually reinforcing agent. Foreign exchange earnings from coffee for this year are expected to be Rs. 60 crores and with coffee prices remaining high, there is need for further production of coffee in new areas. In fact, a world coffee shortage is forecast by the Colombian Coffee Association, the US forecast is that next year's export surplus will be 42.6 million bags of 60 kg. each against this year's 52.7 million bags. Brazil is spending 5,300 million cruzeiros this year on a coffee renewal plan. A special working group of ICO has established rules for world coffee sales without export quotas, including shipment, import control, checks and methods of issuing certificates of origin. These rules will be approved by the executive Board of ICO at its July 5 meeting and by ICO in September. This clears the decks for the third International Coffee Agreement to start operating from October 1.

Rubber :

The government directed STC in June to export a further 6,000 tonnes of rubber, making a total of 11,000 tonnes for export. This will enable small growers to liquidate their stocks and will prevent a fall in prices below remunerative levels. The first export of 5,000 tonnes will earn in foreign exchange Rs. 3.5 crores. World rubber prices are rising, in June they stood at Rs. 900 per quintal, and emphasis is on export of quality grades to obtain higher realisation. The fall in the internal price of rubber to Rs. 540 per quintal in Calcutta, which is about half of the price of rubber last year has caused anxiety to the small growers in the Wynaad area. In addition to the additional export of 6,000 tonnes decided by the government, there is need for the government to instruct the large tyre companies to maintain 3 months instead of the present $2\frac{1}{2}$ months stock. This together with a vigorous export effort can mop up the surplus 20,000 tonnes of rubber in the country and raise prices to normal levels. The world demand for natural rubber is estimated at 35.75 lakh tonnes against a production of 35 lakh tonnes and synthetic rubber demand at 77.25 lakh tonnes against a supply of 78.50 lakh tonnes.

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III. Industrial Development

Salem Steel :

At the end of June, the foundation for the central electrical and mechanical repair workshop of the Salem steel plant was laid and by December the Rs. 40 lakh building will be ready to house the Rs. 1.60 crore machinery. The Dastur project report has been approved by SAIL, and the specifications for the main equipment for the plant's first phase—the cold rolling mill complex, has been prepared and ready for issue awaiting the funds to be issued this year. The first phase will cost Rs. 120 crores.

BHEL :

The Union government has decided that BHEL will acquire two electrical equipment manufacturing companies in Bangalore—Radio and Electricals Manufacturing Company (REMCO) and Mysore Porcelains (MPL) which have been running at a loss and whose restructuring by BHEL will turn them into normal profit earning units. Through REMCO, BHEL will be able to meet the country's need for energy meters, capacitors, cables, radio sets and television receivers—the two latter in response to the demand for them—but more important REMCO will be used to execute the power electronics project of BHEL, which will save the country Rs. 6 crores in foreign exchange. Through MPL, BHEL will be able to meet its requirements for porcelain insulators valued at Rs. 3 crores, fifty per cent of which have had to be imported. Even these imports are delayed, so that the overall production schedule is delayed. So far MPL has provided 25 per cent of BHEL's needs for insulators. Now MPL will be reorganised and its product mix changed to meet the full range of BHEL's needs. BHEL reports that it has won an international contract of Rs. 9 crores for the supply of eight 53 MW generators to New Zealand, once more confirming the international standards of this industrial unit.

ICF and Railway Workshops :

ICF designs and manufactures its own welding rectifier sets—to meet the need for 206 sets which have accumulated because other manufacturers have not been able to meet the specific demand on time. The welding sets are needed in the manufacture of coaches. Its coach building programme is growing apace, the latest being the designing and building of a 44 tonne 148 passenger double decker coach costing Rs. 8 lakhs. The design is being adapted to various needs including sleeping cars and the coach can travel at 120 KM per hour. The welding set design consist of a 3 phase transformer for stepping down AC supply voltage to the value required welding, and the whole operation to meet the back log will cost only about Rs. 20 lakhs. The Railway signal workshop at Podanur which manufactures the entire range of signal equipment for the Indian Railways is being expanded at a cost of Rs. 70 lakhs to produce Rs. 2.50 crores per annum of sophisticated electric and electronic equipment by 1977-78 and so save the country Rs. 80 lakhs a year in foreign exchange. The workshop is manufacturing vigilance control device and the shelf type signalling relays to ensure safety and axle counters to replace wooden sleepers which are in short supply. The workshop starting with producing Rs. 30 lakhs of signalling

equipment in 1960 is now functioning at an annual rate of Rs. 1.70 crores.

TIDCO :

In addition to its Alangulam wet process cement plant (600 tonne capacity per day), TIDCO is setting up at Ariyalur a Rs. 29 crore dry process cement plant with a capacity of 750 tonnes per day. The Ariyalur area has 40 million tonnes of limestone deposits and the first kiln will be commissioned in 1978 and the second in 1979. It has floated the Tamil Nadu Cement Corporation as a Rs. 10 crore subsidiary to manage both the cement plants—at Alangulam and Ariyalur. TIDCO is also putting up a Rs. 5 crore steel blooms plant as an adjunct to its Con Cast plant at Arkonam to supply steel blooms to BHEL's seamless tube plant. With a capacity of 40,000 blooms per year, the plant will go on stream at the end of 1978. All its 10 joint sector projects—fertilisers, chemicals, television sets, cigarettes, pharmaceuticals and trawlers, involving a total investment of Rs. 115 crores have gone into production in the last 9 months. It has 10 more projects with a total outlay of Rs 70 crores under implementation, to be completed in the next 3 years.

CECRI :

CECRI in Karaikudi announces that it has developed the technology for producing aniline by electrolytically reducing nitro benzene. A 45 tonne per annum plant calling for an investment of Rs. 5.44 lakhs can produce aniline sulphate at a cost of Rs. 16 per kg. for use in dye stuff, rubber and pharmaceutical industry. It has also developed the producing toluene which is in extensive use in dyes, pigments and pharmaceutical industries. A 30 tonne per annum capacity plant with an outlay of Rs. 7 lakhs can produce the material at a cost of Rs. 18 per kg.

SIPCOT :

The Hosur Industrial complex of SIPCOT (see Vol VI p 24), is now alive with six manufacturing units with a total investment of Rs. 20 crores. 2,000 workers are employed at the Rs. 8 crore automatic loom factory, and Rs. 4 crore cigarette factory. 12 units for the production of two wheelets, auto spare parts, ceramics, knitting needles, carbide tipped tools, crank shafts and pistons are being readied to start by the end of 1977. Outside the complex are a card cloth unit and steel casting unit recently commissioned. The complex faces 3 problems. One is housing, the acute shortage of which should be speedily relieved by the State Housing Board. A second is transportation from Hosur to the complex which can be met by the Chola Transport Corporation. The third is water which is for now met by the 8 deep bore wells, but which will soon become inadequate and to meet which work on the Rs. 3 crores Kelavarapalli Dam should be started now.

Pollution :

The State government has given tanneries and distilleries three to six months to put up plants to treat their effluents. The Tamil Nadu Public Health Act, the District Municipality Act and the Panchayat Act make it obligatory on the industries to treat their effluents before release. With the growing industrial pollution affecting drinking water and irrigation sources, the government's decision to enforce the Acts in stages, starting with the North Arcot tanneries and

the 7 distilleries in the State is wise. The plants of treatment can be put up jointly and cost little. Another major pollutant is Neyveli which with its thermal, fertiliser, briquetting and carbonisation plants and clay washing, produces solid pollutants, like dust, grit, flyash etc. and gaseous pollutants like silicon dioxide (SO_2) and carbon monoxide. The industrial dust, according to the study by the Regional Labour Institute, Adyar, varies from 1.4 MPCF to 20 and flyash 851. A sample survey of 200 workers exposed to the dust shows that they contract silicosis which affects their respiration and makes them liable to TB. Neyveli must mechanise enough to control the dust and to follow what the scientists call the threshold limit value (TLV). As for SO_2, because of the wide open space, there are no high levels of contamination in Neyveli but the concentration of NH3 and CO are health hazards and the company must ensure by periodical checks that there are no leaks in the plant. That is the minimum. It is time that the government set up an Environmental Protection Board to deal comprehensively with the growing problem of industrial pollution.

Ceramics :

Tamil Nadu Ceramics (TACEL) is setting up at the ceramics functional industrial estate at Vridhachalam a Rs. 27 lakh continuous type tunnel kiln for the common use of the 31 small units at the estate run by technocrats and engineers who produce a variety of pressed porcelain and industrial components, refractories and acid resisting materials. The new tunnel kiln will replace down drought kilns which are used for leaking and are heavy fuel consumers and enable more economical firing and also the production of more sophisticated industrial ceramic products. In addition to setting up four more units in this estate for technocrats, TACEL has plans for establishing a second functional estate at Omalur near Salem. This is related to the good quality clay available in the area. TACEL has also started exporting ceramics—crockery and art pottery worth Rs. 50,000 had been sent to West Asia, ceramic lamp shades on order from the US. Its total production in 1975-76 was Rs. 94.8 lakhs. Only its mechanised brick plant at Thirumazhisai is a losing concern but with the switch from fuel oil to coal, it will also become a paying proposition.

Caustic Soda, Fertiliser and Bran Products :

Kothari Madras has launched a Rs. 16 crore caustic soda—chlorine project in Madras. The project executed in collaboration with a West German firm, will have a capacity to produce 33,000 tonnes, of caustic soda, 20,000 tonnes of chlorine, 24,750 tonnes of hydro-chloric acid and 21,000 tonnes of ammonium chloride. Also SPIC reports that the Rs. 30 crore Tuticorin Alkali Chemicals will go into production in 1978, producing soda ash and ammonium chloride. The salt production in the area needs to achieve better quality and its industrial market needs can be met only if the industry used gypsum and bittern as an integral part of the salt factory. EID-Parry as part of its Rs. 20 crore development plan is diversifying its Ennore fertiliser factory to produce chemicals like methanol and sodium tripoly phosphates. A solvent extraction plant at a cost of Rs. 22 lakhs at Semponnar Koil has been set up to produce edible oil from rice bran. It has produced 350 tonnes of rice bran non-edible oil, of which 300 tonnes have been sold to soap factories at a cost of

Rs. 12.3 lakhs. It now proposes to decolour it, give it a popular smell and sell it as edible oil. It has also produced 1,600 tonnes of deoiled bran for cattle and poultry feed, and has sold 1,300 tonnes for Rs. 5.60 lakhs to the Tamil Nadu Poultry and Dairy Development Corporation.

Textile :

The 295 textile mills in the Southern States (of which 248 are purely spinning mills) and the HMS textile union have made representations to the Union government about the parlous state of the Southern Mills three of which at Coimbatore with a worker strength of 1,800 have closed down. The problems are the rise in the price of cotton (refer to National section) not accompanied by a rise in the price of yarn, the use of capital and reserves by the mills, the difficulty of securing bank credit, and the delay in the government constituted committee to examine their situation and recommend relief. The most immediate action is to control the price of cotton and provide the mills with imported cotton at normal prices. The workers union pointing to the unemployment faced by 15,000 non-permanent workers and badlies supports the mill owners and demands and asks the government to take over the 3 closed mills. There is need for early relief to the mills who produce 30 per cent of the country's yarn, and on whom the decentralised sector depends.

Handlooms :

The special plan for the Development of the handloom industry is now being executed, with a Union outlay of Rs. 10.05 crores, of which Rs. 5 crores are for intensive development and export projects, and the balance to the NCDC for expansion of spinning capacity, extension of co-operative coverage, setting up of processing facilities, special aid to apex societies for marketing and strengthening of weavers service centres. The States are to make their contribution to the plan which will receive a further Rs. 15 crores each year for the next 2 years plus Rs. 200 crores from the financial institutions. Following Tamil Nadu's example of tie-ups between co-operative mills and weavers societies, similar tie-ups in all States, helping weavers to produce quality goods, and under writing of their marketing, a raw materials bank to hold 3 months needs of yarn, dyes and chemicals are part of the plan. In this State 3 centres have been chosen—Karur, Chingleput and Thanjavur—as intensive development or export projects as part of similar programmes in 12 States. The transfer of controlled varieties of saris and dhotis and 200 million metres of controlled cloth from the mills to the handloom sector has been finalised. The residual problem to be resolved is the subsidy for handloom production whose unit cost is higher than that of mills. The proposal now under study by the government is either a subsidy at a flat rate of Re. one per metre or supply of yarn and other inputs at controlled prices. The latter is preferable

Leather :

Though the Madras skins and hides market in early June was sluggish with a declining price trend, leather goods exports in April and May was Rs. 50.23 crores compared to Rs. 28.75 crores in April and May 1975. There seems to be a general air of confidence that when the Export Promotion Council of Madras and Export Promotion Council for Finished Leather and Leather Manufactures are

merged to form the Export Promotion Council for Leather and Leather Manufactures, all efforts will be directed to increase production and attain the target. There is no case for locating the new council in Calcutta. Further with the governments' decision to extend cash aid and the air freight scheme from July 1 to March 30, 1977 and the establishment of many new units using semi-finished leather to manufacture finished goods, and the growing number of enquiries for products from buyers in Europe and US, the industry should develop well and speedily.

Private Sector Reports :

The annual report of Madras Aluminium for 1975 refers to a production loss of 5,000 tonnes due to the 75 per cent power cut and a stock of 3,000 tonnes. With the revised prices, the policy to export aluminium and its diversification, the company hopes for improved results in 1976. The annual report of South India viscose for 1975 refers to the decline in production of rayon yarn (16 per cent), stable fibre (63 per cent) and wood pulp (19 per cent) compared to 1974 due to power cut and strikes. The company is exporting its products and expanding its polysonic fibres and pulp plant and is jointly with the Malaysian firm setting up a wood pulp plant in Malaysia. It has a good raw materials position with adequate areas allotted in the Nilgiris and Kodaikanal.

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IV. Education, Science and Health

Educational Reform :

In order to help relieve the traffic congestion in the City, the government, after consultation, introduced a system of staggered hours of work for city schools and colleges for the current academic year. North Madras schools will start at 9 a.m, those in South Madras at 8-30 a.m., all colleges will start at 9 a.m., in place of the 33 colleges and 760 high schools starting at 10 a.m. This will relieve the rush for buses and suburban trains to the extent of 40,000 students who travel in these vehicles. The government has sanctioned the opening of 100 additional English medium sections in the State's high schools—mostly in government schools which do not have such a stream. A two day conference of officers of the State Department of Education recommended that the government adopt special legislation banning the opening of unrecognised private schools, establish policy for the affiliation of schools in the State to the Board of Higher Secondary Education and the Council of ISC examination, New Delhi, set up committees for framing syllabus for the plus two stage and the employment of the unemployed 6,600 BTs, 2,300 secondary grade teachers, 2,330 physical training instructors, 2,440 craft teachers and 1,000 higher grade teachers in the existing schools in various capacities. The complete ignoring of non-

formal education in the use of these teachers is significant and points to the attitude of the educational experts regarding the scope of education and learning. The City Corporation is increasing the number covered by its nutrition programme from 58,000 to 1.4 lakhs. The Andhra Pradesh government is planning to double its assistance to schools teaching Telugu in Madras. An interesting suggestion is that of the Mayor of Bombay asking industrialists and business men each to adopt a few corporation schools to assist poor students with books and their other needs. The Central Board of Secondary Education has decided to replace marks and the division system of examination by grades and seven point scale and using internal assessment for the third language, work experience and community service, health and physical education in schools. Any student wishing to improve his grade in one subject can reappear in the next examination. The system is to be introduced next year at the end of class X under the 10 + 2 pattern. NCERT's advisory group recommends that teaching in electronics should commence from the middle stage as a part of the integrated science programme. NCERT also is launching a correspondence cum contact programme to train teachers in new 10+2 curriculum. At the University level, the government announced in June its decision to set up the Madras University of Science and Technology which will go into effect in August or September. There is a trend for PUC admissions to decline. The figures are 56, 517 in 1973, 50,536 in 1974, 53,243 in 1975 and 50,891 in 1976. This trend is to be welcomed because it makes the size of the classes manageable, with a better teacher student ratio and relationship and may be due to the non-formal education avenues open to students as well as to the disillusion of students and parents with higher education. The government reports that 111 out of the 188 colleges in the State have been provided with book banks as help for poor students. The Directorate of Collegiate Education also announces that an educational commission will visit government colleges and review the work of the teachers and the colleges. The government also announced in June the building of 16 new hostels for scheduled castes and tribes students accommodating 900 persons in addltion to the existing 543 hostels for 36,000 harijan students. UGC is aiding colleges to set up student health centres, through the government supplies 3,000 university or college hostels with essential commodities to benefit 2.4 lakh students, has set up 15 panels to draw up general guidelines for the new courses in + 3 stage under 10 + 2 + 3 pattern, has selected 100 teachers from affiliated colleges for M.phil., Ph.D. research work, has issued guidelines for the M.Phil. degree, and is doing its best to check the unplanned proliferation of new universities and colleges. A meeting called by the Finance ministers of economists, educationists and scientists on the programme of integrated rural development has decided to prepare a blue-print and launch a youths cadre to implement it. The Andhra Pradesh government promulgated an ordinance in June, giving students representation in the Senate of the 3 universities, providing for the universities to confer autonomy on colleges, reducing the size and chosing the composition of the Senate, Syndicate and Academic Council, setting up a council of affiliated colleges and giving the government power to make rules about affiliated college teaching and non-teaching staff. Some aspects of this ordinance are retrograde.

Adult Education :

Madras TV will have the 175 metre tower commissioned on July 4, and with the increase in the capacity of its transmitter from 1 KW to 10 KW, its operational range will increase from the current 10 K. M. radius to a 90 K.M. radius. SITE is ending in July. The government claims that it helped school attendance and improved the science teaching capacity of the primary school teachers. When the ATS satellite is returned on July 31, 40 per cent of the SITE area will be covered by 6 terrestrial transmitters to be put up at Hyderabad, Jaipur, Muzzaffarpur, Cuttack, Raipur and Gulbarga. In 1980 India will be sending up her own satellite which will be used to cover first Central Indian States where electricity had not yet reached the villages, next the electrified States of Tamil Nadu, Haryana, Punjab, West Bengal and Kerala and in the third stage the hilly and difficult States like those in the North East. With the electronics Commission's finding that a balloon can be used instead of a satellite to provide TV covering throughout India at 1/5 the investment of terrestrial TV, the Tethered Balloon Communication System (TBCS) operating 3,300 metres from the ground certainly opens up new possibilities for TV. On the radio front, the Tirunelveli station is to run a farm broadcasting service, similar to those run by the Tiruchi and Coimbatore stations. This will help the farmers in Tirunelveli area. The National Museum reports a large increase in gifts on antiquities during 1975, increasing the effectiveness of the Museum as a medium of Adult Education. The State Archaeology Department is planning to run conferences in each of the districts where lectures on history, literature, and religion, supplemented by exhibitions will educate people in local pieces of art and traditional treasures at present neglected.

Technical Education :

In June the entrance test of IIT, Guindy for 6,000 candidates was completed and 209 selected. Tamil Nadu Agricultural University set up 3 panels for selection of candidates for its B.Sc. (Agriculture), B.Sc. (Horticulture), and BE (Agriculture) and the admission to 192 students and 119 M.Sc. students is to be completed in July. The Engineering and Medical college admissions are following a similar interview procedure. ICAR has established a horticulture training school in Chatthahalli, Coorg to provide education in preservation and modern methods of horticulture and agricultural management as a means of setting up rural and urban food preservation centres. The Cement Research Institute of India has formulated a technological talent development programme to support the cement, cement machinery, construction and allied industry through eight one week training courses starting in September on various aspects of cement technology and use.

Science :

A numerical control centre for machine tool and metal working industries is to be established at Bangalore within the HMT complex. The centre using punched tapes and computer control represents a sophisticated technology to aid the country's machine tool industry. On the nuclear front, two fuel reprocessing plants for recovering plutonium from power reactors at Bombay and Madras and an expansion of the Trombay plant are under execution. The three plants will increase India's capacity to produce plutonium, the fuel for the breeder reactors to be con-

structed in phase two of its programme. The National Environmental Engineering Research Institute at Nagpur has developed a process to convert blow room cotton dust into excellent compost. One tonne of cotton dust produces 0.6 to 0.7 tonne of compost. Other industrial wastes are also being subject to similar investigation. The Union ministry of Energy in co-operation with CSIR, BHEL and a West German firm is finalising plans for setting up a solar power station, including the fabrication of the collector in the country for wider distribution. The Central Scientific Organisation is developing a bank of spare parts of sophisticated scientific instruments and is also establishing a centre for specialised training in the repair and maintence of such instruments. In agricultural research, ICAR has established 10 chairs of Professors of Eminence and 25 chairs of National Fellows as a measure to strengthen basic research in agriculture in such fields of biological nitrogen fixation, improving the efficency of photo synthesis, groundnut research, phosphorous management and recycling, reproductive physiology in buffalo and fish nutrition in acqua. Also it is establishing a central staff college to train probationers in the newly constituted agricultural research service. The cell for the application of Science and Technology to Rural areas (ASTRA) has, as a result of its investigation concluded that the bullock cart with its big iron rimmed wheels is the best mode of transport for the rural roads of the country, while for the urban use the cart needs to be fitted with small pneumatic tyres. The National Institute of Nutrition on the basis of a cross sectorial study of the heights and weights of healthy children attending schools in different parts of the country concludes that there are no racial differences in the genetic potential for growth in children and the genetic potential for growth in Indian children is similar to that of children in Western Countries. It showed that growth retardation is due to environmental factors of which nutrition is one important element. A National Institute of Public Finance and policy has been established in New Delhi with the Finance Minister and Deputy Chairman, Planning Commission as patron and Chairman and Dr. R. J. Chellia as Director. Its research concentration will be on taxation trends at National, State and local levels, public expenditure of all levels, fiscal policies. public borrowing and debt management at all levels, inter-governmental fiscal relations, the economics and pricing policies of public enterprises, impact of taxes and fiscal policy on the economy, inter-relations between fiscal, monetary and other policies and matters relating to economic planning of sectors. The Institute is located in Yojana Bhavan, and proposes to build up an endowment fund of Rs. 50 lakhs.

Health :

In June, the major development in the field of health was related to population control policies including a proposal by the AICC constitution amendment committee that the Directive Principles of State Policy should include a principle of population control through family planning and other measures. A nation wide survey of Samachar published in early June shows that contrary to popular belief, minorities in India, including Muslims and Catholics, are increasingly adopting family planning, including sterilisation. Mini laparotomy, an operation for sterilising, is popular among Catholic women fisher folk in Kerala, in the Muslim majority Murshidabad district of West Bengal, in the Ranchi Seventh Day Adventist Hospital, YWCA and the Christian Medical Association and in

Andhra Pradesh, Tamil Nadu and Gujarat. There is similar support among these groups for raising the age of marriage. Haryana and Punjab with their rising living standards are aiming at zero population growth rate by 1984, while Kerala, Tamil Nadu and Karnataka feel that their current programmes will bring down the birth rate of 30 per thousand. The all India birth rate is 29.4 and the percentage of protected couples 17.8, that for Karnataka 28.9, Kerala 29.5, Tamil Nadu 28.9, Andhra Pradesh 34, Assam 34.2, Gujarat 37.6, MP 39.1. The target of 10.3 million acceptors has been fixed for this year (4.30 million sterilisation, 1.14 million IUD, 4.69 users of contraceptives). The government reports that women more that men have accepted sterilisation in 1975-76, AP 87,905 women and 21,067 men, Karnataka 69,521 women and 6,974 men, Gujarat 57,633 women and 55,455 men, MP 45,098 and 30,731, UP 47,598 and 18,601 and Kerala 40,781 and 23,800. In other States, men are larger—Maharashtra 1,76,974 men and 1,65,145 women, Tamil Nadu 1,61,884 men and 74,175 women and Assam 1,12,065 men and 12,147 women. UP government announced in June that family medical aid, house allotments, government loans and encashment of earned leave will be denied to government employers with more than 3 children. On the health side, the possibillty of developing a vaccine against sexually transmitted disease and to make it acceptable to society is under study. As part of the malaria eradication programme, the Union government plans to utilise school teachers to distribute chloroquin tablets to the children who are more susceptible to malaria. In this State a programme to motivate and train 350 para medical personnel at the Institute of Child Health, Egmore, with a view to educating parents on child health and care has been launched. Practical knowledge on child care is being imparted to the sanitary staff, ward assistant ayahs, social workers, office assistants, van drivers and watchmen. This should be duplicated in all hospitals in the State.

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V. Employment

The apprenticeship training programme has increased by 80 per cent in the last twelve months since it became one of the 20 points new economic programme launched by the Prime Minister, according to a Union government report in June. As on May 7, 1,28,908 were training as apprentices compared to 69,236 in June 1975. Included in 1.28 lakh persons are 27,238 scheduled castes and tribes appprentices. The programme's scope has been increased by 15 new industries and 57 specialised fields in engineering and technology for graduate engineers and technician apprentices. In this State as at June 19, 8,602 seats were identified and 8,851 taken in for training, including 1,698 places for graduate engineers and diploma holders and 1,072 so placed. The State target was 3,000 plus the 5,000 seats already achieved. With the help of

ILO, 31 ITIs in the State as part of a national programme of 340 ITIs, are being modernised, introducing 15 advanced job oriented courses covering ship building, maintenance of mining equipment, meteorology, industrial chemistry, production technology, plastic mould making, tool designs heat treatment, visual aids, marine diesel operation and domestic appliances. 100 craftsmen will profit from the programme for which the State will receive Rs. 22 lakhs in machinery and itself provide Rs. 12 lakh in equipment. With regard to educated unemployment, the live registers show that as at December 31, 1975 there were 4,784,254 job-seekers, 2.6 million of whom are matriculates, 4,00,000 graduates and post-graduates in arts, 2,50,000 graduate and post-graduates in Science, 75,974 teachers, 17,057 engineers and 7,587 doctors. Except for engineers, in all other areas the number of unemployed has been mounting steadily, under graduates from 26.7 lakhs in December 31, 1972 to 38.58 lakhs in December 31,1975, teachers from 42,036 to 75,974 and doctors from 5,225 to 7,597. A major feature of this unemployment situation is that 80 per cent of the matriculates and under-graduates interviewed want white collar jobs and have never thought of self-employment. Even where the employment opportunities are rising as for commerce graduates from 3,814 in 1972 to 4,758 in 1975, the graduation in commerce was such that live register job seekers jumped from 83,137 to 1,35,285 between 1972 and 1975.

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VI. Other Items

+2 Curriculum :

NCERT called a National Conference on the +2 stage curriculum, on the basis of a draft document that it had prepared. There was a general consensus :that : atleast one +2 Higher Secondary School should be established in every taluk or block headquarters in the country, in addition to the academic stream, there should be atleast 3 or 4 vocational streams related to the resource and emloyment opportunities of the locality which should be identified through a survey, the language and social studies classes should be common to both streams, and the study programmes should be semesterised, and in the long run internal assessments should replace external examinations. On this basis, it was agreed that a national pattern of a 10 year school whose curriculam was established at the 1975 conference (see Vol V p 542) should be followed by the 2 year higher secondary school.

N. S. S. :

The National Student Service, Madras University sector, has decided to use the community service provision in the University curriculam to concentrate on training its members to participate in non-formal education programme. To

this end, a fortnight's training programme was organised in June for some 30 NSS leaders from 4 city colleges in Stella Maris college. The programme consisted of training in social work, adult literacy, education of school drop-outs and vocational training of women.

U. S. Educators :

Two groups of 40 US educators each from North Carolina and Grambling visited the University and participated in a discussion with University staff on two subjects : the State of the Indian Economy where attention was concentrated on the successful fight against inflation and the programme for eradicating poverty including the production and distribution of essential commodities ; and, the status of women in India where discussion centred around the means of removing various forms of legal discrimination, particularly as regards property rights that women suffer and the problem of education and unemployment that they face.

Summer Schools :

Three summer schools for refreshment and orientation of college teachers were held in June in Madras—on English language teaching, on Economics M. A. course and on Quantum Physics. Each course not only helped the participants to update themselves in their field but made a number of suggestions for improving the teaching and learning programme and executing the new system of evaluation that the University has established. For English language teaching, a 4 point programme to remedy immediately the poor English of the college entrant and to prepare English language teachers for schools more adequately was suggested. The Economics course suggested some necessary decentralisation from the Academic Council to the Board of study. The Quantum Physics course asked that the course be repeated every year. There were a number of such courses organised in Tiruchy, Coimbatore and Salem etc.

International Institute of Tamil Studies :

The Board of Governors of the International Institute of Tamil Studies met in June and confirmed the appointment of Dr. Gros (France) as Hon. Director of programmes, and reviewer and approved the accounts of the Institute for 1975-1976 It decided to replace the Academic Council by a Scientific Council and invited the Vice-President and two members to propose amendments to the constitution to give effect to these and the previous decisions of the Board. It decided to call a meeting of the General Assembly at the end of July, as required by the constitution.

Board of Continuing Education :

The Executive Committee of the Board of Continuing Education met in June to review the programme for its Annual conference to be held from July 9-11. The conference is to centre around the new office of Non-formal Education which the State government has set up. The conference will work in four commissions to deal with non-formal education programmes for school drop-outs, for youth, women and adult illiterates.

International Conference on Education and Development :

The International Council for Adult Education organised an International Conference on Adult Education and

Development from June 21-25 in Dar-es-Salaam, Tanzania. The Conference was attended by 500 educators, development specialists and planners from 80 countries and UN agency representatives. Its main purpose was to make an assessment of the Second Development Decade at this mid point, and point the way forward for saving the decade. The Conference opened with a statement by its Honorary President, Julius Nyrere, President of the Republic, setting forth the objectives and strategies of development which the Conference made its own. The Conference adopted a programme of action covering agriculture, mass media, mass campaigns, peoples participation, eco-development, workers education and national development strategies at international, national and local levels. The opening and closing addresses of the President of the Council who was also President of the Conference, which is reproduced in this and the next issues, give some idea of the scope and accomplishment of this meeting.

University Events :

During June there was a meeting of the 140 college principals to review the working of the grant in aid code which resulted in 7 recommendations for its improvement—, a farewell meeting to bid au revoir to the Chancellor K. K. Shah, a meeting of the 500 members of the 50 Boards' studies to finalise the question banks in their field, meetings of the syndicate committees on examination reform and affiliated colleges and the meeting of the syndicate which decided upon reconstituting the Boards of studies and the introduction of a number of new courses in the Universitiy—in Defence studies, in medicine and pharmacology etc. On June 29 and 30, 3,210 post-graduate students for the M.A., M.Sc. and M.Com. courses were selected and admitted in the University departments and the 22 colleges which have post-graduate affiliations.

Special Seminar :

The Special Seminar under the the series, 'Development of Education in Tamil Nadu', met on Friday July 30th to discuss and approve the paper by the Director of the Institute—'Management of Education and the Political Will'. There was general agreement that management begins with a specification of objectives, which has not so far been done officially. The objectives are the broad ones of social and human liberation and the technical ones set forth in earlier seminar papers. Against these objects improved management of teacher use, buildings, equipment, finance and administration was reviewed and accepted. The political will is really lacking in education and particularly with regard to non-formal education and this gap must be filled.

July Seminar :

The Madras Development Seminar for July met on Thursday, July 29, to discuss Prof. C. M. Abraham's paper on population trends. The paper together with a summary of discussion at the Seminar chaired by Dr. Rajkumar, Additional Prof. of Economics, Presidency College appears as the first article.

Second Article :

A paper, 'Adult Education and Development', appears as the second article in this issue.

'POPULATION TRENDS'

By
Dr. C. M. ABRAHAM,
Tirupathi

"No longer can fate be used as an excuse or as a hope ; neither our hopes nor our fears are part of any thing inevitable; we are on our own. Would it not be elementary honesty for the intellectual to realize this new and radical fact of human history and so at least consider the decisions that he is in fact, making, rather than to deny by his work that any responsible decisions are open to him?"

C. Wright Mills: 1959. Page 185.

It was Thomas Robert Malthus who for the first time, envisaged the potential problem that would arise as a result of the race between the growth in population and the growth of sustenance. From his time on many prophets of Doom, have discussed the 'population problem'. In the middle of the present century, the expression 'population problem' was replaced by the usage 'crisis in population' by students of demography. For instance, in an inter-disciplinary Seminar on International Relations, devoted specifically to population in international Affairs, held in the Spring Semester of 1953 at the University of Nebraska, the experts have used the term "crisis" while referring to the phenomenal burgeoning of population since the beginning of the twentieth century. A book which appeared in 1956 bears the title 'The Crisis in World Population. [1] Then, taking into account the mammoth and unprecedented growth of population since 1950's, students of population studies have started calling such a sudden acceleration as 'population explosion.' U.N. also in its reports mention the current population situation as an explosion. Kenneth Boulding in his book, prefers to use the term 'Population Trap' to describe the present demographic situation. [2]

'Population explosion', next to nuclear explosion, is causing great concern not only to all the thinking and foresighted

1. J. C. Hertzler. The Crisis in World Population: A Sociological Examination with Special Reference to the Underdeveloped Areas: University of Nebraska Press; Lincoln; 1956.

2. Kenneth Boulding. World Perspectives: The meaning of the Twentieth Century: The Great Transition: George Allen & Unwin Ltd; London 1965.

people throughout the world, but it also has been the subject of scholarly studies, commission reports, newspaper articles and other mass media coverages. In recent years, interest in the determinants and consequences of population dynamics has been fuelled by widespread concern operating among the people of the developing countries of the world, especially those in Asia, Africa and parts of Latin America, who are aspiring to become a part of the one world. The consequence of 'Urban population explosion' in developed countries, is also causing great concern to many. In a recent survey made by the United Nations Secretariat,[3] it was stated that the extent to which concern over a given population problem is widespread may be measured by the number of governments expressing concern over the population problem. Of the 148 States Members of the United Nations or Specialized Agencies, Governments of 21 countries perceive their rates of national population growth to be "deficient", 42 countries perceive (Table 1 given in the appendix) them to be "excessive" and 85 countries perceive them to be "acceptable". However, although less than 30 per cent of all countries perceive their population growth rates to be "excessive", these have a national population size that is much higher than average (Table 2), and thus contain 57 percent of world population and 81 percent of the population of the less developed countries. (Table 1). It is clear from a comparison of Table 1 and 3 that concern over "excessive" population growth in metropolitan regions, which was expressed by 67 countries is much more widespread than concern over "excessive" national population growth, which was expressed by only 42 countries. This is true for both more developed and less developed countries, though certainly to a lesser extent in the latter.

In this paper entitled 'Population Trends, attention is paid to both the determinants and consequences of population growth. This is followed by an examination of the population trends in the world and also the trends of population growth in India and Tamil Nadu.

The Determinants of Population Growth :

Birth, death and migration (Immigration and Emigation)—these three vital events constitute the necessary ingredients for the analysis of population growth. These three are referred to as the demographic variables. Any change in the population of a territory is accounted on the basis of changes in these variables. When deaths are subtracted from births, we get 'natural increase' and when emigrants are subtracted from immigrants we get 'net-migration' (either number may be negative). Birth and in-migration are classed together as the incremental (or additive) and death and out-migration as the decremental (or subtractive) components of growth.[4] If P_1 is the population of a given area at an earlier time and P_2 the population at a later time then

3. Population Policies and Programmes, prepaired at the United Nations World Population Conference, Bucharest, Romania, 19—30 August 1974, by the United Nations Secretariat.

4. Jay. A. Weinstein. Demographic Transition and Social Change: General Learning Press, New Jersey, 1976.

$$P_2 = P_1 + (\text{Births} - \text{Deaths}) + (\text{In-migration} - \text{Out-migration})$$

or

$$P_2 = P_1 + \text{Natural Increase} + \text{Net-Migration}.$$

This equation is known as the Demographic equation.[5]

In order to compare the population growth in different areas or in different times, the demographer finds it necessary to substitute ratios for absolute numbers. Thus he relates births to the population in various ways to get birth rates and he does the same with deaths and with migrants. In this way, he can state his variables in terms of processes (fertility, mortality and migration) and he can talk about the rate of growth or decline in the population. If "r" is the rate of growth the following formula holds:—

$$r = (F - M) + (I - E)$$

where "F" is fertility, "M" is mortality, "I" is immigration and "E" is emigration. In other words the rate of population growth is determined by the natural increase plus the net-migration. If the area in question includes the whole world, migration drops out of the formula; for in that case only fertility and mortality need be considered. It is clear that any factor influencing the number of people must operate through one or more of the variables mentioned. In no other way can a population be changed. For this reason Kingsley Davis suggests that these demographic variables must be called as "the primary demographic processes" and they represent the core of population analysis.[6]

The rates at which birth, death and migration occur wholly determine the magnitude and direction of growth. The rate of population growth is a function only of the difference between increments and decrements and is independent of their absolute levels.[7] For example, in two populations, one of which experiences an increment of 40 and a decrement of 38 persons per 1,000 population per year, it has an annual growth rate of 2 per 1,000 or 0.2 percent; and the other an increment of 30 and a decrement of 20 persons per 1,000 population per year, it has an annual growth rate of 10 per 1,000 or 1.0 per cent. By placing different emphasis on the control of fertility, control of mortality and the control of migration in various parts of the world, the rate of population growth has varied greatly in time and place.

Population growth is controlled in their rate and especially in their ultimate limit by a host of social, cultural, economic religious and political factors, all of which can be taken as independent variables that together determine the population of a region. On the other hand the population growth acts also as an independent variable, as a cause of change in the economy or in society—for instance as a stimulus to business activity or as an impediment to development.[8] Kingsley Davis emphasises the fact that fertility, mortality and migration are all to a great extent socially determined and socially determining. They are the inner or formal variables in the demographic system whereas, the outer or ultimate variables are sociological and biological. Whenever the demographer pushes his inquiry to the point of asking why the demogra-

5. Kingsley Davis, Human Society, The MacMillan Company, New York, 1966.
6. Kingsley Davis Ibid.
7. Jay A. Weinstein. Op. Cit.
8. Jay A. Weinstein. Op. Cit.

phic processes behave as they do, he enters the social field.[9] On an inter and intrasocietal level, migration is a significant factor in world population growth. There exist *structural effects* of a population or sub-population on groups and individuals within it.* When people change residence, they are subject to new environmental conditions, including structural effects. By learning, imitation and varying degrees of resisting novelty, migrants tend to adapt and in general, become like their new hosts. There are undoubtedly structural effects on fertility and mortality control practices and so when a significant proportion of people change residence, in due time (perhaps in a number of generations) their birth and death rates are in some way affected.[10] Thus, while migration is not a direct component of world population growth, it has had an impact. Indeed a high proportion of Europe's population during its period of rapid growth was absorbed by its overseas settlements, especially those in the Western Hemisphere.[11] The theoretical role of urban growth in demographic transition treats intrasocietal migration as central, for by this thesis, migration into cities exposes increasing proportions of a formerly rural population to structural effects that eventuate in a decline in fertility levels.[12]

Figures on rate of growth of population may be more impressive if related to the time needed to double the population :-

Yearly rate of growth on percentage.	Number of years required to double the population
0.25	278
0.50	139
1.00	70
1.50	46
2.00	35
2.50	28
3.00	23
3.50	20
4.00	17

Source : Orientation Book of the Institute on Medical Education and Family Planning, Washington, D. C. 1969.

* Durkheim's classic study of Suicide represents the first fullscale statistical application of the concept of structural effects. He showed that the chatacteristics of an aggregate—such as the religious composition of a national society—do have an effect on individual rates of behaviour independent of individual characteristics.

9. Kingsley Davis. Op. Cit.
10. Jay A. Weinstein. Op. Cit.
11. Hernfndez, 1974 quoted by Jay A. Weinstein. Op. Cit.
12. Jay A. Weinstein Op. Cit.

The patterns of vital events may change due to various factors in course of time and hence the rate of growth of a population also changes. The movement of a population from a condition of high birth rates and high death rates, to one of high birth rates and low death rates and finally to one of low birth rates and low death rates has been referred to as the *' demographic transition."** The demograghic transition theory was conceived as taking place in three broad stages.—

1. Pre-industrial societies with high fertility and mortality, and a consequent low natural increase;
2. Societies in transition, with continuing high fertility, but declining mortality and a consequent rapid natural increase. The reason for the present population explosion is due to the increasing gap between the birth rate and the death rate—the birth rate remaining as high as in the past, but the death rate has come down considerably due to improvements in sanitation and the use of wonder drugs.
3. Modern societies with both fertility and mortality stabilized at a low level and a consequent more or less static population.

Although some of its details have proved to be false and some of its implications misleading, in its simplest form the theory of demographic transition is nevertheless one of the best documented generalizations in the social sciences. Duly amended and supplemented it is one useful framework within which to organize an analysis of population.[13]

To date, the transition from slow growth to rapid growth to slower growth has followed the sequence in all industrialized countries. The time that elapsed in getting the birth rate down to levels nearer the death rate was well over 100 years in the West; Japan, the only non-western nation to thus far have fully industrialized, also made the demographic transition but at a different time and in a much shorter time period. The whole process was accelerated, particularly the drop in birth rate, declining from 34 in 1947 to 17 in 1965, fortunately accomplishing in less than 18 years what required 130 years in, for example, Sweden. Thus with death rates approaching bottom levels, the immediate future of population growth has been transformed to the behaviour of

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* Though it derives in part from earlier theories, of course, the hypothesis of the demographic transition was first specifically formulated in 1929 (Thompson 1929). Its subsequent refinement to what can be termed its classic form took place over the following decade when it was thought that the generally low fertility of Western Countries would decline further still. Based on this perspective, the population of Western societies was seen as "stationary" (Thompson 1948) or more typically as in " incipient decline " (Notestein. 1945 and 1950), only occasionally as " rationally balanced" (Reed. 1949). After the implication of the postwar " baby boom " were absorbed, the theory was criticised for this false prognosis concerning Western Population trends (e.g. Hatt et all 1955; Van Nort & Karton 1955).

13. William Petersen. Population; Second Edition; The MacMillan Company; London. 1969.

the birth rate, or in Mathusian terms. to preventive checks. By preventive checks, Malthus meant birth control, actually sexual abstinence, since he was opposed to contraception. [14]

As in the West, the Third World population explosion, has been the result of declining death rates and continuing high birth rates. However, the timing and conditions of population changes in the Third World are different, drastically different. Underdeveloped regions received modern sanitary and medical techniques veritably in one fell swoop, frequently witnessing drops in death rates in 10 to 15 years that took almost the full course of industrialization in European countries.[15] Meanwhile birth rates in the Third World have mostly continued at high traditional levels. Indeed with improvements in sanitation and health, birth rates have substantially risen in Third World countries such as Thailand, Pakistan, Ghana, Iraq, Peru, Venezuela and many others. The Mexican birth rate, for example, went up to 46 in 1964 from 32 in 1911, and in Ghana up to 56 in 1960-64 from 33 in 1945-49.[16] Elsewhere, as in Egypt and India, birth rates have been in the vicinity of 40 at least since the turn of the 20th century, while death rates have fallen in recent decades to about 15. Hence the gap between birth rate and death rate in most underdeveloped areas is larger than it ever was in the West and developed with much greater rapidity, both factors thus promoting greater population explosions.

Population Growth and Age Structure

While the absolute levels of vital events do not directly affect natural increase, they do play a role in determining the age structure of a population. Because a population's age structure is a determinant of fertility and mortality potential, the indirect influence on the magnitude of birth and secondarily, death rates is significant. In general, the higher the fertility level of a population, the greater is the proportion who are at or who have yet to achieve puberty or marriage. Thus, a highly fertile population is also young and has a high fertility potential. Conversely, a low fertility population is older and is likely to maintain its low fertility level.

High fertility if accompanied by high mortality results in slow growth of population. But if mortality rates should decline in such a population, its average age also declines. This apparent paradox can be understood if we consider these two characteristics of age specific mortality: First, in observed populations death rates tend to be highest among the very young and the very old. In actual cases of mortality decline, the most dramatic changes occur infant mortality. Second, age structures tend to approximate the familiar population pyramid in which the number of persons at a given age is inversely related to age: they are more very young members of a population than very

14. C. H. Anderson. Toward A New Sociology: A Critical Review: The Dorsey Press, Illinois, 1971.

15. James M. Beshers, Population Process in Social Systams; The Free Press, New York 1967.

16. United Nations Demographic Year Book; The United Nations, New York, 1964.

old. Thus, a lowering of death rates generally means that a greater number of young people survive and increase the proportions at levels below the mean age, whereas the relatively few older members can contribute little to the average. In addition increased survival rates for infants portend greater numbers in post-puberty cohorts, thus increasing fertility levels and in the manner of food stock, lowering the age of population. The prolongation of life in older cohorts has little or no effect on fertility levels.[17]

A population that is experiencing an explosion, then is likely to be young and getting younger. Consequently, a population that is experiencing incipient decline is getting older, since fertility rates decline relative to mortality rates, fewer young people are added and diminishing proportions reach puberty.

Thus in the slowly growing populations in the first phase of the demographic transition would tend to be young. In the rapidly growing populations in the second phase would be even younger. The slowly growing populations in the last phase would tend to be older.

In the non-developed countries less than 30 percent of the population is under 15 years of age and more than 10 percent is over 65 years of age. In Third World countries 40 to 50 percent of the population is under 15 and less than 5 percent is over 65.[18]

Consequence of Population Explosion:

The consequence of population explosion can rightly be summarised by quoting the United Nations Survey entitled 'The Future Growth of World Population'. 1959 "The growth of the population in the next twenty-five years has an importance for outweighing any other economic and social consideration, for it represents the very core of our existence."[19] The unprecedented population growth tends to retard seriously the growth in per capita income, and nullifies all the developmental activities. The progress of a country is affected by the size, distribution and quality of its population. In a democracy every citizen must be provided with not only adequate food, but also shelter, clothing, education, employment, medical care and other amenities of life. It is not difficult to see how the problem of providing these amenities increases in complexity as the size of the population increases. A population with a large per cent of dependent children and old people has to spend a large proportion of earnings in supporting them. The burden of dependency affects the saving capacity of a nation and the dependency rate is often used as an index of development itself. The smaller the dependency rate, the greater the development achieved and possible to be acvieved. Similarly in tradition-oriented countries women are not usually engaged in skilled labour and this results in the wastage of talents and adds to dependency. Distributional aspects such as rural—urban, social classes etc. will also affect the development and progress of a country. The quality of population is a decisive factor. A physically fit and satisfied population is capable of contributing more to productivity, peace and happiness than a population which is undernourised,

17. Jay A. Weinstein—Op. Cit.
18. Ibid.
19. United Nations: The Future Growth. World Popalation, New York, 1959.

underclothed, underhoused and dissatisfied.

The Club of Rome commented on this grave predicament of mankind in their thesis "The Limits to growth" of 1972.[20] "The Limits to growth" thesis summarises the main findings of a global study, tracing, measuring and projecting the interaction of relevant global factors such as population growth, agricultural production, industrialization, environmental, pollution and consumption of non-renewable natural resources. It is feared that the exponential growth rates of these five variables will within 100 years drive the world system towards the limits of the earth. The forecast of the "Limits of growth" thesis about the future of man on earth is more gloomy and pessimistic than the Malthusian prediction.

Trends in World Population Growth.

Only fragmentary data are available to indicate the earlier rate of growth of population of the globe. Even today, the number of inhabitants in the world is known only approximately. While small groups had occasions to take account of their numbers for purposes of war and taxation in earlier period, census procedures as we know them now, are of recent origin. Sweden had started regular census operations in 1749; United States in 1790. Around 1860 only about one-fifth of the estimated population of the world was covered by a census enumeration once in a ten year period. The commonly accepted estimates of the population of the world prior to 1800 are only informed guesses. Some indication of the approximate character of information about early population trends is given by J. Durand: "The estimate of the world total as of 8000 B. C. could be raised as high as ten million or reduced as low as one or two million without much strain on credibility." (1973. p. 95).

Neverthless, certain features of early growth trends are generally agreed upon and are supported, even given the range of estimates that can be found. It is likely for example, that over short-run intervals several alternating upward and downward transitions occurred during the epochs of prehistory. A world population size estimated by E. S. Deevey (1960) at a mere 25,000 in 1 million B. C. had reached 5 million by 8000 B.C. In the interval between 23,000 and 8000 B.C. there was an average annual growth rate (by the exponential model) of 0.003 per cent. This tiny natural increase is likely to have been the result of very high levels of fertility and mortality, possibly in the 45—50/1,000 range.

Between 8000 and 4000 B.C. a major shift in both in the population growth and the social characteristics of mankind took place. During this interval, the world's population increased from 5 to 86 million or an average annual growth rate (by the exponential model) of 0.045 per cent. While this rate seems to be tiny by comparison to modern growth trends, it represents the first clearly documented worldwide demographic transition. Archeologists and historians generally agree that this upward transition was associated with massive migrations and improvements in nutritional and other health practices that were brought about by the agricultural revolution of the Bronze to Iron Ages. Mortality levels decreased as a result of freeing them from the hazards of food-gathering, fishing and hunting. The invention of the plough and the consequent development of agriculture has stimulated the growth of towns

20. SID Survey of International Developments. Vol. IX. No. 3—March 1972.

on river valleys and the earliest civilization developed there. In the 4,000 year old interval to the beginning of the Christian Era, i.e. A. D. the world's population increased more slowly than the preceding centuries. Considering the lowest and the highest estimates at 1 A. D. 133 million (Deevey 1960) and 300 million (Durand 1973), the average annual (exponential) growth rate for this interval was between 8.018 per cent and 0.028 per cent. Willcox's (1953) estimates show negative growth in the world's population between A. D. 14 and A. D. 350. This decline was caused in part by the negative growth that occurred in Europe with the contraction of Rome's sphere of influence. Table 4 (in the appendix) lists average annual growth rates for the period A. D. 14 to 1650. It is generally agreed that natural checks took a heavy toll until the establishment of the European empires, as throughout the Middle Ages world growth rate of population was slow and uneven. In the interval between A. D. 14 and 1600 the world's population did not quite double, as the exponential average rate for this period was 0.040 percent per year. Between 1600 and 1650, the world experienced negative growth due to decreases in Asia, Latin America and possibly Africa and an increase was noted for the period in Europe. As Europe began to colonize other regions, the demographic history of the world bifurcated. The positive growth in Europe and later in North America and the interlude of negative growth elsewhere marked the beginning of a dramatic pattern of growth differentials that exists, in a new form, to this day, (Weinstein. 1976. pp. 38-42).

Trends After 1650.

Between 1 A. D. and 1650, the population of the world has doubled—from an estimated size of 44.5 million in A. D. 14 the population had grown to 95 million by 1600. Europe's average annual rate of (linear) growth between 1600 and 1650 was about 0.16 percent, but in the ensuing 100 years this rate rose to nearly 0.4 percent. Between 1750, and 1800, this accelerated growth continued at an average annual rate of 0.6 percent, which was 10 times the average for the world during the preceding 1500 years. In the 200 years between 1600 and 1800, the population of Europe had doubled again. Thus while it required over 1500 years for one doubling, it required only 200 years for the second doubling. This increase in population growth rates by the mid-eighteenth century denotes Europe's entry into the second phase of its demographic transition. According to Carr-Saunders (1953) and Matras (1973) the death rates began to decline in England and Sweden from the 35-40/1,000 level at the end of the 16th century to the 30—35/1,000 level at the end of the 17th C. Between 1700 and 1750 Sweden's death rates fell to about 25/1,000 and by 1850 they had reached the 20/100 range. Meanwhile birth rates remained in the 35-40/1,000 range through the 17th, 18th and early part of the 19th centuries. Between 1800 and 1850, the population size of Europe grew to 274 million at an average annual rate of 0.84 percent. Between 1850 and 1900, growth rates averaged one percent per year, the greatest growth ever in Europe. In 1900 the population size was 423 million. Thus, another (i.e. the third) doubling had occurred in the population of Europe during 100 years. From the peak growth after 1850, the countries of Europe began to experience downward transition. Sweeping the continent from north-west to south-east, for the seventy years between 1850 and 1920, growth rates began to decline from levels above

1.0 percent per year to levels closer to 0.7 percent. Between 1900 and 1920, Europe grew at an average annual rate of 0.75 percent even though a devastating war intervened. Between 1920 and 1960 the average annual rate was just over 0.75 percent despite another war. By 1970 the population size of Europe has reached 705 million and the growth rate in the decade averaged 0.66 per year. (Weinstein 1976. 00. 42—44).

The period 1650 to 1850 approximately divided the European population history into the three distinct phases of its transition. At about 1850 Europe had entered the third phase of demographic transition with an unprecedented downward trend in population. Birth rates and death rates began to decline simultaneously. Countries in Europe and North America began to experience fertility declines. France began the decline as early as 1760, Sweden in 1820 England in 1875, Germany in 1880 and Hungary is 1890 (Matras 1973. p. 299). The most pronounced form of decline in fertility occurred in European countries very recently. United States began to show trends in decline in fertility rate by the middle of the 19th C. The Federal Republic of Germany probably has achieved zero population growth and the German Democratic Republic claims to have attained negative growth. Finland, Iceland, Sweden, the United Kingdom, Belgium, Austria have average annual rates of population growth of 0.3 percent or even less.

Early Growth Trends in the Third World:

Slow and fluctuating growth characterize the population histories of the under-developed countries of Asia, Africa and Latin America.

Since well before A.D. 1, Asia has been the most populous continent. Until very recent times, it has also been the slowest growing region. With a population estimated to be 184 million in A.D. 14, it had doubled once by the year 1600. As in the rest of the world and particularly in Europe, during that period, there were apparent population declines and an overall average annual rate of growth, in the 0.01 to 0.06 range. By 1750 the population of Asia was 437 million, roughly 65 percent of the world total of 694 million. The population of Africa had grown from 23 million in A. D. 14 to 100 million in 1750. Overall, its growth was somewhat faster than that of Asia and roughly on a par with the European pattern to that point. Latin America's population fluctuated dramatically in the period between A. D. 14 and 1750. With an estimated 3 million inhabitants at the earlier date, the population reached 40 million by 1500. With the European conquest, the numbers in Latin America fell to barely 7 million in 1650. Latin America's population had been 7 million in A. D. 600. Thus the cumulative growth from natural increase that took about 1,000 years was eliminated in 150 years through the drastic social changes accompanying colonization, not the least of them eventuating in war, pestilence and famine. The changes that began to take place in Europe in the 16th and 17th centuries—industrial revolution, colonial expansion, and urban growth—generally were not experienced outside of Europe. The sources of mortality decline associated with these changes, such as sanitation and nutritional improvements, did not affect the population of Asia, Africa and Latin

America. Thus in the Third World mortality rates remained high and growth rates low until quite recently.

Recent Growth Trends in the Third World

As growth rates for the developed and underdeveloped countries were about equal in the pre-1650 period, they were again equal after the first 50 years of the 20th C. During the later period, this equality was achieved as death rates began to decline outside of Europe and North America and birth rates were declining in Europe. Between 1900 and 1950, Asia, Africa and Latin America averaged nearly one per cent (linear) growth per year. Beginning around the turn of the 20th C. after a 200 year lag, enough of the world outside of the developed countries was exposed to modern health and nutrition practices to produce a noticeable and universal drop in mortality levels. While the developed countries reached their maximum average annual rates of 1.0 per cent about 200 years after the beginning of mortality decline, the third world countries, partly because of their high growth potential and partly because of rapid and wholesale innovations in mortality control (when they finally occurred) reached the same one per cent growth levels in 50 years. After the World War II, medical and health innovations spread even more rapidly. As a consequence, growth rates rose far above one per cent in the under-developed countries.

Today, birth rates in Africa average 46/1,000 per year, ranging from 37/1,000 in North African countries such as the UAR to as high as 52/1,000 in such West African countries as Niger. Rates as high as 50/1,000 also hold for West Asian countries, for emample, Saudi Arabia and Pakistan. Overall Asia has an average crude birth rate of 37/1,000 and this includes Japan, the exceptional developed country in Asia with a rate of 19/1,000. Latin America has an average crude birth rate of 38/1,000, with rates as high as 49/1,000 per year in Central America and Caribbean countries, to as low as 22/1,000 in Argentina. (Population Reference Bureau 1973).

Trends in Population Growth in the world and its major Regions—1950—1970.

A profound alteration in the world's balance of births and deaths occurred in the years around 1950, as a result of which mankind's numbers now grow with incomparably greater speed than ever in history. A perusal of Table 5 (in the appendix) reveals the fact that in the more developed regions, population growth accelerated notably in the course of the 19th C. fluctuated in the present century in response to wars and economic crises and most recently has indicated a tendency to slow down. In the less developed regions disruptive events of the past century kept population growth at a

low level, but that growth was augmented to a par with the more developed regions in the 1920's and then, since about 1950, it shot up to unprecedentedly high levels. (U. N. World Population Conference Background Paper, Bucharest, Roumania; 19—30, August 1974).

The impact of population growth varies from country to country, but the fact remains that the demographic gap between more developed and less developed regions is now extremely wide. Two figures suffice to bear this out. By the year 1970, the annual population growth in the more developed regions had shrunk to about 0.9 per cent and that of the less developed regions had expanded to 2.4. At the rate of 0.9 per cent a population can double once every 77 years ; at 2.4 per cent it can double every 29 years.

World Population Growth, absolute and relative magnitudes.

As shown in Table 6, the world's population growth continued to accelerate between 1950 and 1970, from a rate of 1.8 per cent annually in the 1950's to 1.9 per cent in the 1960's. This happened despite the slow-down in the growth of more developed regions (from 1.3 to 1.1 per cent annually), owing to the acceleration of population growth in the much more populous less developed regions (from 2.0 to 2.3 per cent). Population growth was speeded up in all regions of South Asia and Africa, in two regions of Latin America and in two regions of Oceania. In East Asia, if the estimates are correct, and also in Europe as a whole, growth seems to have remained near a constant level. Marked slow-downs of population growth occurred in the Soviet Union, Northern America, Temperate South America and Australia and New Zealand, those regions where there had been a historic expansion of settlements of a European origion. (U.N. World Population Conference Background paper 1974).

Taking the 20 year period as a whole (1950-1970), the population of the world rose by 44 per cent, the increase having been by 26 per cent in the combination of more developed regions and by 54 per cent in the less developod regions. The population of major areas increased as follows :—

Europe	by	17%
Soviet Union	—	35%
North America	—	36%
East Asia	—	38%
Oceania	—	54%
South Asia	—	59%
Africa	—	60%
Latin America	—	73%

Among individual regions there was even greater diversity. Northern Europe, the region of slowest growth, gained 11 per cent. At the other extreme, the population of middle America grew by 87% in the same period of time. Countries in which the population grew more than two fold in the 20 years include Costa Rica, Dominican Republic, Hong Kong, Israel, Kuwait, Singapore, and Venezuela. Some of these countries however, received many immigrants.

As a consequence of differing rates of growth, the distribution of population among the world's regions was modified in several respects. This can be seen from

the Table 7. For instance, 28% of the world's population was in South Asia in 1950, while 31 per cent was in 1970. The share of Latin America rose from 6.5% to 7.8%. On the other hand Europe's share decreased from 15.6 to 12.7%.

Of the greatest importance perhaps is the distribution of the world's population between more developed and less developed regions. The share of the more developed regions in mankind's numbers decreased from 34.2% in 1950 to 29.9% in 1970.

Table 7 also reveals the absolute and relative population gains of the 1950-1970 period. The world's population was augmented by an estimated 1,135 millions, of which 227 millions in the more developed regions and 888 millions—almost 80% of the world's gain—in the less developed regions. The largest increase 413 million or 36% of the entire world's population growth occurred in South Asia.

The world's largest population concentrations occur in the sub-continent of East Asia, Europe, and India. Middle South Asia, East Asia and Europe taken together have a land area of 23,464,000 km^2 or 17.3 per cent of the world's land are area (excluding the Antartic continent). In 1970, they had a combined population of 2,134 million or 58.9 per cent of the world's population. Within the contours of the total land area, their average population density was 90.9 persons per km.^{2} The remainder of the world, comprising 41.1 per cent of its population within 82.7 per cent of its land area, was inhabited at an average density of 13.2 persons to the km^2 or one seventh that of the first group.

Table 7(A) gives the expectation of life at birth, 1935-1939 and 1950-1970 on major areas and regions of the world. The rapidity with which medical and sanitary innovations are adopted by the less developed countries are reflected steady increase in the life expectancy of people in underdeveloped countries. Expectation of life at birth had gone up from about 30 in 1935-1939 to 51 in 1965-1970.

Forecasting Population Growth of the World

Usually two main types of projections of population have been made. First and most important are "short term" projections that extend 20 or 30 years to around the turn of the century—these are often associatee with future planning. Second are projections that ask what the population size will be if a net reproduction rate (NRR) of unity is attained and subsequently sustained for extended time periods in the future. The majority of projections of this type have been done by Tomas Frejka.

The latest authoritative projections of the population of the world are those made by Tomas Frejka. The table is reproduced below :

TOTAL POPULATION (IN MILLIONS) AND INDICES OF POPULATION SIZE (1970=100) 1970–2150-PROJECTIONS .1-5

World Total

Year	Period in which Net Reproduction Rate of One is Reached.				
	1970-1975	1980-1985	2000-2005	2020-2025	2040-2045
	Proj. 1	Proj. 2	Proj. 3	Proj. 4	Proj. 5
1970	3645.0	3645.0	3645.0	3645.0	3645.0
	100	700	100	100	100
1975	3771.9	3953.2	4007.0	4022.2	4029.6
	103	108	109	110	110
1980	3932.7	4212.8	4387.1	4436.3	4460.4
	107	115	120	121	122
1985	4126.7	4403.5	4782.5	4889.6	4941.9
	113	120	131	134	135
1990	4344.9	4628.0	5182.3	5377.5	5473.0
	119	126	142	147	150
1995	4560.2	4873.1	5570.5	5893.3	6051.9
	125	133	152	161	166
2000	4746.1	5115.6	5922.5	6422.1	6669.8
	130	140	162	176	182
2010	5031.4	5522.6	6523.6	7473.2	8003.5
	138	151	178	205	219
2020	5270.1	5831.8	7116.0	8426.0	9418.1
	144	159	195	231	258
2030	5441.6	6077.8	7599.2	9216.0	10813.3
	149	166	208	252	296
2040	5505.8	6215.7	7942.1	9930.5	12038.7
	151	170	217	272	330
2050	5591.6	6286.2	8172.2	10473.2	13024.7
	153	172	224	287	357
2075	5674.9	6399.8	8357.3	11084.7	14660.6
	155	175	229	304	402
2100	5690.7	6416.8	8388.6	11168.6	15102.4
	156	176	230	306	414
2125	5689.0	6413.3	8388.5	11172.0	15154.4
	156	175	230	306	415
2150	5684.0	6407.5	8382.0	11164.9	15148.0
	155	175	229	306	415

Source. Referance Tables to the Future of population Growth : Alternative Paths to Equilibrium. By Tomas Frejka. The Population Council, Bridgeport. Connecticut. 1973. Page 18.

According to Projection 5, the world population will be doubled by about 2010 A.D. and by 2150 the population of the world will again be doubled.

While talking about projections and forecasting, I would like to mention that it is not novel for a sociologist to suggest that it is at best, fruitless to speculate about such complex phenomena as population trends. In 1895, Emile Durkheim wrote "Science is a study bearing on a detailed portion of reality which it aims at knowing and if possible, understanding. To describe and explain what is and what has been—this is its only job, Speculation about the future is not its affair, although it may seek as its final objective to render this possible." (Durkheim 1662. p. 39).

Trends in Population Growth in India

It took centuries for the Indian population to reach the 250 million mark, but it took only 45 years to double the population (1921—251.2 million : 1966—500 million). With 2.4 per cent of the world's land area. India has about 15% of the world's people. One in seven in the world is an Indian. It is estimated that our population as on 1st January 1976 has crossed the 600 million mark, and is now rising at the rate of well over one million per month. Since Independence 250 million have been added, equivalent to the entire population of the Soviet Union with six times the land area of India. The increase every year is now equal to the entire population of Australia which is 2½ times the size of our country (Karan Singh. 1976).

Upto 1921 there was only sporadic growth in the population of India due to famines, plagues, etc. But from 1921 onwards the situation has changed and there has been rapid and uninterrupted growth in the population. Thus 1921 is referred to as the *Great Divide* in the history of the population of our country. By 1921, India has entered the second phase of the demographic transition. It is hoped that by the end of this decade, due to our massive family planning efforts, India would be just entering the third phase of the transition.

The trend of India's population growth is shown in the following table :—

POPULATION OF INDIA AND THE DECENNIAL GROWTH RATE—1901-1971

Year	Population in million	Decennial Growth Rate.
1901	238.3	—
1911	252.0	+ 5.73
1921	251.2	− 0.30
1931	278.8	+11.00
1941	318.5	+14.23
1951	360.9	+13.31
1961	439.0	+21.64
1971	547.3	+24.66

Source : Census of India. 1971. Paper I of 1971—Supplement

PROVISIONAL POPULATION TOTALS.
ESTIMATED BIRTH AND DEATH RATE - 1881-1971.

Year	Birth Rate per 1,000	Death Rate Per 1,000
1881	50.5	42.5
1891	48.8	39.6
1911	51.3	43.1
1921	49.2	48.6
1931	46.4	36.3
1941	45.2	31.2
1951	39.9	27.4
1961	41.7	22.8
1971	39.0	14.0

The above table shows that upto 1921 the death rate also was equally high. But after 1921 the death rate began to decline from decade to decade. The decrease in death rate and increase in life expectancy are the great blessings of the post-independence era, but these very blessings have turned out to be the great curse.

An analysis of the 1971 census has shown that the Christians, Sikhs and Muslims—in that order—are growing at a faster rate than the Hindus.

India has an age structure which is typical of the under developed countries with a broad base and a tapering top. Such a structure is known as Pyramidal.

It is distressing to note that the sex ratio has further dropped from 941 females per 1,000 males in 1961 to 932 in 1971.

Now there are 108.8 million people living in our urban centres. This constitutes nearly 20% of the total population. There has been a tendency towards concentration of population in big cities and urban dispersal over the space has been very meagre.

Projection of Indian Population

The most authoritative projections of the population of India are those made by the Expert Committee on population projections set up by the Planning Commission of the Government of India. The latest projection given by the Expert Committee was in 1967. The earlier ones were 1958 and 1963. All the projected population totals for 1971 were above the census enumeration figure of 547.9 million. With the help of past experience and using the results of the 1971 census enumeration and those from a relatively

new source—the Sample Registration System (SRS)—the Planning Commission has produced new projections of the population from 1971 onwards.

In addition to this official work there have been several other important projections. Those of the World Bank (undertaken by K. C. Zachariah and R. Cuca) and those of Tomas Frejka are alike in that in both cases the projection of the Indian population constitutes just one part of an overall project concerned with population growth in many national and regional populations. Moreover, it must be noted that both these projections were undertaken prior to the availability of the basic demographic data of the 1971 census results—they lean heavily on updated estimates from the U.N. Demographic Year Book. By contrast, the projections by S. Raghavachari, J. P. Ambannavar, the Operations Research Group of Baroda (ORG), and of course those of the Planning Commission were undertaken after the release of these results. (Population and Development Review. Vol. 2 No. 1 March 1976. P. 103).

The projected total population sizes for the years 2001 in Table 7B, imply a population somewhere between 846 and 1,249 million. A majority of these estimates put the population between 917 and 999 million. Interestingly the projected populations are those of the World Bank. Their slow fertility decline series projects a population of not less than 1,249 million in the year 2000. However that series assumes constant fertility to the end of the century, though such an assumption is unlikely to be valid for India. By 1981-85, the projections embodied in the Fifth Plan imply that the crude birth and death rates (CBR and CDR) will be down to 24.8 and 11.1 respectively, with a corresponding growth rate of 1.4 per cent per annum.

Table 7C gives the projections made by Tomas Frejka for India. According to this projection the highest population figure for the year 2000 A.D. will be 1,100 million.

Population Trends in Tamil Nadu

Table 8 gives the population trend and the decennial variation in Tamil Nadu population. The outstanding feature of the census of Tamil Nadu is that population of Tamil Nadu has increased from 33.7 million in 1961 to 41.1 million in 1971, an increase of 22.01% over the decade. To those who expected a fall in the growth of population, considering the steady efforts in the field of family planning in the state, this increase in growth from 11.8 to 22.01% must have been a great shock, and surprise. The growth of population in Tamil Nadu in the last decade i.e. 1951-61 decade was 11.8% as against the all India figure of 21.64. It has now gone upto 22.01% when the all India figure has gone upto 24.57. The state has registered double the rate of growth during the decade 1961-71 compared to that ot 1951-61. Except Jammu and Kashmir and Nagaland no other state has registered such an increase compared

to the rate of growth of the previous decade.

The population of the state has more than doubled during the period 1901-1971. Population of Madras City and Nilgiris District has increased by over four times since 1901. In the case of Kanyakumari District the population has trebled, during the last 70 years. The population of the the districts of South Arcot, Tiruchirapalli, Tanjavur, Ramanathapuram and Tirunelveli have not even doubled during the period. During 1961-71 it is notable that Madras, Chingleput, Dharmapuri, Coimbatore, Madurai and Kanyakumari District have shown higher percentage of population growth than that of the state as a whole.

Jpto 1951 census the sex ratio was positive i.e. there were more females than males. Since 1961 the ratio of females to males had decreased. Table 9 reveals the fact that according to 1970 census there are only 978 females for every 1,000 males. The ratio in rural areas is 990 and in urban areas 951. Only in the two districts of Ramanathapuram and Tirunelveli the sex ratio is positive. (1,042 females per 1,000 males). In the rural areas of Tiruchirapalli District the sex ratio is more or less equal. The lowest sex ratio is reported in Madras City and Chingleput District. These disrricts had low ratios during 1961 too. Saidapet taluq of Chingleput district which surrounds Madras City has a sex ratio of 906 only.

The State is comparatively more progressive than the country as a whole. Table 10 points out the fact that the rural population of the State has increased by 16.35% during 1961-71, while the increase in the urban population for the same period works out to be 38.64%. Madras city, Chingleput, Dharmapuri, Salem and Coimbatore districts have recorded higher percentage of urban population increase over the state average in the current decade. The urban population growth is the highest during 1961-71 decade in Chingleput district, where it has gone up over 120%. The high increase is due to the fact that several suburban areas around have picked up urban characteristics rapidly and hence many of them have been recognized as urban areas for the first time in 1971 census. The least decadal urban growth has been recorded in Thanjavur district (19.3%) closely followed by Tirunelvely district (21.42%) and then by North Arcot district (24.06%). Coimbatore and Nilgiris are the two districts which show a decadal variation in 1961-71 i.e. less than in the previous decade of 1951-61. In all other districts the decadal increase in 1961-71, is higher than that in 1951-61.

APPENDIX

TABLE 1

Government's perception of the acceptability of present levels or trends of national population growth rates by developmental state and regional economic commission area.

Developmental state and regional economic Commission Area.	Governments' perception of the acceptability of present levels or trends of national population growth rates. rates "acceptable"	rates "excessive"	rates "deficient"	Total
Number and percentage of Countries				
More developed	31 (74)	- (-)	11 (26)	42 (100)
Less developed	54 (51)	42 (40)	10 (9)	106 (100)
ECA	21 (49)	5 (35)	7 (16)	43 (100)
ECAFE	9 (31)	8 (62)	2 (7)	29 (100)
ECLA	15 (60)	7 (28)	3 (12)	25 (100)
ECE	29 (74)	1 (3)	9 (23)	39 (100)
ECWA	11 (92)	1 (8)	- (-)	12 (100)
Total	85 (57)	42 (8)	21 (14)	148 (100)
Percentage of 1970 Population				
More developed	25 (82)	- (-)	5 (18)	30 (100)
Less developed	12 (16)	57 (81)	2 (3)	70 (100)
Total	37	57	7	100

SOURCE: Population policies and programmes—prepared by the United Nations Secretariat for the World Population Conference, Bucharest, Romania 19-30 August 1974. (Table-2).

TABLE 2

Governments' perception of the acceptability of present levels or trends of National population growth rates by size of estimated population.

Size of estimated 1970 population (millions)	Governments' perception of the accceptability of present levels or trends of national population growth rates			
	rates "acceptable"	rates "excessive"	rates deficient"	Total
	Numbers and percentage of countries			
Under 1.0	20 (66)	7 (24)	3 (10)	30 (100)
1.0-9.9	43 (65)	14 (21)	9 (14)	66 (100)
10.0-49 9	15 (39)	15 (39)	8 (22)	38 (100)
50.0 and over	7 (50)	6 (43)	1 (7)	14 (100)
Total	85 (57)	42 (28)	21 (14)	148 (100)
Average size	15	48	12	24

Source : Population Policies and Programmes, prepared by the United Nations Secretariat. World Population Conference, Bucharest, Roumania 19-30 August 1974.

TABLE 3

Government's perception of the acceptability of present levels or trends of metropolitan region population growth rates, by developmental state and Regional Economic Commission area.

Developmental state and Regional Economic Commission area	Governments' perception of the acceptability of present levels or trends of metropolitan region population growth rates.		Total
	rates "acceptable"	rates "excessive"	
	Numbers and percentage of countries		
More developed	16 (47)	18 (53)	34 (100)
Less developed	49 (50)	49 (50)	98 (100)
EOA	19 (46)	22 (54)	41 (100)

Developmental state and Regional Economic Commission areas	Governments' perception of the acceptability of present levels or trends of metropolitan rates "acceptable"	rates "excessive"	
	Number and percentage of countries		
ECAFE	13 (50)	13 (50)	26 (100)
ECLA	11 (46)	13 (54)	24 (100)
ECE	16 (52)	15 (48)	31 (100)
ECWA	6 (60)	4 (40)	10 (100)
Total	65 (48)	67 (52)	132 (100)
	Percentage of 1970 Population		
More developed	19 (66)	10 (34)	30 (100)
Less developed	12 (17)	58 (83)	70 (100)
Total	31	68	100 a/

a/ Excluded are for LDCs and three MDCs for which information is insufficent and four LDCs and five MDCs whose territorial size is so small (less than 1,000 Km^2) that the whole national territory is within the metropolitan region.

The sum of their population is less than 0.5 percent of the total.

SOURCE : Population Policies and programmes—prepared by the United Nations Secretariat for the World Population Conference, Bucharest, Romania 19-30 August 1974. (Table 17).

TABLE 4

GEOMETRIC, EXPONENTIAL, AND LINEAR GROWTH RATES FOR THE WORLD, A.D. 14-1650.

Period (A.D.)	Number of Years	Growth rates (in percents)			Population Change (in millions)
		g	e	i	
14-350	336	-.0023	-:0031	-.0023	-2
350-600	250	-.0277	-.0277	-.0268	-17
600-800	200	+.0481	+.0482	+.0506	+24
800-1000	200	+.0351	+.0351	+.0364	+19

Period (A.D.)	Number of Years	Growth rates (in percents)			Population Change (in million)
		g	e	i	
1000-1200	200	+.1580	+.1566	+.1857	+104
1200-1340	140	—.0112	—.0112	—.0112	—6
1340-1500	160	+.0762	+.0760	+.0810	+49
1500-1600	100	+.1539	+.1535	+.1663	+71
1600-1650	50	—.1158	—.1157	—.1124	—28

Source : Madras 1973, p. 21 Table 1.2.

TABLE 5

World population at each half-century from 1750 to 1950 and at each decade from 1900 to 1970, distinguishing the more developed from the less developed regions

Year	Population (millions)			Annual rate of increase since proceeding date (per cent)[a]		
	World total	More developed regions	less developed regions	World total	More developed regions	Less Developed regions
(a) by half centuries						
1750	791	201	590	...	....	...
1800	978	248	730	0.4	0.4	0.4
1850	1,262	347	915	0.5	0.7	0.5
1900	1,650	573	1,077	0.5	1.0	0.3
1950	2,506	857	1,649	0.8	0.8	0.9
(b) by decades						
1900	1,650	573	1,077	...	...	...
1910	1,775	650	1,125	0.7	1.3	0.4
1920	1,837	682	1,155	0.3	0.5	0.3
1930	2,044	759	1,285	1.1	1.1	1.1
1940	2,267	821	1,446	1.0	0.8	1.2

[a] Expontional rates.

Year	Population (millions)			Annual rate of increase since preceding date (per cent [a])		
	World total	More developed regions	less developed regions	World total	More developed regions	Less Developed regions
(b) by decades						
1950	2,506	857	1,649	0.9	0.4	1.2
1960	2,995	976	2,019	1.8	1.3	2.0
1970	3,621	1,084	2,537	1.9	1.1	2.3

Source: Figures for 1750-1900 according to Durand, J. D., "The modern expansion of world population" *Proceedings of the American Philosophical Society*, Vol. III, No. 3, 22 June 1967. Figures for 1920-1970 according to various issues of the *United Nations Demographic Yearbook*, with adjustments where needed for consistency. Figures for 1910 are interpolations taking into account population losses due to war and epidemic in 1910, 1920.

[a] Exponential rates.

TABLE 6

Population 1950, 1960 and 1970 and average annual rates of population growth per decade, in major rates and regions of the world.

Regions	Population (millions)			Rate of growth (per cent)	
	1950	1960	1970	1950-60	1960-70
World Total	2,505.9	2,994.8	3,621.9	1.78	1.90
More developed regions*	857.3	975.8	1,084.2	1.29	1.05
Less developed regions	1,648.6	2,019.0	2,536.8	2.03	2.28
Africa	219.2	272.0	351.7	2.16	2.58
Eastern Africa	62.7	77.0	99.8	2.05	2.60
Middle Africa	26.1	31.6	40.2	1.91	2.41
Northern Africa	51.2	65.2	86.0	2.41	2.77
Southern Africa	14.4	18.2	24.2	2.35	2.87
Western Africa	64.9	80.1	101.5	2.11	2.36

*The regions marked with an asterisk are those considered as "more developed".

Regions	Population (millions)			Rate of growth (per cent)	
Latin America	164.1	216.1	284.2	2.75	2.74
Caribean	16.9	20.7	25.6	2.01	2.12
Middle America	35.8	48.7	67.0	3.07	3.19
Temperate South America*	25.5	30.9	36.4	1.92	1.64
Tropical South America*	85 9	115.8	155.3	2.99	2.93
Northern America*	166.1	198.7	226.4	1.79	1.31
East Asia	673.5	787.4	926.2	1.56	1.62
East Asia without Japan	589.8	693.3	821.8	1.62	1.70
Japan*	83.6	94.1	104.3	1.18	1.03
South Asia	698.4	865.4	1,111.3	2.14	2.50
Eastern South Asia	173.1	218.5	284.9	2.33	2.65
Middle South Asia	480.8	588.4	749.1	2.02	2.41
Western South Asia	44.5	58.5	77.3	2.74	2.79
Europe*	392.0	425.2	459.0	0.81	0.77
Eastern Europe*	88.5	96.7	102.9	0.89	0.62
Northern Europe*	72.5	75.8	80.3	0.45	0.57
Southern Europe*	108.6	118.1	127.7	0.84	0.78
Western Europe*	122.4	134.5	148.1	0.94	0.96
Oceania	12.6	15.8	19.4	2.26	2.12
Australia and New Zealand*	10.1	12.7	15.4	2.25	1.92
Melanesia	1.8	2.2	2.8	2.07	2.44
Micronesia and Polynwaia	0.7	0.9	1.3	2.77	3.42
Soviet Union*	180.1	214.3	242.8	1.74	1.25

*The regions marked with an asterisk are those considered as "more developed".

Source: Demographic Trends in the World and its Major Regions, 1950-1970 Prepared by the United Nations Secretariat as World Population Conference Background Paper, Bucharest, Romania, 19-30, August 1974.

TABLE 7

Percentage of World's Population in major areas and regions of the world, 1950 and 1970, absolute population gains between 1950 and 1970, and percentage share of major areas and regions in the world's population gain.

Region	percent of world population		Increase 1950-1970	
	1950	1970	Amount (million)	per cent of world's increase
World Total	100.0	100.0	1,115.1	00.0
More developed regions*	34.2	29.9	226.9	20.3
Less developed regions	65.8	70.1	888.2	79.7
Africa	8.7	9.7	132.5	11.9
Eastern Africa	2.5	2.8	37.1	3.3
Middle Africa	1.0	1.1	11.1	1.3
Northern Africa	2.0	2.4	34.8	3.1
Southern Africa	0.6	0.7	9.8	0.9
Western Africa	2.6	2.8	36.6	3.3
Latin America	6.5	7.8	120.1	10.8
Caribbean	0.7	0.7	8.7	0.8
Middle America	1.4	1.9	31.2	2.8
Temperate South America*	1.0	1.0	10.9	1.0
Tropical South America	3.4	4.3	69.4	6.2
Northern America*	6.6	6.3	61.5	5.5
East Asia	26.9	25.6	252.7	22.7
East Asia without Japan	23.5	22.7	232.0	20.8
Japan*	3.3	2.9	20.7	1.9
South Asia	27.9	30.7	412.9	37.0
Eastern South Asia	6.9	7.9	111.8	10.0
Middle South Asia	19.2	20.7	268.3	24.1
Western South Asia	1.8	2.1	32.8	2.9
Europe*	15.6	12.7	67.0	6.0
Eastern Europe*	3.5	2.8	14.4	1.3

*The regions marked with an asterisk are those considered as "more developed".

Region	percent of world population 1950	1970	Increase 1950-1970 Amount (million)	per cent of world's increase
Northern Europe*	2.9	2.2	7.8	0.7
Southern Europe*	4.3	3.5	19.1	1.7
Western Europe*	4.9	4.1	25.7	2.3
Oceania	0.5	0.5	6.8	0.6
Australia and New Zealand	0.4	0.4	5.3	0.5
Melanesia	0.1	0.1	1.0	0.1
Micronesia and Polynesia	0.0	0.0	0.6	0.1
Soviet Union*	7.2	6.7	62.7	5.6

*The regions marked with an asterisk are those considered as "more developed".

Source : Prepared by the United Nations Secretariat, World Population Conference, Bucharest, Romania, 19-30 August 1974.

TABLE 7 A

Expectation of life at birth, 1935–1939 and 1950-1970 in major areas and regions of the world (years) (Estimates available to the United Nations as of March 1974)

Region	1935-39 [a]	1950-55	1955-60	1960-65	1965-70
World Total	about 35	47	50	53	55
More developed regions*	55	64.6	67.8	69.2	70.3
Less developed regions*	about 30	42	45	48	51
Africa	about 30	38	39	41	43
Eastern Africa	...	36	38	40	42
Middle Africa	...	37	39	40	41
Northern Africa	...	43	45	47	49
Southern Africa	...	43	45	46	48
Western Africa	...	33	34	37	39

*The regions marked with an asterisk are those considered as "more developed".

[a] / More developed regions according to *World Population Prospects* as assessed in 1963 (United Nations publication, sales No. 66. XIII. 2); less developed regions according to World Population Trends 1920-1947 (United Nations publication, sales No. 1949. XIII. 3).

Region	1935-39 [a]/	1950-55	1955-60	1960-65	1965-70
Latin America	about 40	52	55	58	60
Caribbean	...	52	55	58	61
Middle America	40	50	54	58	60
Temperate South America*	52	61.4	62.9	64.3	65.6
Tropical South America	...	53	55	57	59
Northern America*	62	68.7	69.7	70.0	70.5
East Asia	...	45	51	55	60
East Asia without Japan	about 30 [b]/	45	50	54	58
Japan*	49	61.9	66.9	69.0	70.9
South Asia	...	41	43	46	48
Eastern South Asia	...	42	45	47	49
Middle South Asia	about 30	40	42	45	47
Western South Asia	about 30	44	46	49	51
Europe*	58	65.4	67.9	69.6	70.7
Eastern Europe*	54	63.2	66.5	68.7	69.6
Northern Europe*	63	69.4	70.6	71.3	71.9
Southern Europe*	53	63.3	66.4	68.2	69.8
Western Europe*	62	67.6	69.3	70.7	71.4
Oceania	...	65	66	67	68
Australia and New Zealand	66	69.6	70.5	71.3	71.8
Melanesia	...	40	42	44	46
Micronesia and Polynesia	...	45	52	56	60
Soviet Union*	47	61.7	67.4	68.9	70.3

*The regions marked with an asterisk are those considered as "more developed"

[a]/ More developed regions according to *World Population Prospects* are assessed in 1963 (United Nations publication, sales No. 66. XIII. 2); less developed regions according to World population Trends 1920-1947 (United Nations publication, sales No. 1949. XIII. 3).

[b]/ Includes Eastern South Asia.

Source: Prepared by the United Nations Secretariat, World Population Conference, Bucharest, Romania, 19-30 August 1974.

TABLE 7 B

Projected population Totals (Millions) of India, 1971–2001, for Five Series of projections.

Projection	Fertility Decline	1971	1976	1981	1986	1991	1996	2001
World Bank (a)	Fast	537	-	668	-	807	-	956
	Intermediate	537	-	680	-	860	-	1,084
	Slow (constant)	537	-	693	-	923	-	1,249
Raghavachari (b)	Fast	547	600	648	699	751	799	846
	Intermediate	547	605	668	734	801	872	945
	Slow	547	609	677	753	837	930	1,032
Ambannavar	Fast	548	611	678	747	814	875	926
	Intermediate	548	612	683	759	839	921	999
	Slow	548	612	683	762	849	942	1,035
Operations Research Group (ORG) Baroda								
Mortality alternative	Fast	585	648	711	775	839	905	972
	Intermediate	585	651	719	788	859	928	999
	Slow	585	653	726	803	881	958	1,033
Mortality alternative	Fast	585	641	695	749	803	860	917
	Intermediate	585	643	702	762	822	881	942
	Slow	585	645	709	776	842	909	973
Planning Commission		547	581[c]	636[d]	685[e]	705		

NOTE : For the sources of these results see the notes to table 1. Frejka's projected populations are not given but are discussed in the postscript.

(a) The Totals projected by the World Bank pertain to 1970, 1975, 1980,. 2000.

(b) Raghavachari actually made six separate projections, However the three presented here may "be taken to provide the possible range of population (Raghavachari, cited in footnote 5, p. 433).

(c) 1974 (d) 1979 (e) 1984.

Source : Population and Development Review Vol. 2 No. 1 March 1976.

TABLE 7 C

TOTAL POPULATION (IN MILLIONS) AND INDICES OF POPULATION SIZE (1070=100), 1970=2150 LINEAR DECLINE OF FERTILITY TO NRR LEVEL OF 1.0

INDIA B.4 YEAR	PROJECTIONS 1=5 Period in which net reproduction rate of one is reached				
	1970-1975 proj 1	1980-1985 proj 2	2000-2005 proj 3	2020-2025 proj 4	2040-2045 proj 5
1970	534.3 100	534.3 100	534.3 100	534.3 100	534.3 100
1975	555.8 104	588.6 110	598.3 111	601.2 112	602.5 112
1980	584.1 109	634.6 118	666.7 124	676.0 126	680.5 127
1985	618.6 115	668.1 125	739.0 138	759.6 142	769.6 144
1990	656.4 112	707.7 132	812.4 152	850.7 159	869.3 162
1995	692.0 129	750.3 140	883.5 165	947.9 177	979.5 183
2000	723.0 135	792.1 148	948.3 177	1049.8 196	1100.2 205
2010	775.1 145	863.0 161	1058.1 198	1256.1 235	1368.0 256
2020	818.2 153	919.9 172	1167.4 218	1445.2 270	1661.0 310
2030	846.6 158	962.2 180	1255.1 234	1598.9 299	1953.6 365
2040	858.9 160	986.2 184	1319.7 246	1741.6 325	2215.7 414
2050	876.0 163	1001.7 187	1365.5 255	1854.8 347	2431.9 455
2075	892.3 167	1023.2 191	1402.0 262	1984.9 371	2799.0 523
2100	894.3 167	1025.6 191	1407.0 263	2000.4 374	2897.0 542
2125	893.0 167	1024.0 191	1405.3 263	1999.0 374	2904.7 543
2150	891.2 166	1021.9 191	1402.6 262	1995.4 373	2900.2 542

Source : Reference tables to the Future of Population Growth : Alternative Paths to Equlibrium.

By Tomas Frejka. The Population Council, Bridgeport, Connecticut. 1973. Page. 18.

TABLE 8

DECADAL VARIATION IN TAMIL NADU POPULATION SINCE 1901

Years	Persons	Decade Variation	% age of decadal variation	Males	Females
1901	19,252,630	—	—	9,419,398	9,833,232
1911	20,902,616	+1,649,986	8.57	10,236,951	10,668,665
1921	21,628,518	+ 725,902	+ 3.47	10,659,489	10,969,029
1931	23,472,099	+1,843,581	+ 8.52	11,577,988	11,894,111
1941	25,267,507	+2,795,408	+11.91	13,056,967	13,210,540
1951	30,119,047	+3,567,906	+14.66	15,003,724	15,115,323
1961	33,686,953	+3,567,906	+11.85	16,910,978	16,775,995
1971	41,199,168	+7,512,215	+22.30	20,828,021	20,371,149

Source : Census of India Tamil Nadu Series 29

TABLE 9

CHANGES IN THE PROPORTION OF SEXES IN TAMIL NADU 1901-1971

	1971	1961	1951	1941	1931	1921	1911	1910
TOTAL	978	992	1,007	1,012	1,027	1,029	1,042	1,044
Rural	990	1,003	1,014	1,017	1,034	1,033	1,044	1,043
Urban	951	963	986	990	997	1,007	1,032	1,047

Source ; The Census of India Tamil Nadu series : 19.

TABLE 10

TAMIL NADU RURAL & URBAN POPULATION %AGE VARIATION—1901-1971

	1901-1971	1961-1971	1951-1961	1941-1951	1931-1941	1921-1931	1911-1921	1901-1911
TOTAL	113.99	22.30	11.85	14.66	11.91	8.52	3.47	8.57
RURAL	73.98	16.35	8.39	8.15	9.61	5.69	2.56	7.37
URBAN	355.50	38.64	22.59	41.06	22.31	23.52	8.59	15.80

Source : Census of India : Tamil Nadu Series 29

Summary of Discussion

In the discussion of the paper at the Seminar held in the Seminar Room of the Institute on Thursday 29th July 1976, under the chairmanship of Dr. P. V. Rajkumar, Additional Professor of Economics, Presidency College, Madras, the chairman observed that the paper is an elaborate review of global data on population trends with due emphasis on national and local aspects.

The author, introducing the paper, said that the paper expressed some views on population projection and forecasts which were likely to be controversial. An indication of the pre-occupation with population growth is in the terms used in the studies, from the sober "population problems" of the fifties, "population crisis" of the sixties, followed by "population explosion" of the early seventies and the "population trap" of the later seventies. The analysis in the paper deals with five aspects of population growth, namely, determinants, consequences, trends, growth and Indian and Tamil Nadu population. Birth, death and migration comprise the three vital ingredients for a study of population growth. The rate of growth is a function of the difference between increments and decrements. The three identifiable phases of population expansion are described comprehensively as the demographic transition. These are the movements of a population from a condition of high birth rate and high death rate to one of high birth rate and low death rates, followed by low birth rates and low death rates. This has been borne out by the industrialised countries of the West, where the transition took place over a hundred years'. The countries of the Third World are in the second phase of demographic transition with high birth rates and low death rates. The consequence of a rapid increase in population are not just an increase in numbers but retarding of increase in per capita income, nullifying the gains of development and making it impossible for a welfare state to provide minimum requirements of food, shelter, clothing, education and medical care. A direct effect is the migration from rural areas into the cities, creating problems of slums, unemployment and sociological dislocation. Tracing the history of demographic growth trends through the centuries, between 8000 BC and 4000 BC the population of the world increased from 5 to 86 millions. A slower growth took place from 4000 B.C. to 1 A.D. In the interval between A. D. 14 and 1600 the average rate of growth was 0.040 per cent per year. Between A. D. 1 and 1600 the population of the world doubled itself from 44.5 to 95 millions. A region-wise, survey of demographic transition shows that while population doubled itself in A.D. 1 to 1600, the second doubling took only 200 years thereafter. As the third world countries entered upon the second phase of demographic transition with a drop in death rates, there was a profound alteration in the world's balance of births and deaths, modifying the global distribution of population. Short term projections forecast growth maintaining present rates of increase and probable population levels are established. Commenting on the population growth trends in India and Tamil Nadu, three distinct features were identified. The country and the State, have a characteristic age structure in population which is typical of the underdeveloped countries, with the younger age-groups forming a large segment of the population. The sex ratio has dropped from 941:1000 in 1961 to 932:1000 in 1971

There has also been a sharp rise in the population of urban areas. An analysis of 1971 census data shows that Chirstians, Sikhs and Muslims are growing at a faster rate than Hindus. The authoritative projections of the population of India are those made by the Expert Committee set up by the Planning Commission of the Government of India, which are however, far above the actual census figures. Taking into account the population of the State separately, it is seen that between 1901-1971, the population doubled itself. The population of the Madras City and the Nilgiris District has increased by over four times since 1901, while in the districts of South Arcot, Tiruchirapalli, Thanjavur, Ramanathapuram and Tirunelveli has not even doubled. Another significant feature in the State population growth is that the increase in the rural population in 1961-71 is only 16.35 per cent as compared to 38.64 per cent in urban areas. The author expressed the view that exercises in population projection and forecasting were at best only tentative estimates of a complex phenomena.

During the discussion it was pointed out that the statistics given did not present a clear picture of the population trends in India. After independence there was a sharp fall in death rates, while birth rates varied in a curious fashion, which was evident from the figures for 1951-71 and this also leaves room for population growth on an unexpected basis. The staitstics provided do not include separate death and birth rates for Tamil Nadu. It is now realised that population expansion is a negative factor setting at naught all development efforts and a population policy is being formulated on a national level for the first time. This policy has incentives and disincentives to control population growth. From the point of view of population control, projections and forecasts cease to be mere theoretical exercises. An acceptable source of population data, other than those of the census and the Planning Commission, is the statistics computed by the Registrar General. A view was expressed that cultural and sociological attitudes and ignorance are mainly responsible for resistance to family planning. However, a recent survey in the State showed an encouraging acceptance of the concept of limited families in rural areas. Referring to population trends in the country, the absence of inter-regional studies is a handicap. The disparity in the sex ratio in urban Tamil Nadu is less acute than in Bombay or Calcutta as the general practice in North India is to leave the families in the villages. Sociological changes and occupational shifts explain differences in population growth within a given area or region. The assumption that economic growth per se would bring down population levels is not universally applicable as the contrasting experiences of Sweden and North America show. In an agricultural economy sustained by family labour, economic growth does not lead to population fall. However, the population of Thanjavur which is only 10 per cent of the total State population producing 30 per cent of food output of Tamil Nadu has shown low rates ot growth, underlining need for interdisciplinary regional studies. The State's family planning seems to centre round sterilisation, which is irreversible, while contraceptives are better accepted elsewhere in the country.

An overview of the demographic situation in the country leaves little room for complacency. The birth rate target of 25 per 1000 is far from being attained and the growing pressure on food and other basic natural resources highlights the need for definitive national policy for population control.

ADULT EDUCATION AND DEVELOPMENT*

Salutation

We are well met at this conference on Adult Education and Development called by the International Council of Adult Education.

We are well met because our meeting ground, the Republic of Tanzania, represents the confluence of Adult Education and Development. In this attractive land and its beloved and hospitable people, we have a standing demonstration of Adult Education being the motorforce for its development, a demonstration that each of us delegates to this conference will be learning more from, than all the speeches (including this one of mine) that we will be making or hearing, all the voluminous and learned documents that have been so carefully prepared and made available to us tor this conference, and the many resolutions and recommendations that we will be adopting during the coming five days of our sojourn here. I believe that an ounce of seeing and learning for ourselves how the Tanzanian people and government are hitching the wagon of Adult Education to their star of national development will be worth more than the tonnes of statements and papers that we will be carrying back with us home. On your behalf and mine, I salute the Republic and people of Tanzania.

We are well met because we have as the Honorary President and Patron of the International Council of Adult Education and load star of this conference, the embodiment of the irreversible will of the Tanzanian people for development, the wise educator charting a continental path of independence and learning for the people of Africa, the declared leader of the two billion people and their governments of the Third World struggling for education and equity, and a world statesman whose services to peace, development and education were recognised in January of this year by the conferment on him of the Jawaharlal Nehru award for peace and international understanding—President Julius Nyerere. Plato over two and a half millennia ago wistfully wondered what would happen if Philosophers became Kings. We to-day know in the person of Julius Nyerere what happens when a teacher becomes the President of his Republic. On your behalf and my own, I salute our Patron and President of the Republic, His Excellency Julius Nyerere.

We are well met because in this confrontation of Education and Development we are not alone, we will have the aid and comfort of our many fellow international compatriots and well wishers from seven UN Agencies, UNESCO, ILO, WHO, FAO, UNEP, WORLD BANK, and UNICEF and fourteen international organizations, IFLA, WORLD EDUCATION, ICFTU, CEPAL, ICUAE, the Adult Education bureaux for Africa, Asia and

*Extracts from the Presidential Statement of Dr. Malcolm S. Adiseshiah during the International Council of Adult Education, Dar-es-Salaam Tanzania on June 21, 1976.

Europe, ICCEE, YMCA, YWCA, International Co-operative Alliance, World College, and the World Council of Churches. In this connection I note with gratitude the financial help given to our Third World delegates to travel to this conference from the African Development Bank, Agence de Co-operation Culturelle et Technique, Arab Bank for African Development, Canadian International Development Agency, Carnegie Corporation, The Commonwealth Foundation, The Commonwealth Secretariat, Deutscher Volkshochschul-Verband E. V., Friedrich Ebert Stiftung, International Bank for reconstruction and Development, International Development Research Centre, International Labour Organization, W. K. Kellogg Foundation, Ministry of Development, The Hague, The Rockefeller Foundation and the U. S. Agency for International Development. In your name and mine, I salute them.

We are well met because we have the great good fortune to have with us the outstanding Adult Educator of our times, Paulo Freire, who in his person embodies the thought, will and action of what Adult Education stands for and can achieve.

Finally, we are well met because we are to-day, in the mid seventies, at the cross roads of history—a history which demands that we choose here and now whether we wish to walk the uphill path of political peace and equal relations or that of the well worn paths of colonialism and neo-colonialism, the arduous path of development based on justice and equity or the easy path of maldevelopment and inequities, and the wise ways of life long learning as embodied in adult education or the easy roads of miseducation and illiteracy which is our past inheritance and present condition And in making these fateful choices time, I am afraid, is not on our side. On your behalf and mine, I salute this conference which gives each of us, and all of us, in the First, Second and Third Worlds the opportunity to make our choices.

What are these choices that we adult educators and national development planners face? Some of them I admit, go beyond our particular field competence and decision making, but all of them are susceptible to influence by the quest for and as votaries of Adult Education and Development.

Political Choice

The clearest cleavage is in the area of international and intera-national political relations. The year since we met as a Council last in Ottawa, Canada, has seen three important positive gains for peace, equality and sanity in the international political scene. One was the ending of over three and a half decades of war and destruction showered on the peoples of Vietnam, Cambodia and Laos, whose indomitable fight for freedom and independence has been crowned with this great region of South East Asia emerging as a decisive force for peace and progress. The second was the Helsenki agreement ushering in a period of detente in the relations between the countries and peoples of Europe and North America, whose fallout to other regions of the world is still hopefully awaited. The third was the victorious struggle of the Angolan people for their independence, with Angola joining the free peoples of the Third World in its quest for peace and development. Against these positive elements must be set the sombre, evil and threatening forces of reaction which cloud

our political horizon. The most poignant is the official racist policies embodied in the government of South Africa, which once more last week led to killing of over 100 of our brothers and sisters living there and the serious wounding of over 1,000 people. For us, educators, gathered in this conference in the belief that education is the spark plug to development, there is a sombre lesson to be learnt from this tragedy—that it was education, the question of the medium of education, which sparked this mass death and misery for its people. And parallelly there is the fight of the people of Zimbawe and Namibia where the people are daily shedding their lives and blood against the forces of recist reaction and their neocolonial allives. Then there is the continuing tragedy of the war in Lebanon, once the intellectual and scenic spa of the Mediterranean, now lying in political tatters, and having suffered an untold loss of precious human lives, within the framework of the state of no war and no peace in that great region. As we meet to take stock of the role of Adult Education in Development, we have to see that role as subordinate to the prior political frame of our world, in order that both Adult Education and Development planners realise their limits and still do what they can to contribute to peace, equality and independence of people everywhere, particularly in South Africa, Southern Africa and the Middle East.

This sombre political horizon also applies to political processes and frames with our own countries. In many of our countries, the political networks and decision making centres are being narrowed and increasingly centralised in the hands of a small minority of the educated and economic elite. It is this same small group which manages to vote itself into power time after time, with the mass of the people playing the role of passive voters. Suspension of the rule of law, of fundamental rights, and even of the constitution, non-participation of the people in the political process, and in even local rural and urban development plans and programmes, are eroding the democratic foundations of most of our countries. Development programmes attempted in this context lead either to skewed distribution of political power and the fruits of development or the attainment of short term and transitory successes without a lasting infrastructure for people's spontaneous and self sustained efforts at growth and development. At the national level, Adult Education can be a powerful factor for ensuring that people are real participants in political processes and are at the centres of decision making.

Economic Choice

Against these political imperatives, the immediate choice confronting us in this conference, intranationally and internationally, is the use of Adult Education for Development, or the misuse or nonuse of Adult Education for Maldevelopment. And here the choices facing us are serious indeed. We are at the mid point of the Second Development Decade, and as of now if a verdict has to be rendered, it is that the Second Decade has failed. Using a rather simplist Yard Stick, against the targets of 6 per cent of GNP growth and 4 percent of per capita growth that we set ourselves for this Decade, the majority of our Third World countries have recorded a per capita growth of 0.5 per cent for the first three years of the second Decade, a minus 0.5 per cent rate in 1974, and a minus 0.7 per cent rate in 1975, and, if we project this trend, the Decade will end with a 0.5 per cent per capita growth.

This poor national growth performance, is matched by an even poorer international aid performance, where against an aid pledge to be attained by 1975 of 0.7 per cent of the combined national income of the rich countries, the actual aid delivered in 1975 was 0.33 per cent, which is not even half of the pledge.

Can the Second Development Decade be saved or salvaged? That is the stark question confronting us at this conference—And in this salvage operation what is the role of Adult Education?

I will start with the national perspectives.

At the national level, the most urgent problem for Adult Education is to focus on increased food grains production for two reasons. First on such increased food production, with a working, non-corrupt distribution net work, depends the people's calories consumption, and the possibility of lifting the majority who are consuming less than the minimum, 2,200 calories per day to that minimum. and meeting the nutrition needs of the most vulnerable group, the pregnant and nursing mother and the pre-school child. Second our countries which were once food exporting ones have become large scale food importers of the order of 50 million metric tons per annum which now must be reversed. This increased food production would involve technical farmers education programmes, aimed at the small farmer, the marginal farmer, and drought prone farm lands, in the use of scale neutral modern agriculture technology with its science based land and water use and management, high yielding varieties of seeds, use of chemical and organic fertilizers and pesticides, and learning to deal with the second generation problems on the one hand, and adult education back up and/or agitation for the much needed agrarian reforms in the form of land ceilings, distribution of farm lands to the landless, consolidated state farms, recording and security of tenancies, regulation of rents and establishment of living wages for landless labour, on all of which such increased food production and rural development generally depend.

A second task facing our countries is for Adult Education to concentrate through cottage and small industries training on the production of goods of essential consumption—essential to lifting the living levels of the majority of the poverty sector in our countries. These essential goods include, besides food grains, fish and animal foods, edible oils, sugar, cloth, housing material etc. Adult Education's emphasis on household and small industries training is on the principle that mass poverty eradication demands that people own the assets and factors used in production, and the productive process and results involve the mobilization of the relatively plentiful human resources of the countries—the only resource that is plentiful in our countries.

In this regard Adult Education has a special third task in motivating our people to adhere to and adopt the population control programmes devised for their individual and family well being.

A fourth task facing Adult Education is to train people, particularly young people, in self employment. The problem faced by our countries in the area of unemployment is truly massive, and the current ILO International Conference on World

Employment calls attention to the fact that at present the Third World countries face a frightening backlog of 300 million unemployed, which would escalate to over twice that figure in another two and a half decades when 1,000 million employment opportunities will have to be created. In this matter of unemployment, Adult Education faces two imperatives. First the problem in our countries is not really overt unemployment. In the absence of a social security system, no one can afford to be wholly unemployed. If he was, he would simply starve and die. And so we have large numbers literally scratching the land for a living. Adult Education's task is therefore to train the mass of our underemployed farmers and farm labourers as well as the urban poor in subsidiary occupations for fuller utilization of the unused and surplus labour time. The second is for adult education to train persons in simple, minimum, managerial skills so that the tradition of wage and salaried employment is replaced by multiplying the avenues and the prespectives of self employment.

Turning to the international arena, our choices are equally daunting. Against the falling prices for their exports and the impact of world inflation on their imports, particularly in food, fertilizers, fuel, nonferrous metal, and machinery, leading to a 20 per cent worsening in their terms of trade in the current Decade, to a $40 to $50 billion annual deficit on their international balance of accounts and an international debt burden about to reach $100 billion, the Third World countries have joined with the other countries in launching the New International Economic Order —as a prop and corrective to the fumbling, failing Second Decade programme. The heart of the New International Economic Order is around the five major issues debated at UNCTAD IV last month in Nairobi, where the only decision made was not to make any decision but to continue the discussion. This was, of course, better than the alternative of sterile confrontation and conflict. The five points of New International Economic Order, which aims at replacing the present status of international dependency of the Third World countries by a relationship of equality, are: one, the establishment of buffer stocks in eleven commodities with a fund of $ 3 billion to start with, alongside of an indexation of thier export prices, as a means of stabilizing their export incomes, and their former's incomes; two, a moratorium of international indebtedness of the Third World countries and a seriousness in reaching the pledge of 0.7 percent aid; three, a reformed world monetary system in which liquidity decisions, voting rights and the organic linking of SDRs with development assistance are assured on an equal footing for all countries; four, an organized system of technology transfers, with controls on multi-nationals operating in our countries and some speeding of the process of moving towards a fairer share, 20 per cent for the Third World countries in world industrialisation; and five, greater intra Third World countries trade and exchanges. Here I believe that the role of adult education is to help people understand these momentous issues and as voters and citizens decide on their positions with regard to each of them.

Adult Education :

But all this seems like far cry from the policy and practice of remedial education that went by the name of Adult Education, in the case of industrialised countries

continuing or completing the formal education which was begun, and in the case of Third World countries the liquidation of adult illiteracy through teaching the Rs. Yes, there is a change. We are going to talk in this conference of the expanded concept of development. I would say, even as we talk about expanding development and plan for it, as we must so that it covers all facets of the quality of life, and the limits, not to growth, but to the unbalanced way in which the rich one-third of our world is consuming ninety five percent of our non renewable resources. Even as we expand development to cover all these facets, let us make sure that the basic development issues, national, and international that I have just outlined are first faced and solved. Adult Education also, true to its genius is constantly giving birth to new forms of learning. It gave us the concept of life long learning, the doctrine of continuing recurrent education, the programmes of non formal education and is making a rather significant contribution to the techniques of teaching and methodogy of learning in our formal institutions—of our schools and universities. And now comes the Conference crunch—that of desining the crucible of Adult Education In the Action that the Second Development Decade and the New International Economic Order call us to.

I believe the richness of Adult Education—in content, techniques and multi-faceted methodology—is a rather precise, precious resource as we confront the fumbling, faltering, failing Development end products in our countries and that is the reason for my ending on a hopeful note. The seeds of that hope are grounded in President Nyerere's message this morning and Tanzania's shining example in using Education successfully in the service of Development. Such also is my experience as Economist and Educator, as Planning Commissioner and Vice Chancellor. The springs for the success of our development effort are in the invincible human mind and the endless human spirit, and that is where educatian lives and that is what adult education is all about. It is in that faith that I call on each of us and all of us, Adult Educators, to confront and respond to the call of Development at this Conference.

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Printed by Aslami Printers, Arunachalapuram, Adyar, Madras-600 020.
Editor: Dr. Malcolm S. Adiseshiah.