YOJANA

TWELFTH YEAR 20 OCTOBER 13, 1968

25 PAISE

WORDS THAT INSPIRE

Young men...claiming...to be the fathers of tomorrow, should be the salt of the nation. If the salt loses its flavour, wherewith shall it be salted?

●

I ask you (young men) to go to the villages and bury yourselves there, not as their masters or benefactors, but as their humble servants. Let them know what to do and how to change their modes of living from your daily conduct and way of living. I ask you to go forth as messengers of God carrying balm for the wounded soil of India.

●

Woman is the companion of man, gifted with equal mental capacities. She has the right to participate in very minutes detail in the activities of man, and she has an equal right of freedom and liberty with him. She is entitled to a supreme place in her own sphere of activity, as man in his.

●

I hold the right education in this country is to teach woman the art of saying 'no' even to her husband, to teach her that it is no part of her duty to become a mere tool or doll in her husband's hands.

●

Refuse to decorate yourselves, don't go in for scent and lavender waters; if you want to give out the scent, it must come out of your heart, and then you will captivate not man but humanity.

●

In this country of semi-starvation of millions and insufficient nutrition of practically eighty per cent of the people, the wearing of jewellery is an offence to the eye...The wearing of expensive jewellery is a distinct loss to the country. It is so much capital locked up or, worse still, allowed to wear away.

●

We can never reach Swaraj with the poison of untouchability corroding the Hindu part of the national body. Swaraj is a meaningless term, if we desire to keep a fifth of India under perpetual subjection, and deliberately deny to them the fruits of national culture.

●

There should not only be no untouchability as between Hindus and Hindus, but there should be no untouchability whatsoever between Hindus, Christians, Mussalmans, Parsis and the rest...It is untouchability with all its subtle forms that separates us from one another, and makes life itself unlovely and difficult to live.

●

Farmer and workers...make India. Their poverty is India's curse and crime. Their prosperity alone can make India a country fit to live in.

●

Our salvation can only come through the farmer. Neither the lawyers, nor the doctors, nor the rich landlords are going to secure it.

●

It is not literacy or leaning that make a man, but education for real life. What would matter if (men) knew everything but did not know how to live in brotherliness with their neighbours.

●

There is something radically wrong in the system of education that fails to arm girls and boys to fight against social and other evils. That education alone is of value which draws out the faculties of a student so as to enable him or her to solve correctly the problems of life in every dapartment.

●

We cannot properly control or conquer the sexual passion by turning a blind eye to it. I am, therefore, strongly in favour of teaching young boys and girls the significance and right use of their generative organs. Sex education... must have for its object the conquest and sublimation of the sex passion.

●

Is it right for us... to bring forth children in an atmosphere so debasing? We only multiply slaves and weaklings, if we continue the process of procreation whilst we feel and remain helpless, diseased and famine-stricken.

●

Propagation of the race rabbit-wise must undoubtedly be stopped, but not so as to bring greater evils in its train. It must be stopped by methods which in themselves ennoble the race.

●

It is far easier and safer to prevent illness by the observance of the laws of health than to set about curing the illness which has been brought on by our own ignorance and carelessness.

●

When once a bottle of medicine gets itself introduced into a home, it never thinks of going out, but only goes on drawing other bottles in its train.

●

Our passion for exercies should become so strong that we could not bring ourselves to dispense with it on any account. We hardly realise how weak and futile is our mental work when unaccompanied by hard physical exercise.

●

Khadi mentality means decentralisation of the production and distribution of the necessaries of life. Heavy industries will necessarily be centralised and nationalised. But they will occupy the least part of the vast national activity in the villages.

GANDHIJI

YOJANA

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LEST WE FORGET

So long as the millions live in hunger and ignorance, I hold every man a traitor, who, having been educated at their expense, pays not the least heed to them.

—*Vivekananda*

IN THIS ISSUE

ECONOMIC TRENDS

THE central theme of the Reserve Bank's Report this year is that the Indian economy is slowly finding its feet after a prolonged period of stress and strain. In this context, the report points out that "The price level now is six per cent lower than the level at the end of last year. The balance of payments has shown an improvement; and there is more confidence all round." The report underlines the change in the economic climate and in expectations that are in evidence today. All these developments hold out bright prospects for the much-needed resumption of economic growth. At the same time the report draws attention to the difficult problems which lie ahead. It is significant that while the Report spotlights the gains in various directions, it emphasises the need for caution and dynamism in our efforts to build further on the present favourable trends.

The Report projects without frills the overall picture of the economy after two years of successive drought and serious imbalances in the economy, which nevertheless, showed some wholesome trends. These were : (1) a marked improvement in the supply situation, both in respect of foodgrains and industrial raw materials; (2) a reversal of recent trends in prices and (3) an improvement in the balance of payments position. The Report draws attention to the increase of 9.3 per cent in national income as well as to the substantial increase in the production of foodgrains which amounted to about 29 per cent over that of the previous year. The Report notices the revival of industrial production in the first quarter of this year. As regard prices, the Report discloses that the general price index over the year declined by about six per cent. It devotes a great deal of attention to the policy measures taken during the year to promote a more broad-based revival of the economy and outlines the steps taken for the development of agriculture.

One of the encouraging features in this year's Report is the appreciable improvement in the country's foreign exchange reserves, which registered an increase of 104 million dollars, as against a steep fall of 160 million dollars in the previous year. A significant reason for this improvement, it is true, was the net drawings from the International Monetary Fund and special deposits by the World Bank. Nevertheless, the improvement reflects the reduction in the imports of food and raw jute and an improvement in the volume of exports. The Report points out that the recovery in exports continued through April to June 1968. The Report, however, emphasises the need for continued vigilance and flexibility in dealing with the foreign exchange situation.

Dealing with future prospects, the Bank's Report sounds a note of caution. While pointing out that the new strategy of agricultural development holds out the promise of continued advance, it makes it clear that industrial production has yet to pick up. Industrial recovery so far, the Reports adds, is partial and tardy. It emphasises that several industries are working below capacity, and better performances can only be brought about by a steady rise in real income, increase in investment and further growth in exports.

The Report lends support to the need for growth with stability, which the "Approach to the Fourth Plan" has stressed. The Report, however, states that basically, resumption of growth with stability depends on the success of efforts to mobilise larger savings, in order to make up for any shortfalls in external assistance. It is here that the people as a whole have an important part to play.

Re-examination of Union-State Financial Relations Overdue

M.A. OOMMEN

IN India the allocation of resources between the Centre and the States is being done through two institutions, the Finance Commission and the Planning Commission. These two institutions work independently of each other and in an uncoordinated fashion. This has been the result of historical circumstances.

The institution of the Finance Commission was based on the lessons we drew from the experiences of the old federations like the U.S.A, Canada and Australia. The institution of the Planning Commission was more or less modelled on the planning machinery of the centrally-planned economies of the Socialist camp. The absence of co-ordination between these two institutions, which determine the allocation of resources to the States, has created dissatisfaction among the States and uneasiness at the Centre. In what follows we may examine how far the Finance Commission has been helpful as an effective agency of federal transfers and what orientation needs to be made in the existing machinery of federal transfers to make it more effective in the context of planning in our country.

First, in a planned economy, its needs and resources will have to be viewed in toto. The allocation of resources will have to be consistent with the objectives and priorities laid down in the Plans. The process of organisation and utilisation of resources is a joint responsibility of the Centre and the States. The old federal principle, which regards all the constituent units as independent of each other in their own spheres, has to give place to what may be called the idea of co-operative federalism. All the arrangements for Centre-State transfers of resources will have to be based on the considerations of rapid economic growth without prejudice to the idea of 'federal justice'.

The Finance Commission's recommendations at present are confined only to the non-Plan budgetary needs. The distinction between Plan and non-Plan expenditure seems to be unnecessary and arbitrary in a planned economy. The distribution of federal resources should not only ensure budgetary equilibrium, but also economic equilibrium through a balanced growth of the different regions as laid down in the Five Year Plans. The dichotomy of functions based on Plan and non-Plan requirements seems to entail needless duplication.

DEBT SERVICING

For the three Five Year plans, the loans given by the Union to the States amounted to about Rs 5,280 crore, of which about Rs 4,000 crore will have to be paid to the Centre. The Fourth Finance Commission has estimated that the interest liability in respect of loans outstanding at the end of the Third Plan and those likely to be raised during the period from 1965-66 to 1970-71 will be over Rs 1,500 crore. If capital repayments are included, it will be seen that the entire amount received by the States as a result of the Fourth Finance Commission's recommendations will be used up in servicing the debts to the Union. Thus the complicated and probably ingenious scheme of financial relations embodied in the Constitution has become somewhat meaningless.

As grants and loans on capital account as well as planning grants on revenue account are left outside the purview of the Finance Commission, it controls only a small part of the transfers to the States. Loans and discretionary grants, which lie largely outside the purview of the Finance Commission, cover nearly 68 to 73 per cent of the total

Case for a stronger Finance Commission and a separate wing at the Planning Commission to deal with Centre-State finances

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transfers in the first three Plan periods. During the last two years (1966-67 and 1967-68) the percentage has risen as high as 77 per cent. This means that the role of the Finance Commission as a quasi-judicial body instituted to allocate equitably federal funds to the States stands practically nullified. In fact, in a planned federal policy, an agency confined only to budgetary equilibrium would not serve the larger ultimate interests of the federation. The distribution of federal resources will have to ensure economic equilibrium in the nation as a whole, facilitating the rapid growth of less developed regions to catch up with the rest. Hence there is need for a statutory agency which would ensure a more equitable distribution of federal resources as a whole.

RESEARCH AND STUDIES

One would expect the Finance Commission to conduct research and independent studies (a) to provide new insights into the Centre-State financial relations and to educate the public on the various aspects of the problem and (b) to base their decisions on reliable data. None of the Finance Commissions has undertaken such studies. No doubt some of them felt the need, but could not proceed on these lines. The Third Finance Commission, which was anxious to give grants on a scientific basis, found that no data were available for determining the needs of settled by the Planning Commission, to be made under different heads on the basis of certain principles to be prescribed."

TWO REMEDIES

Two important remedies suggest themselves for meeting this situation. One is that the Finance Commission should be strengthened to function more effectively. As we have argued out, the case for it is not based on valid grounds. Our plea is that the planning Commission should be reconstituted with a separate wing to deal with the devolution of finances from the Union to the States. The Commission will have to be suitably oriented, giving it statutory powers to be an effective, impartial instrument of planning in the country. To spell out the details of such a Planning Commission is largely administrative mechanics. Some important aspects to be borne in mind in such a re-orientation however are indicated.

A new agency needed to ensure a fairer distribution of federal resources

There is no need for a costly apparatus like that of the Finance Commission to determine mere percentages. But, in fact, a cursory glance through the various Finance Commission Reports will show that the alteration of the percentages fixed by the previous Commissions or addition of a few more items to the divisible pool of taxes have been the major works of the Commissions, an exercise which they have arrived at after incurring heavy expenses and costly visits to State capitals. This can be said without disrespect to the institution of the Finance Commission, for the Third Finance Commission itself spoke more or less in the same vein when they said: "The role of the Finance Commission comes to be, at best, that of an agency to review the forecasts of revenue and expenditure submitted by the States and the acceptance of the revenue elements of the Plan, as indicated by the Planning Commission, for determining the quantum of devolution and grants-in-aid to be made; and, at worst, its function is merely to undertake an arithmetical exercise of devolution, based on amounts of assistance for each State already the States, their taxable capacity and efficiency of administration. At one place, the Fourth Finance Commission complains: "No data except the conspectus of Central and State budgets are made available to us." Some of the Commissions have indicated how the limitations of "time and organisation" have undermined their work.

All these indicate the need for a permanent agency continuously engaged in the study of these problems. What Mr. E.J. Hanson points out in regard to the well-known Australian Grants Commission is worth quoting here: ""The Australian Commonwealth Grants Commission has made a great contribution in federal-State relationships through its research studies and its impartial examination of issues... It has served to educate the Australinns in the finances of their country and to induce them to approach federal-State problems on the basis of fact-finding techniques and national discussion." In sum, we may say that the accumulated lore and wisdom of a permanent body is likely to be far greater than that of an organisation destined to regular births and deaths.

The Commission should be a body of technical experts with their counterparts at the State level. It should be strictly non-political. The allocation of grants, taxes and loans should be based on clearly defined norms consistent with the objectives of Indian Planning. This would automatically keep Centre-State financial relations out of the busy and crowded ring of political conflict. In the past, except for the Finance Commission awards, which cover only a small portion of federal transfers, there have been no clear norms. For most part the share of each State has been decided as a matter of intra-party bargaining and political horse-trading when the same party ruled in the Centre as well as in the States. In the context of the changed political realities, the need for well-defined norms is all the more great.

NO MAGIC FORMULA

We know that there is no magic formula, the mechanical application of which would yield the right results in all cases, so that some exercise of broad judgment also is ines-

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EDUCATION FOR EMPLOYEES TO HELP THEM ADVANCE IN THEIR PROFESSION

M.R. VERMA

There are no institutional arrangements in the country that enable the large number of scientific and technical employees in the various establishments to improve their professional qualifications and keep pace with new knowledge in their respective fields. Nor are the study leave rules, as they are framed, of any help in the matter.

THE importance of providing stimulating conditions of work and adequate opportunities for professional advancement in teaching and research and for attracting and retaining the right type of persons in the professions has been recognised by the Education Commission. To achieve these ends, the Commission has emphasised that the education system should be so modified as to (i) enable workers to acquire knowledge, ability, and vocational skill and to improve their chances of earning more and (ii) help to refresh the knowledge of educated persons and enable them to keep pace with the new knowledge in the field of their interest.

Let us examine in the light of the Commission's remarks how the agencies in India employing a large number of scientific and technical personnel have fared in providing to them opportunities for professional advancement and for keeping pace with the new knowledge.

The Atomic Energy Establishment, one of the largest scientific institutions in the country, takes fresh graduates and gives them intensive training in fields connected with the various aspects of atomic energy before absorbing them in the various sections. The Indian Council of Agricultural Research has a well-established school of graduate studies to which the employees are admitted along with students from outside and where they take courses leading to M.Sc. or Ph.D. degrees. There are a very large number of similar institutions, including the Council of Scientific and Industrial Research, which employ a large body of scientific personnel, most of whom are graduates in science and a few are M.Sc.s or Ph.D.s. Whereas M.Sc.s can register for Ph.D. with a neighbouring university, graduates or undergraduates enjoy no such facilities for registration for higher courses. Universities demand full-time attendance. Study leave rules of the different institutes are not liberal enough to enable their employees to prosecute regular courses of study. The professional advancement of such employees, who, of course, have the practical skill for doing their jobs satisfactorily, is completely blocked owing to this lack of facilities.

Other countries have tackled this problem effectively and to the great benefit of their employees. In the U.K., the scientific assistants in the Department of Scientific and Industrial Research are advised and encouraged to improve their qualifications. The National Bureau of Standards, Washington, organise academic courses at both the Graduate and Undergraduate levels to allow qualified members of the staff to follow a plan of study and research leading to Master's and Doctor's degrees. Their non-professional employees can take undergraduate courses in science and technology which would enable them to promote their technical development.

Let us explore the channels that are open to science graduates in India for improving their professional qualifications, besides Universities. The Institution of Engineers conducts an examination leading to the A.M.I.E. diploma which is recognised as equivalent to the B.E. degree. This is open to diploma holders in engineering or graduates in science. Only people who are in the engineering profession and working under qualified engineers are eligible to take the examination. The Defence Research and Development Organisation has established a school for training candidates for the A.M.I.E. examination. The Institution of Telecommunication Engineers holds a similar examination for which it registers candidates and awards a diploma to the successful ones.

Both the above diplomas have professional standing. In the scientific field, the Institution of Chemists of India conducts an examination leading to the A.I.C. diploma. The emphasis is on various branches of analytical chemistry, namely the analysis of drugs, pharmaceuticals, ores, water, oils, fats and soaps. This qualification has been recognised by the Government of India as equivalent to the M.Sc. degree, but no university recognises this for purposes of registration for its Ph.D. degree.

In U.K., the professional societies, in particular, take a leading part in catering for the scientific and technical personnel desirous of higher professional qualification, and diplomas awarded by them are

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highly valued by employers. For instance, a Public Analyst in the Ministry of Food and Agriculture has to have a Fellowship or Associateship of the Royal Institute of Chemistry. Institutions of Rubber Industry or Plastics Industry conduct examinations leading to associateship or fellowship. The Indian Branch of the Institution of Rubber Industry, London, also conducts examinations on behalf of the parent body. Although well-organised courses in rubber technology are not prevalent in Indian Universities or technical institutions, the British courses provide the necessary technically qualified personnel needed by the Indian Rubber Industry.

Similarly, the Physical Society of the U.K. conducts graduateship and associateship examinations, the former being recognised as equivalent to the Honours degree. These examinations are taken by those interested in physics but not going to the universities. Most employers there encourage their technical staff to go for part-time studies to improve their qualifications and knowledge of physics. Surprisingly enough, no effort appears to have been made in India for providing an advanced training in the field of general physics.

In spite of pious sentiments expressed to the contrary, degrees remain the only criteria for promotions in professional and scientific institutes in this country. Quite a large number of personnel, who otherwise are performing their duties efficiently, continue to be without any foreseeable hope of improving their qualifications and face the inevitable of having their careers blocked for all time to come.

The Council of Scientific and Industrial Research, which is the premier organisation employing a large number of scientific and technical personnel, should take a lead in tackling this rather gloomy situation.

It is true that the Council some time ago issued a directive that laboratories may offer training for City & Guilds Examination, which is like a certificate course in workshop practice. More positive and constructive steps are necessary if the employees are to be really benefited. The Council should (i) enter into arrangements with the universities and colleges located in the vicinity of the C.S.I.R. laboratories to arrange evening classes for graduate and post-graduate degree work; and (ii) set up training schools under its own auspices at its various laboratories and encourage the junior staff to register themselves and take the necessary examinations. Such examinations should have statutory recognition.

Several institutions in this country other than the universities have been deemed to be equivalent to universities and there is no reason why the C.S.I.R. Training Institute, if established, should not have the status of a university. Along with these steps by C.S.I.R., professional societies in the country, specially the Physical, Chemical and the Mathematical Societies, should institute courses and conduct examinations for associateship and fellowship diplomas. Their syllabi should be drawn up keeping in view the advancing frontiers of knowledge.

Even after making the requisite institutional arrangements for higher education for employees, if official rules do not facilitate the prosecution of such studies, the institutes would not serve the purpose for which they would be set up. The most important facility that the employees should get is study leave. The Second Pay Commission took a very encouraging stand when it said that the availing of study leave should be encouraged and personnel should be advised to take such leave. Study leave rules as framed at present say that (i) it is not admissible for studies in academic or literary subjects and (ii) it is ordinarily granted to Government servants of gazetted rank. But it is those persons who join the lower cadres of service who need facilities for improving their level of training and background for becoming more useful scientific and technical workers.

These steps will open the way for the less qualified scientific and technical personnel to advance their educational qualifications and thereby improve the prospects of their scientific and technical careers.

When a scientific or technical employee acquires improved qualifications in the course of his employment, he does not stand to benefit immediately by way of higher emoluments. The Education Commission recommended that "Two advance increments should be given in recognition of professional training received." A parallel already exists. Persons qualifying themselves in some of the accounts examinations become entitled to accelerated increments if posts in the higher grade are not available. There is no reason why a similar procedure should not be applied to scientific posts also. A minimum qualification may be prescribed for each post, and if the incumbent acquires higher qualifications, he may be given special advance increments.

BHARAT ELECTRICALS RAISES PRODUCTION THREE-FOLD

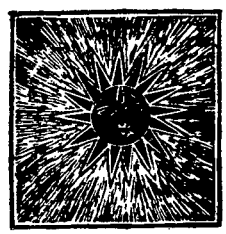
Last year the Bharat Heavy Electricals, a public sector undertaking, expanded its production three-fold. The Company's plants at Hardwar, Hyderabad, and Tiruchirapalli produced electrical equipment worth more than Rs 20 crore in 1967 as against about Rs 7 crore in the previous year.

A large portion of this enhanced production was by the Tiruchirapalli plant, whose output rose to Rs 11.43 crore resulting in a net profit of Rs 51 lakh.

Mr. D.C. Baijal, Chairman of the Company, said that BHE was now in a position to take up the manufacture of boilers of various sizes for different industries. Boilers for the thermal power stations made by the Company are now under erection at Ennore in Madras and at Durgapur.

The Company has also started manufacturing industrial boilers, orders for four of which have already been secured. A heavy-power equipment plant at Hyderabad is getting ready to manufacture turbo-blowers and turbo-compressors for steel mills.

An important contribution by the Bharat Heavy Electricals is the installation and commissioning of 220 KV air blast circuit breakers at the Tarapore sub-station for distributing nuclear power.



AUTOMATION

Technological advance does not mean setting a new "Fashion", but it is the very essence of progress. Automation is, in this context, of vital significance in promoting efficiency and aiding economic development. However, for a country like India, where there is a surplus of manpower, it has a human side which cannot be ignored. The dilemma which confronts the country is heightened by the urgent need to progress and the inescapable need to maintain the present rate of employment.

REDUCES EMPLOYMENT, BUT HELPS TECHNOLOGICAL PROGRESS

THE term "automation" is loosely used in India to include any form of rationalisation of work-process, mechanisation of work or adoption of improved methods which reduces the number of workers. Automation is thus an attitude, a philosophy, rather than a particular technology of electronic devices. It is distinguished by only one feature, reduction in the number of persons employed in producing goods or services.

Paul Einzig, a specialist on automation, defines it thus: "Automation, as applied in factories, aims at achieving uninterrupted motion unaided by human effort, which transforms materials through a series of processes into the desired shape and processing the desired qualities, transfers them to where they are required, and assembles the pieces into the final product, with the aid of self-correcting devices which inspect the goods to check whether they are in conformity with specifications, eliminate defective goods, and automatically adjust the process, if necessary, to bring the result into conformity with specification."

As applied to offices, automation aims at entrusting machines with the execution of routine clerical work, keeping the management supplied with up-to-date information about production sales, inventories, and accounts, storing routine information in such a way as to make it available automatically whenever required and in the form in which it is required; and assisting the management to work out speedily alternative plans af action.

Techonological change is a historical inevitability and automation is the ultimate stage which Aristotle dreamt of when he said, "There is only one condition in which we can imagine managers not needing subordinates and masters not needing slaves. This condition would be such that each instrument could do its own work at the word of command or by intelligent anticipation." In this world of rapid technological change automation is fast bringing about a revolution. There is no point in discussing the desirability of this revolution; and there is no question of turning back and little possibility even of regulating the speed of development. The problem is to move forward in the social field fast enough to be able to ensure that technological progress is transplanted into social progress.

MAJOR ADVANTAGES

The major advantages claimed for automation may be listed as follows :—

(i) Automation contributes to increased productivity and reduction in costs, bringing immense material gain to the community, possibilities of wage increases, and rise in the standards of living.

(ii) It provides economy in the labour force.

(iii) It gives much greater control of processes and fuller utilisation of plants.

(iv) With automation there is much greater safety for the operator. There is less risk to life, limb and health owing to the possibility of distant control and the elimination of the most difficult and dangerous tasks.

(v) Automatic self-correction prevents wastage of materials.

(vi) It secures a higher degree of uniformity and precision than by human labour.

(vii) It ensures efficient record maintenance in offices and provides a tool for various forms of management control designed to increase efficiency and improve production planning.

On the other hand, automation has certain disadvantages which cannot be altogether ignored. Among these, the most important are:

(i) Automation may cause large-scale unemployment and labour displacement;

(ii) It may increase monopolistic trends. In the developed countries where automation has made progress, a good many trade unions and small employers fear that small business will drop out because it cannot afford the cost of automation or the capital to finance it.

(iii) The more complex the equipment of a factory, the more vulnerable it is to breakdowns.

(iv) Automation may cause unbalanced growth both within the economy of a country and without by upsetting international economic equilibriums.

Much of the progress in automation has so far been confined to the developed countries, with the United States, the country of its birth, leading with 27,000 computers in use. Japan comes next with 2,000, followed by Britain 1,905, West Germany 1,800, France 1,500, Canada 900, and Italy 800. In the Soviet Union and the other East European countries also automation is making rapid progress.

The advocates of automation claim that it has an important role to play in the developing countries as well, because it stimulates both agricultural and industrial development. Among other things, it helps in mass production, which means more demand for raw materials and components. Through automation goods and services are produced at lower costs, promoting mass consumption and greater economic buoyancy. It also helps generate surpluses and savings for investment. It boosts exports by rendering products cheaper and more competitive in international market.

AUTOMATION IN INDIA

Automatic or semi-automatic machinery is to be found in some pharmaceutical establishments (filling and sealing of vials), cotton textile mills (automatic looms), petroleum refineries, oil fields, chemical plants and steel processing plants. Many large firms use computers for sales and payroll accounting, inventory control and invoicing. Electronic computers have been installed in 31 establishments in India, 15 in the public Sector, 13 in the Private Sector and three in departmental undertakings.

Computers have been installed on five railways to do the work of the Unit Record equipment which is unable to handle the increasing workload efficiently. Computers are expected to be installed in two more railways and in the Railway Board's office. Computers have also been installed in the Chittaranjan Locomotive Works, tbe Diesel Locomotive Works, Varanasi, and the Integral Coach Factory, Madras. But there has been no retrenchment of staff. In fact, about 1,300 clerks who had become surplus have been absorbed elsewhere. According to the Ministry of Railways, the employment potential of the railways is not likely to be affected significantly by computerisation. Only a marginal reduction in the ministerial staff is likely initially, but when traffic begins to expand, more staff may be recruited for operation and maintenance work.

The Life Insurance Corporation has installed one computer in Bombay and is planning to instal another in Calcutta. This will render 383 workers surplus, but 225 new jobs will be created. The net reduction in jobs will thus be only 158, spread over a period of three years. The first stage of mechanisation was introduced by the installation of Adrema Machines for premium billing in 1924, but it did not have any effect on employment in the insurance industry. In 1928, the second stage began with the introduction of Punched Card Equipment. But, there was no retrenchment of staff because of the change-over to mechanisation.

NO RETRENCHMENT

The Life Insurance Corporation's decision to introduce Computers Is intended to improve its service to policy-holders and Agents, and also bring about substantial savings. The work of maintaining files, premium and loan interest billing, renewal commission and bonus commission billing, premium loan and commission accounting, and generation of status reports—form giving full information on policies—is already being done by Computers.

So far as the oil companies are concerned, the Union Labour Ministry has set up a Commission of Inquiry to report on the rationalisation of business and working methods and the introduction of automatic devices, including accounting machines and computers. The Reserve Bank of India and the State Bank of India have each installed a computer. This has become necessary to meet the increasing load of transactions. Computers have replaced machines which have outlived their utility and will also be used for analysis of data, involving complex types of tabulation and computation, to help the Banks to formulate their policies. In both cases there will be no retrenchment.

An elaborate procedure has been laid down by the Central Government for the import of electronic computers. Each request is referred to the Union Ministry of Labour and Employment for clearance. Before granting any such request, detailed information is collected about the data processing equipment already installed, the number of persons employed, items of work proposed to be done by computers, the amount of work already done by conventional processes, and the effect of the introduction of computers on the existing employment position. The views of the registered trade union operating in the establishment and its parent organisation to which it is affiliated are taken into consideration in arriving at a decision. It is only after consideration at various levels that a decision is

taken to recommend the release of foreign exchange and issue of import licence. Final clearance is given by the Union Ministry of Labour and Employment only after ensuring that there is need for introducing electronic computers and that the employment position will not be adversely affected. An undertaking is also taken from the employers that the staff employed by it would not be affected.

While considering the relevance of automation to India, an important factor to be borne in mind is the fact that we have an abundance of manpower. The economies of countries where automation has made significant progress are those where there is relative shortage of manpower. Thus, while automation in those countries was inevitable to a large extent and was followed by no substantial unemployment, the pace of technological development in India has to be regulated to minimise hardship to the workers.

There are other limitations as far as India is concerned. Automation equipment is expensive and in view of the low cost of manual work in India there may not be many fields in which its use can be justified on economic grounds. Scarcity of capital, lack of foreign exchange, trained personnel and difficulties in obtaining spare parts are other limiting factors.

Advocates of automation argue that these problems are transitional and that, in the long run, labour stands to gain through increased employment opportunities generated by automation. They point out that automation leads to increased earnings and higher standards of living and more leisure and reduces drudgery and monotony. Trade unions in India, however, oppose automation mainly because it cuts down employment opportunities.

ACUTE UNEMPLOYMENT

In India, for example, the difficulties would be accentuated because there is already a huge backlog of unemplpoment in the labour force. The prospects of displaced workmen finding alternative employment in the production, maintenance and servicing of automatic equipments do not have the same assurance and dependability as in developed countries. According to the International Labour Organisation, whatever may be the trend of total employment, large-scale shift of workers from one industry, occupation or undertaking to another is unavoidable. It is pointed out that the necessary adjustments can be made smoothly and easily only in conditions of full employment.

More skilled workers and technicians will be required in automated factories with the result that a large number of semi-skilled and unskilled workers will become redundant. While this no doubt offers opportunities to unskilled and semi-skilled workers to acquire the requisite skills and thereby increase their earning power, the extent to which this opportunity will be available is obviously limited. Again, because the nature of skills in an automated factory or establishment is different, even those now described as skilled and highly skilled workers may become redundant unless they acquire more sophisticated skills.

The introduction of automation will call for reorientation of educational and training methods to meet the new requirements of skill and keep pace with developments in automation. As there will be more jobs of a technical or specialised nature, emphasis should be on technical education rather than technical training.

Since the impact of automation on labour is so far based on the experience of developed countries, a few studies in selected establishments in India might prove useful. These studies may cover the impact of automation on employment, occupations and working conditions and the methods and problems of adjustment.

TRIPARTITE DISCUSSIONS

Automation has been discussed more than once at the tripartite Indian Labour Conference in recent years. The installation of computers in the Life Insurance Corporation and the Oil Companies and the apprehensions it evoked among the workers brought the question to the fore at the Conference in New Delhi in July 1966. The Standing Labour Committee also discussed the matter in May 1967. While no specific conclusion was reached, the consensus seemed to be that automation for "production work" could continue to be regulated by the Model Agreement on Rationalisation. Opinion on the question of automation of Table Work was, however, divided. The Workers' representatives and some State Labour Ministers were opposed to any automation of Table Work on the ground that it would shrink the employment potential.

A special session of the Standing Labour Committee was held on July 18, 1968 in New Delhi to discuss the question of automation. The representatives of the four Trade Union federations—All India Trade Union Congress, United Trade Union Congress, Indian National Trade Union Congress and Hind Mazdoor Sabha—were of the view that in the context of the need for an active manpower and employment policy and to rid the country of scourge of unemployment, it had become necessary to lay down the limit of technological change that the country could afford in its present stage of development. While the AITUC wanted a freeze on automation, the HMS, UTUC and INTUC were in favour of a statutory committee with representation from labour to screen all proposals for the introduction of computers.

There can be no justifiable opposition to automation when it attempts tasks and fulfils functions beyond the capacity or capability of the human agency. Equally, for a country like India with an essential export programme, any automation measure that can reduce costs and improve quality should be welcomed. The displacement and unemployment of labour, however, pose difficult problems in an economy which is already overburdened with a backlog of unemployment. The progress of automation should be so regulated as not to accentuate this problem, but to bring about solutions through gradual adjustment. In essence, the remedy would lie in a fast rate of economic growth.

There is a short-term problem arising from displacement and unemployment and there is the long-term prospect of technological advance providing the breakthrough in economic development. Technological advance itself will prove self-defeating unless it ensures the social good of the community.

I.R.-8 IDDLIS

S.V. Raghavan

With more gusto than pride the farmer was ordering his cook to prepare IR-8 iddli for breakfast the next day. To his guests, who had come to his place to get a first-hand information about his achievements in the field of agriculture, this nomenclature for *iddlis* sounded somewhat puzzling.

Seeing the puzzled look of his guests, the landlord explained. IR-8, he said, was a new exotic high-yielding paddy strain brought into India from the Philippines and grown widely over a large area in the rice-producing belt of his and adjoining districts as part of the latest programme to achieve a breakthrough in food production. Rice from this particular variety of paddy was welcomed by the people as a very tasty one, both as cooked rice and in dishes like *iddli* and *dosa*. The landlord was, therefore, anxious to serve his guests with a repast of IR-8 iddlis.

This gentleman, who personally tends his farm covering over 30 acres, and his two sons, science graduates—one of them is a Master of Science in Bio-Chemistry and the other a Bachelor in Agriculture—have brought to bear on their field operations the latest in farm management and technique, so that their lands are made to yield the maximum.

The elder son's approach to his farm work is very interesting. He has a small improvised laboratory in a part of his house in the village, where he conducts studies on the high-yielding strains—their properties, both as seed and harvested grain, their cooking qualities, durability and taste, details, which every intelligent farmer should go into. Next he tries a sample quantity of the seed on a limited area, say, an acre or two, and treats the soil to the prescribed course of manuring with natural and chemical fertilisers. When the seed is sown, he takes meticulous care in raising the crop and guarding against pests, insects and other forms of crop-killers by the timely administration of endrin, streptocyclin, cumon, etc. NPK mixture with periodic doses of urea is applied on a rigid time schedule. Transplanting of the nurture, harvesting and threshing are done in a scientific manner. When the yield is obtained, it is carefully assessed in terms of capital, labour and profitability. The more successful strains are sown on bigger areas of 15 and 20 acres. As the visitors got interested in his methods, he whispered a wish with a twinkle in his eye; he could do more and perhaps blaze a new trail in agriculture had he a ten thousand rupees to put by for a fully-equipped laboratory.

This educated and enlightened family almost comes near to the ideal of educated young men going to the villages in big numbers to take to farming—a wish to which the Madras Chief Minister gave expression when he saw the Japanese youth taking to agriculture.

In the conversation that followed the next morning over platefuls of IR-8 iddlis, the chief host said that the ideal he had set for himself and for his two sons was to serve and save the country, to the extent they could jointly and severally do, in times of acute food crisis. He lives about 100 miles from Madras and his lands till some time ago were subject to the vagaries of the seasons. He claimed that some two or three years ago he had started the application of modern knowledge and equipment with a view to bypassing Nature when she played truant.

This year's yield of paddy with the high-yielding varieties, the affluent gentleman farmer hopes, would set up a record. His favourite is, of course, IR-8, and his estimate is anything from 40 to 45 bags per acre, whereas with conventional varieties the average yield was between 20 and 22 bags of 75 kgs each. This doubling of production, so demonstrably established, he hoped, would bring about a revolutionary change in the attitude and outlook of farmers not so well educated or responsive to modern scientific agricultural practices, so perseveringly propagated by official agencies. He believes in showing the way to others by his own example. And it is catching, as is evidenced by acres upon acres of luscious green paddy fields all round, where just a year ago there were only stretches of dry and parched earth.

MORE D.D.T.

The Hindustan Insecticides Ltd. is studying the possibility of setting up another DDT plant. The company now runs two factories, one each at Delhi and Alwaye, which have recorded substantial progress in 1967-68. The total output of technical DDT of 3,102 tonnes represents an increase of over 10 per cent over of the last three years' production. The Alwaye factory produced more than half of it, which is about 19.5 per cent above the installed capacity of the plant.

The company is now setting up additional plants for manufacturing annually 1,400 tonnes more of DDT at Delhi and 3,000 tonnes more of BHC at Alwaye. These two plants are expected to be completed next year.

A REPORT BY KIRTI AGRAWALA

RAJASTHAN'S HARDY MEN BRAVE THE HARDY ANNUAL

men trek away with cattle; women and children remain

RAJASTHAN is passing through another critical year. Its five western districts are again in the grip of drought. For the eighth successive year, rains have totally failed in Jaisalmer. In Barmer and Bikaner, it is the fourth bad year. For Jalore and Jodhpur too, it has been a hardy annual.

These five districts are spread over an area of about 1.27 lakh square kms, nearly 40 per cent of the State. They have a population of about 27 lakhs, about 15 per cent of the total population of Rajasthan. It is in these districts that Rajasthan has an international border of about 11,000 kms with Pakistan.

The villages in these districts are far apart and accessible with difficulty. For hundreds of miles, there are vast stretches of sand interspersed with sand dunes. Of late, the building of border roads has cut short time and distance in some parts.

Famine in this area has been almost chronic. A couplet in Rajasthani quotes famine as saying "My feet are planted in Bikaner with the trunk lying across Marwar and arms extending to Barmer." But in Jaisalmer, says the poet, the famine has its permanent home. The virgin soil in most of the region, however, is fertile. With a little rain, coarse grains can be cultivated. Throughout the desert, the evergreen shrubs of the Sewan grass has withstood a number of dry spells in the past. But this year even the Sewan is reduced to black stumps from which hungry cattle turn away. Food crops have totally failed in the Western districts; in other parts of the State the crops have withered owing to lack of rains after the downpour in July which raised hopes of a bumper Kharif harvest.

On the food front, Rajasthan's first estimates of additional grain requirements are officially stated to be about one lakh tons from the Central pool. In the desert region, informal rationing has been introduced even in the rural areas of two districts. The district authorities have been asked to ensure that there is no death due to lack of food. This itself is a gigantic task. The economic conditions are such that many families in the interior cannot buy the rations.

The drinking water shortage is acute. The sources of water are few and even these are drying up. The large tanks in several places are now parched holes. In one village on Barmer-Jaisalmer road there are three wells—a rather unusual sight. But they are half dry and a woman takes no less than a hundred minutes to fill her pitcher. This naturally leads to a scramble among housewives for their quota of water. There are some tubewells but not many are working satisfactorily. As there is no power, operation is costly and restricted to fixed hours. People can be seen trekking for miles and miles with camel loads of water. Most of it is brackish and still it is consumed by both men and cattle. Government has pressed tankers into service to carry drinking water into the affected villages and give relief to suffering people but the task is an uphill one.

State Government's valiant emergency measures are no answer to the recurring problem.

CATTLE SHOWS STATUS

In Rajasthan, the problems of cattle are as grave as the problems of human beings. In the western districts, the entire economy is cattle-based. A man's status is known by the size and quality of his herd. There are families possessing as many as a thousand animals. There is great emotional attachment to milch cattle including cows as they supply most of the milk and ghee, forming a substantial volume of trade. But this year, at a fair in Bilera in Jodhpur District, the number of cattle put up for sale was double of last year's because people could not feed them and also because they were in dire need of money.

The efforts of the State Government are at present aimed at saving some three lakh pedigree cattle. For this, about 25,000 tons of fodder is needed until the next harvest. Fodder is being sold at heavily subsidised prices.

Caravans of menfolk with their cattle are seen moving to distant places in search of pastures. Women and children left behind by them have to be looked after. Many of them are employed on relief works started by the Government. State Government and voluntary agencies

have geared themselves up to provide whatever relief is possible in a near-famine of fodder, grass and drinking water. Other States have been approached to provide grazing facilities, and assistance depots on migration routes have been set up near places where drinking water is available.

In Bikaner, a voluntary agency is running a relief camp at Kolyat. Some 1,500 people are engaged in desilting an old tank. They get wages in kind: one kg. of wheat per head a day. A house-to-house campaign has been started for collecting grain. Another agency assists in the movement of cattle to safer areas. There is a camp for emaciated cows which are given fodder, drinking water and veterinary care.

A voluntary organisation in Jaisalmer has adopted a novel method. Cattle feed for cows is supplied against ration cards. About a thousand animals are fed in this way. Funds for this purpose are provided by the Central Gosamvardhan Council, the State Government and philanthropists.

Efforts are necessary to reduce dependence on cattle for a living. In this field, there seems enough scope to develop the wool industry as also the processing of hides and skins. Sheep and goats can stand the drought most and can be a source of wealth. In the famine of 1940 in Bikaner, mortality among sheep and goats was almost nil. Actually their number after the famine year was more than that indicated in the earlier census. Among cows, buffaloes and bullocks, mortality was around 35% while only 4% camels died.

Some attempts made in the private sector in wool industry in the small-scale sector are promising. The State Government is also working through its own centres for the development of sheep and wool. An expansion of this activity is likely to help greatly in reshaping the economy of the region.

RAJASTHAN CANAL

But emergency measures, however big they may be, would not solve the problem. The Rajasthan Canal Project is one of the most welcome steps taken so far to solve the State's water problem on a permanent footing. The Project holds out the promise of plenty to the desert areas of the State.

In all, the canal is expected to irrigate about three million acres of land. The total length of the entire canal system, the longest in the world, will be over 7,000 kms. This includes its distributaries and minor channels. Work on the main canal has been completed up to Birdhwal, about 80 kms from the point of its entry into Rajasthan. Water has so far been let out in 10 distributary systems. By next year, irrigation is expected to be made available for about four lakh acres. The farmers are looking forward to bringing about an economic revolution through this major project. Some of them are already getting ready to reap a good paddy crop this year. As the work proceeds, parallel steps are being taken to shape the future economy of the area. Already a land survey has been completed in an area which is expected to get water in the next three years. Rectangular fields have been marked out. Allotment of land is in progress. Special quotas are reserved for the landless and for those displaced by the construction of the Bhakra and Rajasthan projects. Quotas are also reserved for certain other categories of people, including Scheduled Castes and Scheduled Tribes. The State Government hopes to complete 15,000 allotments in the next three years. Crop planning is under way.

The latest decision of the State Government to shift people from famine-stricken areas to the canal sites will serve a double purpose, It will provide more manpower for the project as well as mitigate the hardship of the people.

To develop the region to be served by the Canal Project, the State Government is spending Rs 1 crore annually on roads. Concessions are being worked out for setting up industries. An agro-industrial survey is being made. Industrial areas will be located around mandis which will grow up as grain production increases. Land has already been allotted to some enterprises.

The Canal may take anywhere between five and ten years to complete. Before that, a network of small sources of water will have to be created even if it is costly. Sinking of more tube-wells throughout the area seems to be the only answer to this question.

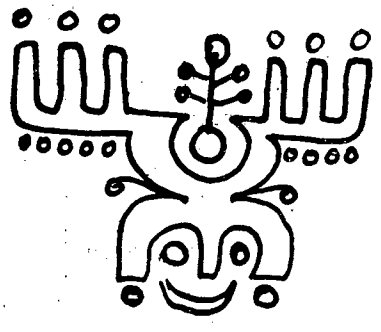
I.T.I.'s NEW RECORD

The Indian Telephone Industries showed a record turnover of Rs. 20.30 crore in 1967-68. This represents an increase of 27 per cent over previous sales. The gross profit amounted to Rs. 3.52 crore compared to Rs. 2.5 crore in the previous year, an increase of 40 per cent.

The percentage of gross profit to sales was 17.6 against 16 in the previous year. The ITI's progressive turnover since its inception crossed the Rs. 100-crore mark during the year and stood at Rs. 112.80 crore. During the last decade, the turnover has increased from Rs. 3.40 crore to Rs. 20.30 crore, representing an average annual growth rate of 21 per cent.

The average annual increase in net income from Rs. 12 lakh to Rs. 153 lakh over the same period was of the order of 31 per cent. ITI's exports during the year amounted to Rs. 51.36 lakh, taking the total to Rs. 155 lakh. Export orders valued at Rs. 98 lakh were secured during 1967-68.

The year saw a change in the pattern of ITI's export achievement. Apart from obtaining orders for components and piece parts, ITI was able to secure orders for complete telephone exchanges against keen global competition.



THIS INDIA

YOJANA invites contributions to this feature from its readers. Each anecdote must be true to life, of less than two hundred words, capturing something significant of India's rich and varied life. Each published anecdote will be paid for.

I did not want to bear a child for the fifth time but my relatives wanted me to get one more. Nobody wanted to realise my difficulties and to share my feelings. My husband was against interference with the processes of nature. I was in a fix. One day I happened to hear the *'Baheno Ka Karyakram'* of All India Radio. It gave me a hint. Without letting anyone else know, I went to the nearest *Lal Trikon Kendra.* There I met the doctor in-charge of the Family Planning Centre and asked for advice. She gave me some contraceptives and told me what to do with them. The fifth child has remained a dream of my relatives while I have enjoyed my married life fully. I have told my friends, who are in the same plight as I was in and do not want to be over-loaded with children, about my happy experience.

Delhi USHA KUMARI

One day a maid-servant who used to clean our utensils and sweep the rooms asked my wife about the details of working of our new acquisition in our kitchen: a gas oven. We had bought it only a few days back with the help of the small savings my wife had collected for over a year. The woman asked the price of the gas oven. On being told that it cost us over Rs 200, she said that she would soon buy it. My wife and I smiled as we could not take her seriously. But a few days later we discovered that she had a sewing machine and a transistor. No wonder that she could think of a gas oven too. All the four members of her family—she, her husband, a daughter and a son—were engaged in domestic jobs and the average earning of the family was Rs 300 per mensem.

New Delhi P. K. BANDYOPADHYAY

On June first at about twelve noon I was standing on the balcony of a building on the Kachiguda station road in Hyderabad when the funeral procession of "X" turned into a communal riot. Tear gas bombs were used to disperse the gathering crowds. A fruit vendor's shop was looted and burnt. Mango fruits were hurled at the police, as brickbats were not readily available. A beggar in tattered clothes picked up mango after mango from the road and calmly ate them off. He had no time to be affected by the communal frenzy that raged round him. The beggar continued to eat the mangoes long after the whole crowd had dispersed.

Rajahmundry K. LINGARAJU

As an Extension Officer, I had to organise a One-Teacher *Pathsala* in a village under our block. The teacher was a Muslim. His education itself was meagre but he was keen to make the adult members of his area at least literate. A few days later he wrote to me that his *Pathsala* was going to celebrate "Saraswati Puja" and he and his pupils were eager to have me in their midst during the function.

We were also celebrating "Sarswati Puja" in our Block Office, but I decided to go to the village *Pathsala.* When a colleague and I reached there, the teacher told us that we were late and that the Puja was over. We asked him wherefrom he had bought the image for the Puja.

The teacher told us that as their pupils were poor, they could not afford to buy a clay image. Instead, they had borrowed a painting. He went inside his house and brought the painting. The picture was not of Saraswati but of Laxmi.

Nagrakata BIBHUTI BHUSAN CHANDA

During the recent anti-Hindi demonstrations throughout Madras State, one of the main targets of the demonstrators was automobiles. The demonstrators and students used to stop the passing vehicles in order to write anti-Hindi slogans on them. In some cases, they exhibited their anger by damaging the vehicles. So, more in their self-interest than out of any love for the language, owners of automobiles began to paste posters containing anti-Hindi slogans on the windscreens of the vehicles. The posters contained slogans such as "Down with Hindi", "Long live Tamil". One of the famous comedians of the Tamil screen, who also happens to hold an executive post in a leading commercial firm, in his own humorous way pasted the following slogan on his car. *'Long Live Tamil'* and *'Long Live my car too'.*

Madras C.R. THIAGA RAJA VARMA

Olympic Hurdles

THE Olympics, which is the direct descendant of the Games in Ancient Greece, twice interrupted by War in the 72-years since it was reborn at Athens, has run into serious trouble. The XIX Games of the Modern Olympiad in Mexico City seems to be heading towards history. It is a tragic paradox of our times that a festival of "Peace" should be threatened with violent death. It is equally unfortunate that, while the ancient Games was killed by a Roman Emperor, the first of the Modern Olympics to be held in the southern hemisphere should be threatened by home-bred assasins.

The Mexico City Olympics, which promises to be the biggest-ever, with more than 7,200 competitors from 119 countries taking part, has had to cross many hurdles to reach the starting post. Let us hope that it will not go down in history as the only one to be abandoned in peace time. And yet, this seems to be the inescapable consequence of student unrest and violence, which has erupted in the Mexican Capital. In ancient Greece, the warring City-States forgot their quarrels during the Games, and Olympia was a sanctuary where no arms could be carried. Modern man, however, has a different sense of values; and the Olympic Games seems to have lost its meaning.

Rebuilding a City

A small, insignificant town in West Germany is on the way to gaining architectural eminence. The 112-year-old town of 20,000 residents, which is called SELB, is being redesigned and rebuilt from scratch. The veteran architect, Dr. Water Gropius who has planned the transformation, would like to demonstrate, using Selb as an example, that even the much maligned small-town can be made an attractive place to live in. He feels it is high time more attention was paid to these Cinderellas of town planning.

The basic idea of the architect is to provide the town with a pulsating centre. Shops, theatres, cinemas and restaurants are to entice the people back into a city centre where they can wander about undisturbed by motor traffic. The entire town centre is to be surrounded by a green belt. Housing blocks will be on the periphery, opening on to the parkland. Like the buildings to be newly constructed in the town centre, the apartment blocks will be on stilts, leaving room for parking and delivery traffic.

The three main traffic arteries are to converge on a ring-road round the town centre. This will be overlaid by a star-shaped network of footpaths and small streets extending past the ring and into the suburbs.

The reconstruction of Selb will be completed in four phases. It is estimated that approximately thirty years will be needed to complete the work.

Beauty and The Beast

THERE are many ways of keeping the filth out of our lives. The easiest way to do it is to push the dust under the carpet, where it cannot be seen. There is, however, another way of making people look away from squalor. And that is by clever window dressing which makes one forget that there is any ugliness around, and to pretend that everything is lovely in the garden.

The people suffering from this second type of self-delusion seem to be running the civic administration in the Capital. There is, of course, the brighter side of it which one has to acknowledge. In the process, let us admit, a great deal of beautification is slowly transforming the face of New Delhi. But is it doing anything to remove the scars that abound or make the need for essential amenities any the less?

Stoned pavements, stream-lined round-abouts and greenery along the roads are certainly not to be scoffed at. But what about the smoking, dirty, noisy buses on the roads? What are we doing about this perpetual shortage of public transport and drinking water? When is every child in the two Delhis to have *pucca* buildings for schools, instead of having to start life in tattered tents, pitched just anywhere? When will the sick and the infirm be better looked after? When will there be a sufficient number of playgrounds for our children who are forced to seek recreation on the pavements only to be called "street urchins"?

A "Welfare State" has to provide amenities that directly affect the lives and living of the people, and not merely cater to the senses. Beauty certainly has a place in life; but it has to be inside the home and not something which can only serve as an escape from squalid, day-to-day reality. Planning presupposes the fixing of priorities and not merely doing something for mere effect. Obviously, living in a land of beautiful make-believe cannot be a substitute for progress

IGNORAMAN
Wants to Know

Isn't it time to evolve a High-Yielding variety of foreign aid ?

A CONTROVERSIAL ATTEMPT TO INCREASE THE PRODUCTIVE CAPACITY OF DEVELOPING COUNTRIES

A TECHNOLOGY FOR VILLAGES

Interview

With E.F. SCHUMACHER

Mr E.F. Schumacher, Director of the Intermediate Technology Group Ltd., is an economic adviser to the U.K. National Coal Board. He was economic adviser to the Government of Burma in 1962, and of India in 1966.

Q. When you launched the Intermediate Technology Development Group in 1966, what were you aiming at? What made you feel that an intermediate technology was so important?

A. In my view the real problem of world poverty, and thereby the problem of development, lies in the villages—perhaps two million of them. These villages find their populations multiplying; they have not got enough land; their present farming methods are too inefficient to produce a proper livelihood. As a result, people are streaming off the land and into the towns. This, in turn, is making the towns quite unmanageable.

The high level of technology that we have developed in the west can only function if there is a town in the vicinity, and most of the aid effort has gone into such towns. This means that the people who need aid most are simply being bypassed. Can we bring aid into the rural areas so as to stabilise this position, stop the great drift into towns, do something about unemployment and banish the spectre of world hunger by raising productivity?

The moment you begin to think along these lines, you see that an appropriate technology is required, something very much simpler than the highly sophisticated technology we are using in the west. The term that we use is an intermediate technology.

Q. What do you see this technology as being intermediate between?

A. It should be very much better than the non-viable technology in the rural are as of the poor countries today. At present there is a gap, a huge gap, between these traditional, primitive methods and the high-level technology of modern farming.

Take, for instance, harvesting equipment. This means either the sickle or the combine harvester. What we want is to fill the gap between the two. Something better than the sickle but much easier to maintain and much sturdier than the combine harvester.

Q. Quite a lot of work is already being done in developing countries along these lines. Do you think that you have something different to offer?

A. We do not want to be different. We want to tackle a particular

aspect of the problem that is generally neglected. Poverty is a terrible condition, though most of us do not know very much about it. One of the drastic features of poverty is that you are cut off, out of touch, unconnected with what is going on elsewhere. There is no communication, and the same methods have to be re-invented again and again all over the world. Our main job is to tackle the problem of communication.

In India some splendid solutions have been found of an intermediate technology kind, but in Peru or, say, Tanzania, nobody knows about them—and vice versa. It is tragic to see people struggling to find solutions to quite straightforward problems which have been solved long ago somewhere else.

Further, we have research establishments, both in the developing and in the aid-giving countries, where solutions have been found using an appropriately simple technology. But these solutions are unknown to those who need them.

Q. How do you aim to bridge this gap ?

A. Quite obviously we cannot communicate with two million villages directly from London. Our policy is to set up local groups in the developing countries themselves. We have groups in India, Peru and Colombia. Negotiations are going on in many other places: Pakistan, Ceylon and various African countries.

We want the local group to do two jobs: first of all, to gather information on all the positive work already going on in the country; secondly, to receive and disseminate the information that we can pass to them from London.

We try to feed these groups with information in an easy-reference form, like the catalogue that we have recently published called Tools for Progress. We are working on specialised manuals dealing with important everyday problems. At the same time we are very anxious to get from the groups a feedback of what the problems really are.

Q. What sort of nucleus do you form in these countries ? Is it round a government agency or private individuals who are doing particularly good work in the field ?"

A. If you want to achieve anything in the real world you always look for something that already exists, some growing point: a technical university; a group of private individuals.

If you ask me for a general formula, I would say that it has got to combine the three forces of society. I call them the A,B,C forces: A stands for administration—in this case, government and international agencies; B stands for business, for industry; and C stands for the communicators, the intellectuals, the research people, universities and so on.

Setting up these groups is clearly the first step. The next, presumably, is to sift and sort out the information you receive and to issue publications which can, in turn, be used by the groups. Is Tools for Progress typical of what you are seeking to do in this direction ?

I think it is. We have been talking for some time about the appropriate equipment for these two million villages. People quite naturally said to us: "Well, where is it ? Has it still got to be invented ? Who is manufacturing this type of equipment ?"

We started with British industry and found that what we consider appropriate equipment is being produced, commercially, today. There is no need to invent it; there is no need for new designs. No one had hitherto gathered the information into a catalogue which could be easily used by people in the field to find out what they wanted.

The catalogue lists manufacturers who are producing down-to-earth equipment. It contains the names of British manufacturers who are prepared to help with the production of this type of equipment abroad, either as a joint venture or under license. Where a certain product has gone out of production in Britain, because the market for it is no longer large enough, the manufacturer has offered to make his blueprints available to anyone interested in setting up production in a developing country.

Now that you have established a base, what is your group aiming to tackle next ?

We are now becoming more specialised. Our most important project is another publication dealing exclusively with low-cost building methods. There is a wide range of building methods, but a director of education, for example, who has to build 50 schools or 50 houses for teachers, has very little information to help him chose between the alternatives, particularly on really low-cost possibilities.

We are assembling a manual which will present a complete view of the alternatives that are available.

Another subject on which we are actively engaged is water supply and storage. A large number of the developing countries are arid. Water is the beginning of everything. Until this problem is tackled, no development effort can get off the ground. Here again, a great deal of knowledge exists in highly scattered form. Our aim is to bring it together into a low-cost brochure.

There are many simple possibilities which could make a very real impact at the village level. The rainwater catchment tank, for instance, has aroused great interest in Botswana. Two of them have already been built and we are negotiating at the moment to get the very simple technique involved taught in primary schools throughout the country.

Q. The introduction of simple tools and equipment could have an immense impact on village problems but this impact can only be felt on the world level if you can reach several hundred million people in the rural sector. The task is huge. Do you see yourselves working closely with government and international agencies ?

A. Time is getting very short. We must use every means available and must work with everyone who is prepared to work with us. The international agencies are doing excellent work, but they are large and bureaucratic. There are many things which they cannot do because it would be tactless. They cannot easily initiate action and very often must wait for the local people to ask them for help. We are extremely anxious to work with them and have so far been quite successful but we will not wait for them.

The network that is coming into being is a network of groups of

individuals who really want to do something about the development problem and want to do it now.

We cannot, of course, reach two million villages in one throw but we can reach people who are really concerned about the problem and we have to hope that there will be some snowballing effect.

We are trying to supplement our activity on the commercial side by getting people to tackle the trading aspects and also the question of credit. Credit is a major problem in poor villages and there is very little one can do about it from London. But, at least, when we get people interested in appropriate equipment, we now have good banking connections who will help with the financing.

I do not think that a small private group like ourselves can solve the world's problems. But I think that through our work people are now becoming much more interested in this approach. I hope that we can persuade the big agencies to work with us. In this country there are the big money-collecting agencies like Oxfam and Freedom from Hunger. We are working very closely with them.

Q. Charity can have an enormous impact in a small area, but there is surely a very definite limit to what it can achieve ?

A. My answer is both yes and no. I do not believe that the problems of development are problems of money. It is more a question of giving the right kind of help and advice. You can waste an enormous amount of money on projects which are not appropriate to the conditions of poverty as they actually exist.

Let us assume that there are some two million villages that represent the real heartland of poverty today. You can establish a first-class wood working and metal-working shop for $ 100. One hundred times two million is not an insuperable problem.

It is organisation that is, perhaps, beyond us. It is intelligence, the application of intelligence to village problems, that is in short supply. If the advice given is the right advice and the equipment available is the appropriate equipment, then finding the money to buy it is not such a problem.

I think great mistakes are being made in being too generous. People do not value a thing so much if they have not had to work for it. You cannot assimilate any knowledge without your own effort. But the right information can be supplied free of charge—a form of charity if you like. Our funds are very limited. Our contribution is to mobilise knowledge that already exists and make it available in the right places.

Q. And this is the gap that you are aiming to bridge ?

A. It is a major gap at an all-important level. Many people assume that I want to do away with all high-level technology. In fact, I am not concerned with this at all. I am concerned with the gap ? Can we fill this gap ? Because if we do not, then the main aid effort will continue to bypass the poorest and will not touch the rural areas except at a few points.

The scientists and research workers of the rich countries work on the problems of the rich countries. The much less numerous scientists and research workers of the poor countries also work on the problems of the rich countries. Only in a few special cases, often at the instigation of international agencies, do the scientists and research workers of the rich countries apply themselves to the very humble and down-to-earth problems of the poor countries.

Our principle is to set up working groups of real experts on a voluntry basis to tackle simple questions: water conservation, transport, fish drying, crafts and trades; the tools a village needs from clothing and footwear to simple processing of agricultural products.

We want to make available detailed background information on technologies cheap enough to be of use and which can be applied on the inevitably small scale that the village economy demands.

—Interviewed by Geraldine Keen
Reprinted from Ceres, the F.A.O. Review

TAX RELIEF FOR TEA

The tea industry has been given tax reliefs from this month. The rebate on export duty will be increased from 24 paise per kilogram to 35 paise per kilogram. The special excise duty, which is levied at the rate of twenty per cent of the basic excise duty, will be abolished. These reliefs will operate during the remaining six months of the current financial year. The benefit to the industry during this period is estimated at three crore rupees.

The industry will be expected to use the extra money for specified purposes, like extension of planted area, provision of irrigation, and control of pests and diseases. The tea estates will have to maintain a separate account of the funds that they will get from the reliefs and of the expense incurred by them on the specified purposes.

A replantation subsidy scheme is also being introduced for the entire tea industry. The subsidy will be 3,500 rupees per hectare in the plains and 4,500 rupees per hectare in the hills for areas replanted. The intention is to exempt the subsidy from income tax. For getting the subsidy, tea estate should be registered with the Tea Board, should use only approved planting material, and follow recommended planting techniques. The subsidy is being given because Government feels that two per cent of the area under tea should be replanted every year with improved planting material. The rate at present is only 0.6 per cent every year.

NEW COPPER RESERVES

The Geological Survey of India has located copper-ore reserves of about 140.2 million tonnes in the Madankudan block of the Khetri copper belt. The copper-ore reserves in Kolihan block in the same belt have been estimated at 10.13 million tonnes.

GSI had also established about 64 million tonnes of ore reserves having 1.5 per cent copper in Ramrakha Block and about 25 million tonnes in Tama Pahar block in the Singhbhum copper belt in Bihar.

Detailed drilling in South Arcot district in Madras State had led to the discovery of copper-lead-zinc deposits of about 9 million tonnes in the Manandur area.

GSI had located promising lead and zinc deposits in Rajpura area of Rajasthan. Preliminary estimates have put the reserves at 15 million tonnes, but the actual reserves would be much higher.

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Mobilisation of Resources by States

Mobilisation of State Resources edited by M.D. Joshi. Published by Impex India, New Delhi. 240 pages.

M.R. Kulkarni

THE issue concerning the responsibility of the States to raise resources for the Plan is being discussed with increasing animation nowdays. The States have been generally exhibiting a tendency of favouring big Plans, but of not squarely facing their responsibility to raise matching resources. This was apparent in the last N.D.C. discussions where the States generally endorsed the Planning Commission's Approach to the Fourth Plan without committing themselves to the task implicit in regard to the raising of resources. It goes without saying that the fate of the Plan hangs by the attitude taken by the State Governments in this connection. This is not to say that there is no explanation, or even some justification, for the present attitude of the States. Whereas large and important development programmes fall within the State sector, the most productive and buoyant sources of revenue are with the Central Government. Therefore, the related issue of pattern and criteria of Central assistance has also come into prominence. The Finance Commission is presently seized of this problem and some long-term guidelines may be expected to become available from it.

The problem of mobilisation of resources by States, which was very vital even in the past, has become all the more crucial in view of the uncertainty regarding the size and scope of the Fourth Plan. It was very appropriate and timely for the Economics Department of Lucknow University to have organised a seminar on this subject. This seminar, however, was organised on the eve of the old Fourth Plan which was subsequently abandoned. During the last three years since the conclusion of the Third Plan, the Indian economy as well as the Indian political scene has undergone such a radical change that most of the basic assumptions governing economic developments prevalent then are no more valid. In the field of mobilisation of State resources itself, there is a new awareness and a definitive change in approach. This is amply demonstrated in the State Governments' changing policy in regard to prohibition, state lotteries, and so on. The two successive droughts followed by a bumper harvest have also induced some fresh thinking over our developmental problems.

Ignoring for a moment these changes which could not be anticipated, what has the seminar to offer by way of fresh guidelines for raising resources by the States? Even a cursory glance at papers contributed in the seminar would convince us that it was a totally disappointing endeavour. If some of the papers had overlapping subjects, repeating the same worn-out reforms and suggestions, some of the others would do credit at best to the undergraduate students. There are essays on fiscal policy and individual taxes setting out generalisations which are hardly of any practical significance. What can one say about the familiar platitude that public undertakings should earn profit at the rate of 10 per cent on capital, when, for one thing, the States have hardly any industrial enterprises and the problems regarding electricity boards and irrigation schemes are so unique in themselves? What purpose does it serve again to emphasise that the tax on land is very low and that it should be stepped up when the State Governments one after another are abolishing land revenue? Even in the limited context of U.P., no penetrating analysis of its problems and prospects is available.

There is some attempt to touch upon the other side of the problem, namely, the pattern of investment; but it is too cursory to be revealing or practically useful. The question is: Do the States wisely use the funds available so that the re-investible resources go on increasing? Do they not invest on projects politically dictated? Are not projects abandoned half way or neglected and new projects taken up simply because Central assistance is readily available for them?

Apparently no one in the seminar thought it important to go into these impotant aspects.

It is the Editor's job to bring together the conclusions and critically examine their mutual consistency and practical significance. However, no such serious effort has been made. Thus we find a motley of suggestions, proposals and ideas jostling with each other without any meaningful concensus emerging.

A Rigmarole

Economic Trends and Indications Vol. XI by Bhikhalal Kapasi. Published by the author. 131 pages. Rs 7.50.

R. C. Saxena

THIS is a collection of seventeen articles by the author written at different times. The author touches upon the various facets of the Indian economy as it emerged in the year 1967, namely, the aftermath of devaluation, recession, exports and foreign aid trends, nationalisation of banks, labour unrest and many other problems including the Agricultural and Food Administration. Instead of analysing the economic trends in an objective manner, the author plays the role of a spokesman of the private sector. Totally oblivious of the objectives of planning in India, he argues that "the adherence or application of some socialistic doctrines somewhat prematurely by developing countries looks inappropriate and in the case of India, the cost of premature application should exceed Rs 1,000 crore, if one is to take into account the imports of steel during the last one decade and the enhanced cost of constructions of steel plants." Mr Kapasi

obviously forgets that in no country has development taken place without heavy social costs.

The author vehemently asks for a reasonable increase in the price of industrial products with a view to solving the problem of corporate reserves specially when 'raw material prices have been left uncontrolled and workers have been encouraged to demand higher wages and bonuses." The numerous instances of protection given by the government to many industries have escaped the author's attention. But the fact that their performance was poor in spite of their getting the most-favoured treatment from the government ought to have convinced the author that it is the avarice and malpractices of private sector which should be blamed.

According to Mr Kapasi, the Government's monetary policy has been "unduly biased against private sector industries". From a sectoral analysis of 'bank finance' right from the First Plan, it may be found out that there was little change in the relative proportions of advances to industry and commerce up to 1955 and the shift thereafter was from commerce to industries like mining, building and manufacturing. Agriculture, small industries and exports suffered for want of bank credit all these years.

The author has no compunction even in making unfounded statements when it suits him to buttress his pro-capitalist views. At one place he says, "in all those countries where the socialist pattern of ideologies permeates economic thinking and policies, the rate of growth is much lower than in those economies which are free from such ideologies." This bald statement has no facts to substantiate it. In almost all the socialist countries, the rate of growth has been around 10 per cent as compared to 3 to 5 per cent in capitalist economies barring Japan, West Germany and France.

At places, the book becomes a rigmarole on absurdities, such as "If we as a nation are wedded to an ideology and bent upon creating a socialistic pattern of society, we have to put up with low rates of growth" and "what is needed is that the Prime Minister should select two or three intelligent and sagacious business leaders...who would be deeply interested in the economic development of the country."

A Tearful Memoir

The Story of Rehabilitation by U. Bhaskar Rao. Published by Publications Division, Patiala House, New Delhi-1. Price Rs.7.00

D.P. Bhattacharjea

THE book is a two-part story of the refugees from Pakistan and their rehabilitation in India.

The first part provides a comprehensive study on the refugee problem that once plagued our national life. It shows how communal bias overtook the centre of political activities and inflamed passion in the minds of many. The political scene in our country in the period immediately after the Second World War was marked by two things : the tremendous nationalist upheaval against foreign rule and the spate in communal activities. While the Congress and the other nationalist parties intensified their offensive against the British Raj, the Muslim league geared all its strength to set up a separate State for the Muslims. As preaching of communal hatred reached a very high pitch, the whole atmosphere became vitiated. And it took very little time to reach the climax in the great Calcutta riot of 1946.

But it did not end there. The entire northern belt was engulfed in communal frenzy. Punjab witnessed the most macabre spectacle of wanton brutality. The situation became so grave that the army even found it not easy to tackle. The communal fury grew increasingly strong, seeking new excuses for committing newer types of barbarities.

No sooner had the midnight gong on August 14, 1947 heralded the birth of free India than non-Muslims from Pakistan rushed into this land in staggering numbers. To rehabilitate them, to nurse them became the first charge of the Government of India.

The second part of the book deals with the heroic efforts made by the Government to tackle the problem of an enormous magnitude. The book describes the Government policy as well as the measures it took at different times with meticulous details.

Though it is an official report, it will rank as a source book. The period it has covered and the topic it has dealt with, have, no doubt, passed into history, with the overwhelming bulk of the refugees having settled down to a new pattern of life by now. It presents a vivid picture of dark agonising days for all those who have been lucky to escape the tragedy. It remains a tearful memoir of human suffering.

The book has an engaging manner of presentation and a captivating style. It is these qualities that could have lent so much of charm to a dry and drab official report. Seldom do we come across such an interesting and happy-reading Government publication.

Physics for the Layman

Physics: A Text-book for Secondary School, Part I—Mechanics and Properties of Matter. Published by the Publication Unit, National Council of Educational Research and Training, B-31, Maharani Bagh, New Delhi. Pages 239. Price Rs. 5.20

Pradip Maitra

THIS book is in keeping with the modern trend in Physics text-books for schools. The mathematical prerequisites have been kept down to a base minimum. Throughout the book a successful attempt has been made to bring out the basic principles of physics. To achieve this objective, a large number of illustrative examples have been drawn from everyday life. These also help to make the book interesting and readable.

The topics covered are varied in nature. Special stress has been laid on the measurement of fundamental quantities, namely, mass, length and time. An excellent treatment of vectors and of fluid properties has been given. The use of rationalised decimal system of units throughout the book is another heartening feature.

Despite all these features the book is far from self-sufficient for use as a text-book for secondary schools. But it will be useful to a lay reader in understanding the

fundamentals of the subject. The quantitative aspect of physics has been neglected and the use of this book in conjuction with a numerical examples book is a must. Little stress has been laid on the analysis and use of graphical data and the use of mathematical principles as a tool for understanding the subject. The production and printing are good, but I doubt whether it can stand up to three years of rough handling.

The Universe

The Universe by P.L, Bhatnagar. Published by the Publication Unit, National Council of Educational Research and Training, B-31, Maharani Bagh, New Delhi. Pages 200+six charts. Price Rs 6.50.

THE author has discussed in some detail the basic physics used in the study of the universe. The author introduces the reader to the relation between matter and radiation. Concepts such as wave-particle duality, various radiation laws, spectral analysis etc. are explained. One chapter each is devoted to the optical telescope and the radio-telescope. Under optical telescopes, their desirable characteristics, their various types and the advantages of each type have been discussed. In his treatment of radio-telescopes the author lays special stress on antennas and use of interferometers to improve the resolving power.

After this basic discussion attention is turned to a discussion of the stars. Under stellar constellation, names and magnitude of stars, the co-ordinate system, the use of stellar charts and the zodiac are discussed. Classification of galaxies and the interesting problem of the redshift and the expansion of the universe have been introduced. Special attention has been paid to our galaxy—the milky way. The stars, the sun and the planetary system have been treated in slightly greater detail and a host of interesting facts and figures have been brought forth. In particular the possibility of life on other planets has been discussed. The concluding chapter of the book examines the various theories on the origin of our solar system.

Periodicals Indexed

Index India, 1968, Ist Quarter (January to March). Edited by N.N. Gidwani. Published by Rajasthan University Library, Jaipur. 167 pages.

P.C. Roy

PERIODICAL literature the world over forms the germinating stage of books. Interestingly enough, much of the informative and thought-provoking writings embodied in the newspapers, periodicals and journals remain congealed in the pages of their origin, specially in our country. Librarians and researchers have an arduous task when they have to search for the articles they need from among a huge collection of periodical literature. The growth of such literature coupled with the variety of subjects covered by it underlines the need for a book of reference, which will straightway inform the reader of the whereabouts of the author, subject and the source he is looking for.

India is not merely in the throes of a book revolution. The Annual Reports of the Press Registrar bear ample evidence to the increasing number of newspapers and periodicals. The rate of their circulation and readership is also increasing year by year. Yet we are sorely negligent in bringing out consolidated index for the periodical literature. *"Index India"* is undoubtedly a most valuable entrant in this fruitful field.

The issue under review is the first issue of the second year of publication of this quarterly documentation of selected articles, editorials, notes and letters from English periodicals and newspapers. It also marks its transformation from the mimeograph form to that of letter press. There are changes in other aspects also.

Indexing of new composite books, which contain articles by diverse contributors on different aspects of Indian studies, is a new and extremely useful feature. Thirty five such books have been indexed in the current issue, making a total of more than 500 entries. The editor is perfectly justified in his claim that their retrieval in the index form has saved these writings from the verge of almost total loss to the world of scholarship. Another useful feature introduced is the provision of an author index which supplements the alphabetical index and facilitates the task of locating the entries sought for. The entries, in all about 12,500, are arranged under a wide range of subjects ranging from planning, economics, history, sociology, religion and philosophy to engineering, science and technology, agriculture, arts and profiles. They have been called out from more than 800 periodicals and newspapers. The target for the 1968 volume is 50,000 entries as against 30,000 entered in the first volume last year.

Much labour has gone into the index to make it a valuable reference book. There are a few minor omissions. In the list of periodicals, the country of origin of a few has not been mentioned. *New Age* has not been included although *People's Democracy* figures in the list of periodicals indexed. Under the entry *Gupta, Bharat Bhushan, Reorganisation of Union Government (P. 100. p)* the name of the journal does not find mention. What however, catches the eye is the impressive list of US periodicals received by the Rajasthan University Library. The American periodicals account for one-fifth of the total number of periodicals indexed and it is likely that a considerable number of articles to which the index refers must be representing American points of view.

OTHER BOOKS RECEIVED

Recession in India. Published by Popular Prakashan, Bombay. 36 pages. Re. 1

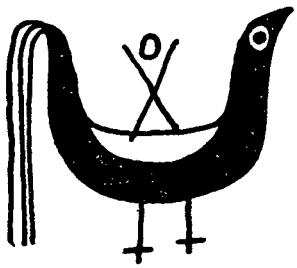
The Past Year in Retrospect. Published by Indian Oxygen Limited, Calcutta-1. 103 pages.

Introduction to Vocational Economics by B. N. Pal. Published by Vora & Co., Publishers Pvt. Limited, Bombay. 301 pages. Rs. 15.

The Last Cocktail by C. Minderovic. Published by Siddhartha Publications (Private) Ltd., Delhi-6. 89 pages. Rs. 6.

Irrigation and Power in the Three Plans (1951-66). Published by Publications Division, Patiala House, New Delhi. 79 pages. Rs. 1.50.

Needs, Facilities and the People. Published by Tribal Research Institute, Department of Social Welfare, Udaipur. 146 pages.



QUOTATION BOX

Dr. Chandrashekhar, who generally thinks ahead of times. is reportedly toying with the idea that Nirodh (condoms) be sold through slot machines in the big cities. Since there are no such implements in use in our country, the danger is that all and sundry, particularly children, might find the gadge's fascinating.

—From New Delhi Notebook of "The Statesman"

Few of us can approach nudity on the stage with the detachment of the man who went to see Lady Godiva in the pageant because he was interested in the horse. So a naked Helen, like a bearded Hamlet, will always seem slightly odd.

—From "Public Affairs"

The story is told of a Chinese passing through a London street. He noticed a woman in distress who had accidentally fallen in a dustbin. His sad comment was, "Englishmen, very wasteful. This woman is good for another 10 years !'

—'From 'BSF Newsletter"

Another advantage in AIR TV will be that instead of squirming to ministerial and VIP voices we shall have the good fortune to watch their gestures as well and enjoy their photogenic faces.

—From the Editorial of "The Times of India"

Fitting ex-President Eisenhower with a new heart was, it appears, seriously considered. It was a pity in a way that his need for one did not coincide with Senator. Robert Kennedy's assassination.

—Malcolm Muggeridge in "New Statesman"

How many first-class travellers actually pay for their seats, i.e., from their net income after deduction of tax? It will be found most first-class travel is by civil servants and railway employees above a certain rank, M.P.s and serving officers, businessmen on expense accounts, and other employees with travel vouchers which are only exchangeable for first-class tickets.

—From a letter in "The Times", London

Rajmata Vijaya Raje Scindia said to reporters "The more the defections to SVD from Congress, the wider the Cabinet."

—From "The Statesman"

A young man astonished lunch hour crowds yesterday (in Atlanta, U.S.A.) by stripping off his clothes and standing nude in front of the IBM building with a sign saying "computers are obscene".

—An A.P. News Report

Your paper is'nt perfect. You suspect there's a better one. But changing from one daily to another can hurt. The old one's so much a part of your life, like your wife.

—An advertisement of "The Times", London

To see something on television is to feel entitled to it, to be promised something by a politician is to feel immediately deprived of it.

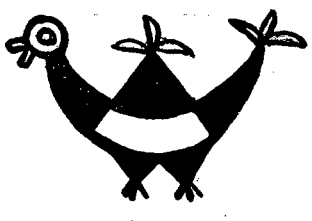
—Irving Kristol in "Fortune", Chicago

"Showaleg !" Nautical term for: "Good Morning, this is your Captain speaking !"

—An Advertisement

Like everyone else, I am following with bated breath the tortuous non-love affairs between An—an, the Chinese panda from Moscow, and Chi-Chi, the female panda which is the pride of London's Zoo...Dare I suggest a headline to the editors of *The Peking Daily :* 'Russian Revisionists and British Imperialists Plot to Produce Third China"

—From Traveller's Tales in "Far Eastern Economic Review"



MAKING OLD TRACTORS WORK

The Punjab Government has set up a Tractor and Machinery Cell under its Directorate of Agriculture.

The Cell will conduct a survey of the old tractors plying in theState which require spare parts in order to be in working condition and also assess the number of additional tractors required by the cultivators to mechanise their small and bigger holdings.

About 10,000 tractors of different brands and horse power are in use at present in the State. The farmers with holding above 30 acres are mechanising their farms according to availability of tractors. There are 67,000 small holdings comprising an area between 10 to 30 acres. For taking up mechanised farming on these holdings, the demand for small tractors is increasing rapidly. In order to accelerate the mechanisation of small holdings, it is very essential to assess the requirements of tractors and to make timely arrangements for the procurement of the same.

A large number of them have become idle for want of spares which are not easily available. There are about 8,000 tube wells and about 4,000 diesel engines in the State.

Night navigation facilities are expected to be available at the major Kandla port by the middle of next year. Berthing facilities for two more ships at Kandla port are also expected to be completed in the next one and a half years.

India's export of bed sheets and bed covers has almost trebled during the last three years. The exports rose from Rs 1.3 crore in 1965 to more than Rs 3.6 crore in 1967.

The Government of Maharashtra will award a prize of Rs 10,000 to one village in each district which stands first in giving shape to Gandhiji's ideal of a model village during the Gandhi Centenary Year.

INDIA'S SILK INDUSTRY HAS BRIGHT CHANCES FOR GROWTH AND EXPORT

PRODUCERS NEED SUPPORT

MAHABIR DASS

SERICULTURE plays an important role among the village and small-scale industries that help in boosting India's rural economy. It is an agro-industry *par excellence*, which provides full or part-time employment to more than 32 lakh persons of whom nearly seven lakhs belong to the scheduled castes and tribes. The Central Silk Board has estimated that the industry is likely to create additional job opportunities for four lakh more people during the Fourth Plan period. This is not inconsiderable when compared with the possible achievements of other similar industries.

India is the fourth largest producer of silk in the world but it trails a long way behind the first three, namely Japan, China and the U.S.S.R., in the quality of output. The country's annual production is hardly 1,600 tons of mulberry silk while the total global production is 32,000 tons. This works out to just about 5 per cent of the total. India, however, has the unique distinction of being the only producer of all the four cultivated varieties of silk, mulberry, tasar, eri and muga. Last year, India's production of these was as follows :— Mulberry silk, 16.68 lakh kgs; Tasar, 2.81 lakh kgs; Eri, 2.11 lakh kgs; Muga, 0.69 lakh kgs.

While we rank second among the tasar silk producers of the world with a 10 per cent output to our credit as against China's 90 per cent, in Muga silk India happens to have a monopoly. This golden-coloured silk is the exclusive product of Assam. China and South Korea produce considerable quantities of Eri silk but precise details are not readily available. At the World Meeting on Silk Production held in Murcia (Spain) in November last year under the auspices of the International Sericulture Commission, many silk-consuming countries urged India to increase her output of silk so as to compensate for Japan's gradual withdrawal from the global silk market owing to her post-war boom. Some countries took advantage of Japan's withdrawal. South Korea, which ranked as the sixth largest producer of silk in the world, had doubled her output of silk in the five-year period ending 1967. It should be possible for India to do no less if the Central and State Governments and the Planning Commission appreciate the potential of this industry in our country and ensure the flow of necessary inputs into the industry.

The following table gives the figures of expenditure on sericulture industry as compared with village and small-scale industries during the successive Plans.

Plan period	*Expenditure on Village & Small-scale Industries (Rupees in lakhs)*	*Expenditure on Sericulture*	*Percentage*
I Plan	970.0	21.61	2.2
II Plan	8,098.0	219.30	2.7
III Plan	9,947.0	350.30	3.5

It is true that sericulture as such has not suffered from any diminishing priorities in the village and small-scale industries sector. But it cannot be denied that the village and small industry sector as a whole did get relegated to a relatively less important role and sericulture has suffered as a result of this.

Another factor which has eroded the funds for sericulture is the present pattern of assistance whereby the Central Government gives 50 per cent grant and 25 per cent loan provided the balance is met by the States concerned. The States' financial position being what it is, this procedure of Central assistance for sericulture development serves very little purpose. The Government should consider how best to improve this procedure so that sericulture could develop to the full scope of its potential.

PROPOSED OUTLAY

The Central Silk Board which is the apex body concerned with the development of the sericulture industry has drawn up a Fourth Plan for the industry. The target of production has been fixed at 30 lakh kg of silk (both mulberry and non-

AN INDUSTRY EMPLOYING 32 LAKHS; SCOPE FOR FOUR LAKHS MORE

Mr. Dass is a Member of Parliament and is Vice-Chairman of the Central Silk Board.

mulberry). The required outlay has been assessed at Rs 24 crore. It may be recalled that the Planning Commission had agreed in 1966 to a tentative provision of Rs 13 crore for the development of sericulture industry during the Fourth Plan. The increased outlay proposed by the Silk Board is a determined bid to ensure that the industry's performance during the forthcoming Plan matches the expectations raised in this country as well as among the silk markets of the world.

A study of the industry's set-up at present indicates that the future for sericulture in India lies in giving attention to the following lines of development :

(1) Introducing high-yielding mulberry plants and silkworm races

(2) Organising a more sound seed supply organisation

(3) Popularising improved cottage basins and replacing the outmoded "charka"

(4) Modernisation of filatures after introducing the most modern types of basins and improving methods of cooking

(5) Bringing more efficiency in "Applied Research" and co-ordinating research work with the field work

(6) Organising co-operatives for different sectors of the industry

(7) Proper marketing arrangement for the different varieties of silk cocoons

(8) Establishing pilot centres for the introduction of sericulture in new areas which have a good potential for the industry

(9) Improving the standard of training imparted so that the products of sericultural training institutions might emerge as true technocrats imbued with a sense of purpose and charged with the requisite know-how.

Our silkmen are presently knocking at the doors of international markets. We must give them the wherewithal to strengthen their hands to reach our targets. The country exported silk fabrics worth Rs 34.67 lakh in 1958. Within a decade the exports have risen by ten times so that in 1967 they came to Rs 342.11 lakh. Besides last year the country also earned Rs 86.49 lakh by exporting silkwaste. During the first half of this year, our exports of silk fabrics have netted a total of Rs 215.24 lakh as against Rs 132.54 lakh for the corresponding period last year. Silkwastes worth Rs 21.61 lakh were exported between January and May this year. If this trend is to be maintained and improved so that the exports might expand to their fullest scope in a short period, a more imaginative export publicity is a crying need. It should not at all be difficult to reach an annual export target of Rs 7.5 crore.

The sericulture industry has to fulfil certain requirements of our exporters for them to embark on long-term contracts with customers abroad. Firstly, there should be a stability of prices over a period of time. Secondly, the quality of our silks should improve, if not to the international level, at least to the minimum standard of acceptability by the continental countries and the U.S.A. For all we know, these are not unachievable objectives.

Panchayats in Jammu

Prior to the merger with the Indian Union the authorities in Jammu-Kashmir did not look favourably on the institution of panchayats although there did exist a few such organisations. The present study is, however, an attempt to examine the working and progress of Panchayats in this part of the country.

With the establishment of popular rule in the State, panchayats began to be organised. The present form of panchayats under the Act of 1958 seeks to fulfil the ends of democratic decentralisation.

Among the various organs of the panchayat, the Panchayat Adalat compels attention. It is a separate judicial organisation, which functions independently of other members of the Gram Panchayat. Members of the Panchayati Adalat elect a Chairman from among themselves. The term of the Chairman is four years and he presides over the meetings of the Panchayati Adalat. Three members of the Panchayat form the panel. These Adalats are vested with judicial powers to deal with both criminal and civil cases committed under the Ranbir Penal Code 1933, the Cattle Trespass Act 1921, the Prevention of Cruelty to Animal Act 1934, and the Jammu and Kashmir Village Panchayat Act 1958. They can try suits to the extent of Rs 150.

Progress recorded so far by the executive bodies of the panchayats has not, however, been satisfactory. Their activities are mainly confined to the construction of panchayat *Ghars,* nurseries, some investment on roads and wells and pavement of lanes. They do very little in the field of agriculture. Many people still do not know how to use fertilisers supplied to them.

Members of the panchayats have been more interested in personal aggrandisement than in enlightening the masses, for instance, about the new techniques of agricultural production. One of the major aims behind the concept of Panchayati Raj was to enlist the active co-operation of the local people in formulating and executing the various production plans, and to make the panchayat an effective link between officials and the rural community, Unfortunately, however, Extension works and other allied programmes are being left entirely to the permanent staff in the area, who have other pre-occupations.

There are factions among the villagers, which have hindered the execution of development works. They are not competent to make their own plans and properly use the meagre funds.

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So Much Food in Indian Ocean

SEAWEEDS CAN BE USED TO MAKE FOOD AND TO BUILD A NEW INDUSTRY

S. P. Raychaudhuri
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THE proper use of natural resources is a fundamental condition for the economic development of any country. Further, as a counter-measure to the rapid increase of population, increased production of food has come to be an urgent problem in any country. Viewed in this context, seaweeds, otherwise known as marine algae, represent an unexploited resource in India. Hence, the development of the seaweed industry is important for the economic development of the country. In India, the natural wealth available from marine plant resources, if properly developed, can form the basis of an extensive industry.

Among the most important phycocolloids now being extracted on a large scale are agar-agar and carrageenans from red seaweeds and alginic acid from brown seaweeds. The rocky stretches of India's coastline harbour a variety of seaweeds of economic value. The long coastline of about 5679.77 sq. kms. with a number of gulfs and bays here and there form a typical habitat for these marine algae. The most important Indian seaweed resources are those that yield agar and algin. The former comprise red algae of the genera *Gelidium, Gelidiella, Gracilaria, Hypnea, Sarconema,* and *Ceramium,* while the latter comprise the brown algae of the genera *Sargassum, Cystophyllum, Turbinaria, Dictyota, Padina, Hormophysa* and *Colpomenia.* Among the edible seaweeds may be mentioned the green algae *Ulva, Enteromorpha, Caulerpa* and the algae *Laurencia* and *Acanthophora.*

The available information on the economic resources of seaweeds indicate that the agarophyte, *Gracilaria,* in the Chilka Lake is about 4-5 metric tons per annum on dry basis. It is reported that in the Cape Comorin area about 7 metric tons of dried agar weed can be collected every year, while from areas around Krusadai and the neighbouring islands and the south-east coast of Madras about. 300 metric tons of dry *Gelidiella* and 300 metric tons of dry Gracilaria can be harvested annually. From the Gulf of Kutch and other parts of Saurashtra coast 5 metric tons of Gelidiella and 20 metric tons of dry Gracilaria can be harvested annually.

It may be mentioned that from the south-east coast of Madras alone about 220 metric tons of dried Gelidiella are being exported to Japan and other Far East countries. Thus the potential agarophyte resources of *Gelidiella* alone can be estimated to be 300 metric tons, which can be utilised in our country, provided the export of this weed is banned.

The most important areas for *Gelidiella* and *Gracilaria* are in the south-east coast of Madras and, to some extent, along the Gujarat coast.

There is at present no precise information on the quantity of alginophytes (algin yielding seaweeds) available in Indian waters. Early reports based on a preliminary survey conducted by the Department of Agriculture show that 100 metric tons of dry weed could be collected annually, yielding about 20 metric tons of alginic acid. Recent reports state that 10,000 metric tons of dry harvestable alginophytes are available in the Gulf of Kutch and along the shores of Saurashtra annually. But it is well known that the above estimate is far less than the actual availability. The Seaweed Resources Section of the Central Salt & Marine Chemicals Research Institute, Bhavnagar, has taken up a systematic survey of the underwater beds of alginophytes along the Indian coast. The preliminary reports of this survey indicate that a much greater amount of seaweeds than reported uptill now is available in the Gulf of Kutch.

The drift seaweed survey undertaken at various places by the Institute shows that 200 metric tons of brown seaweeds alone can be collected along the 10 km. coast at Idinthakarai. On a conservative estimate, drift weeds amounting to 10,000 metric tons wet weight are available annually along the Indian coast.

AVAILABLE RESOURCES

The available resources of harvestable seaweeds along the coast can be estimated from the following break-up :

1. Gujarat coast consisting of Okha, Dwarka, Porbander, Veraval and Gulf of Kutch. In this area, the more important red seaweeds are *Gelidiella, Gracilaria, Aypnea,* while brown seaweeds are *Sargassum,* and *Colpomenia.* Green alga, *Ulva,* is available only along the exposed coasts in harvestable quantities.

2. Bombay coast consisting of Bombay, Ratnagiri and Malwan has an abundance of brown alga *Sargassum, Cystophyllum, Padina* and *Dictyota* and green algae like *Ulva, Enteromorpha* and *Caulerpa.*

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3. Karnatak coast in Karwar, yields *Sargassum* and *Enteromorpha.*

4. Kerala coast in Vizhinjam, Kovalam and Poovar has a good supply of *Gelidium, Gracilaria, Hypnea, Sarconema, Ulva, Caulerpa, Sargassum* and *Cystophyllum.*

5. Tiruchendur, Tuticorin, Mandapam, and Pamban group of Islands and Madras (Adayar and Mahabalipuram) form the richest zone from the point of view of economic algae, *Geldiella, Gracilaria, Gelidium, Sargassum* and *Cystophyllnm.*

6. The Andhra coast in Visakhapatnam and Pudimadake has a good growth of *Ulva, Grecilaria* and *Sargassum.*

7. Orissa coast consisting of Chilka lake has a dominance of *Gracilaria.*

8. The Andaman Islands and Laccadives are considered to be a very productive area also.

The use of seaweed as food, manure and for making medicines has been known from ancient times in various parts of the Orient. The number of seaweeds which have graced the local markets in many countries at one time or the other include members of the red, brown and green algae family and included 195 species in 76 genera. It is only in the Orient that people still relish seaweed preparations, for which there is a ready market. Farmers along the shore, it is believed, have always used drift seaweed or plants from exposed reefs as manure or as stock-feed supplement.

The extraction of soda, potash and iodine from seaweed ash was one of the earliest industrial chemical operations. But when cheaper sources of these chemicals became available, the seaweed industry declined. Countering this trend of declining use of seaweeds is the development of industries based on the extraction of their organic constituents. These are agar-agar, algins, carrageenans, mannitol, Laminarin, fucoidin etc. Thus the industrial use of seaweeds is becoming more and more important as their products are finding extensive use in various industries.

INDUSTRIAL USE

Agar-agar is a jelly substance which dissolves in boiling water and the solution sets to a jellying agar. No special cooling method is generally required. Once it becomes a jelly, agar retains that property for a very long time irrespective of change in temperature. In the jellying conditions, every gram will have about 10 grams of water in an imbedded stage. This property of agar, coupled with the high quality of the jelly makes it an ideal medium for the culture of microorganisms for laboratory and industrial purposes and growth of antibiotic organisms. Agar is very largely used in leather, paper, photographic film and plate, tungsten wire, dental impression material, surgical dressing, confection sweets, jams, vegetable paste, canned fish, cosmetics, tooth paste, and other allied industries.

The most common agarophytes, *Gelidiella* and *Gracilaria* have been found to be valuable raw material for the production of agar-agar in India. Though different processes have been known earlier, it is only recently that a process has been developed by the Central Salt and Marine Chemicals Research Institute, Bhavnagar, where the conditions for the production of good quality agar have been standardised using *Gelidiella* as raw material. Based on this process, agar-agar is now produced at several places.

Also, the Fisheries Technological Station, Madras, is setting up a small agar plant of 3 metric tons annual capacity at Tuticorin based on the use of *Gracilaria.*

India is annually importing 15 metric tons of agar-agar coating about Rs. 2.79 lakh. But the demand for agar-agar is increasing and it is estimated to be around 50 metric tons. In order to meet this growing demand more agar industries have to be set up. In this connection it may be mentioned that the import of raw material, *Gelidiella* available from neighbouring countries at cheaper rates, may ease the shortage of this raw material.

Alginic acid is a gelatinous substance which practically does not dissolve in water, cold or boiling and goes into solution only when treated with an alkali. The common industrial alginates are those of sodium, ammonium calcium, aluminium and copper. Sodium alginate to which the name algin is usually applied, is used in the manufacture of cheese, milk powder, custard powder, cakes, jams, jelly, sweets, aerated waters and fruit drinks. In stabilising ice cream it is employed more commonly than agar. It is used in milk-puddings where calcium of the milk forms gelatinous alginate. The addition of sodium alginate in pharmaceutical and cosmetic preparations is common. It is also used in the textile industry, paints and varnish industry and in waterproofing wood, textile and paper.

Though *Sargassum* is the chief source of algin in India, other seaweeds like *Cystophyllum, Dictyota, Padina* are also fairly good sources. The process of extraction of alginate from Indian seaweeds developed by the Institute at Bhavnagar is being now exploited by Cellulose products, Ahmedabad.

If we have to fully utilise Indian seaweed resources and make the indigenously manufactured agar and alginate at cheaper rates and save considerable foreign exchange, it is necessary that more and more units are planned in various parts of the country. However, the lack of accurate information on the availability of the economic seaweed resources along the Indian coast appear to be the major obstacle in the progress of the seaweed-based industries in our country.

FOOD SOURCE

There are a number of countries in the world, where marine algae are abundantly used for food. The most important among these is Japan, China, Korea, Philippines, Vietnam, Thailand, Burma, Brazil and parts of the Pacific coast of America are also known consumers of seaweed in their diet. These algae are rich in protein, essential aminoacids, vitamins and iodine.

About 20 different kinds of algae, including green, brown and red seaweeds, are known to be used as food. The most popular seaweed used as food in Japan is *Porphyra tenera* (locally called Asakusa-nori). Besides *Porphyra,* the other seaweeds consumed as food in Japan are *Laminaria* ('Kombu'), *Undoria* ('Wakame'), Hijukea (Hijiki),

Monostroma (Hito-e-gusa), Enteromorpha (Ao-nori) and Gracilaria (ogonori). Utilisation of seaweed as food is well known in Philippines. The seaweeds are either eaten raw or are blanched mostly as salad vegetable.

Seaweeds are not yet popular in our country as a food. However, it is known that in certain coastal districts of Madras, Gracilaria (locally called Kanji pasigal) is used as porridge meal. A cottage industry process of the preparation of porridge meal from *Gracilaria edulis* has been reported. It consists of pulverising the sunbleached and dry seaweed, after washing in fresh water. The powder is then soaked and ground fine in a grinder and dried on a cloth. Two tea spoonfuls of this meal is cooked in a cup, of water to make the porridge.

With a view to popularise the use of seaweeds as food in Madras State, some experiments were conducted at the Marine Biological Station, Krusadai Island, and it was found that a variety of dishes like *vadai, kalva* and *payasam* could be prepared with the seaweeds.

Experiments at CSMCRI, Bhavnagar have shown that *Ulva*, which is a green leafy alga available in sufficient quantities, is rich in protein, minerals and trace elements. Its protein content ranges from 20-30 per cent when dry. It is also a good source of vitamin (2.5 mg. riboflavin, 150-250 mg. of vitamin C and 0.035 mg. of vitamin B_{12} per 100 gms. of dry material). It was found that essential amino-acids like methionine, which are absent in the land plants, are present in *Ulva*. The Bhavnagar Institute has successfully developed a process for the extraction of protein concentrates from *Ulva*. These protein concentrates have the advantage of easy acceptability by people not used to non-vegetarian diet.

It is known that *Halimeda, Corallina,* and *Jania* can be dried and given along with the normal feed-to poultry as they are rich in calcium. Tests, however, showed that the addition of seaweed meal to either the assorted chick diet or wheat did not have a favourable effect in promoting the growth of chicks. On the other hand, when fed to adult hens, the addition of the algal materials to the assorted chick diet had a distinctly favourable effect upon the egg producing capacity of poultry.

The use of seaweeds as cattle fodder is a common practice in many countries like the U.S.A., Norway and Denmark. India has almost one fourth of the total cattle population of the world and there is a heavy competition between cattle and human beings with regard to sustenance. Efforts may, therefore, be made to find out hitherto unexploited 'resources' of fodder and thus recourse may be taken to algae in the coastal areas.

USE AS MANURE

The earliest reference in literature to the agricultural utilisation of seaweeds is found in ancient Roman writings. Seaweeds have long been used for manurial purposes in the U.K., Sweden and elsewhere. Seaweeds are particularly good for sandy tracts, where there is fast loss of moisture and consequent drying of the root system of plants. The addition of seaweeds, apart from giving nutrients to the plants, helps to keep them moist throughout due to the water-imbibing property of seaweeds. The results of experiments conducted with "sea magic" (trade name of a product derived from seaweed) to determine the manurial value of the seaweeds, on wheat and berseem at I.A.R.I., Delhi, showed that the yield of berseem does show marked increase.

Experiments conducted at CSMCRI, Bhavnagar, have shown that the nitrifiability of organic nitrogen from Ulva and drift seaweeds is high as compared to Farmyard manure and a few other organic matter, as is evident from high nitrification which is beneficial for the growth of soil micro-organisms. Experiments have also proved that composting of seaweed after washing in fresh water under a pit system produce a compost having a significantly higher nitrogen and phosphoric acid content.

Seaweed fertilisers in extract form have been developed in many countries. The extracts can be distributed by spraying. This is a promising field for effectively utilising the valuable Indian seaweed resources.

Recent experiments on the cultivation of agarophytes conducted by CSMCRI, Bhavnagar, in their experimental seaweed farm at Mandapam Camp showed that it is possible to set up "seaweed farms", on the pattern of those in Japan, along the Indian coasts to increase the seaweed resources of our country. When they are established, it is possible even to introduce into our water sexotic seaweeds of better yield and quality.

The use of seaweeds thus plays a considerable commercial role. A rational utilisation of seaweeds depends upon proper selection, by means of chemical analysis of those species which contain valuable chemicals. Such an analysis must be carried out through all seasons of the year and at different stages of the development of the alga. Also, mapping of the distribution of seaweeds and investigations to find out whether the harvesting of a certain area can be repeated in order to ensure supply to the seaweed-based industries in a planned manner.

NEW BRICK-MAKING MACHINE

A new brick-making machine has been developed by the Central Building Research Institute, Roorkee. The machine can make 3,000 wire cut bricks per hour. It is of a double-deck design, the double shafted mixer forming the upper deck and main auger, the lower. Provision has been made for a vacuum chamber of large capacity to avoid bridging of clay.

All the components and materials for the machine are indigenously available. The demand for the machine is estimated to rise considerably in the coming years with the anticipated increase in building activity. A large number of kiln owners, producing on an average 25,000 to 30,000 bricks a day, are anxious to adopt a semi-mechanised process. For commercial utilisation of the device the National Research Development Corporation of India at New Delhi has to be contacted.

OWNING A HOUSE IN CANADA

D.B. Das Gupta

FOR an average family in Canada, to own a home is not such an arduous chore. This is not due solely to the fact that the average family income is quite high, nor is it only because of the governmental action. Principally, the existence of a developed capital market in general and a mortgage market in particular makes home ownership easy. This, of course, is not as simple as it sounds. The mortgage market works through an intricate process. Housing is a special type of commodity, and hence the behaviour of the housing market is different from other markets.

A 'mortgage' is a legal device for pledging residential real estate as security for debt. So the mortgage market, like any other market, has two parties; (a) borrowers who pledge real estate as security for obtaining funds, and (b) lenders who lend money on the collateral of the real estate. The price of the loan is known as the interest rate. From the point of view of a lender, interest rate and the term of loan (i.e. number of years for payment) are the important considerations. On the borrower's part, it is the cost of the loan. As in any other market, a borrower would tend to minimise his cost of borrowing to maximise his gain. Theoretically, therefore, terms and conditions of mortgages are supposedly determined by the action and interaction of borrowers and lenders. In reality, however, they seldom do. The mortgage market is far from perfect and most often participants do not behave 'rationally' in the economic sense of the term.

Suppose a person wants to buy or build a house. He picks up a particular design and a suitable location. Next thing he does is to engage a builder. Most often a builder has on display different types of houses. The problem before the buyer is to obtain necessary finance. This is where he enters into the mortgage market. The builder takes care of the engineering details of the construction, i.e., servicing the land according to the municipal standard etc. The builder also quotes a price for the particular house one wants to buy.

Let us also suppose that the agreed price of the house is $30,000. The buyer has to get the funds. If he has ready cash, the transaction ends as soon as the money is paid. But an average buyer does not have that kind of money in his savings. So he has to go to a lender who is a seller in the mortgage market. The lender, other things being equal (namely the existing market conditions, borrower's credit ratings etc), will lend him the money on the collateral of the house. But the lender seldom gives 100 per cent mortgages. He will advance 70 to 75 per cent of the market price of the house. The remainder is considered to be the owner's equity. To a lender the owner's equity represents the security of his investment. The higher the equity the better is the economic position of the borrower. After all, in the entire transaction this is the part a borrower invests in cash. The more he pays initially, the less mortgage he will have, and the less risky it will be for the lender. If the buyer fails to repay his mortgage, the lender will foreclose his house and subsequently sell it to recover his investment.

In Canada, a person can obtain two different types of mortgages: (a) either he can take a government insured mortgage, or (b) he can secure an ordinary private mortgage known as 'conventional' mortgage. In the case of the former, the loan to value ratio is smaller. By the term 'loan to value ratio' we refer to the ratio of the value of the mortgage to the sale price. If the loan to value ratio is, say, 75%, then for a house priced at $100, a person can obtain a mortgage of $75. The government-insured mortgages in Canada are regulated by the National Housing Act. Hence they are often referred to as NHA mortgages. These NHA mortgages have certain features: (i) It requires a buyer to pay at least 5 per cent of the sale price in cash (i.e. for a $ 30,000 house, the buyer has to have at least $1,500 in cash).

(ii) A buyer will be able to get 95 per cent of the first $13,000 and 70 per cent of the reminder, not exceeding $18,000 as mortgage (loan to value ratio).

(iii) The borrower pays 2 per cent of the mortgage amount as insurance fee, which really insures the lender.

(iv) Interest rate is fixed by the government.

The conventional mortgage, on the other hand, does not have any insurance feature. But it offers a high loan to value ratio. At the same time, conventional interest rates are higher than NHA mortgage rates.

Coming back to our illustration, a person wanting to own a home has a choice of the type of mortgage he wants to take. For a $30,000 house, if he wants to take a NHA mortgage, all he will get is $18,000, because that is the maximum amount permitted by the

regulation. This means his downpayment (difference between the value of the mortgage and the sale price) will be in the vicinity of $10,000-$12,000. If he does not have that much in hand, then he can borrow this additional amount (less his 5% equity needed as per regulation) which is called a 'second mortgage'. Because of the higher risk, interest rate for the second mortgage is higher than the first mortgage. A person can take a third mortgage or what is known as a 'junior mortgage' to meet the required downpayment.

There is also a small charge called 'service charge' for processing the legal document. For the government insured mortgages there are a few extra steps. First, the lender scrutinises the application and checks the borrower's credit ratings. As per regulation, the monthly mortgage payment should be at least 27 per cent of the borrower's monthly income. This feature is called 'gross debt service'. The lender files the application to the housing agency of the government. This stage is therefore called 'request to insure'. If this is approved by the government, then the loan is officially approved. The approval does not automatically ensure the full disbursement. Money is disbursed in stages. But as soon as the loan is approved, the builder can proceed with the construction of the house. During the process of construction, government inspectors inspect the various phases of construction to ensure that they meet the national building code. If the house is already built, the whole sum will be paid to the builder as soon as the loan is approved. For the benefit of the borrower, the whole mortgage principal and interest (compounded annually) are amortized in equal monthly instalments for the term of the mortgage. A person can get a mortgage under NHA from a private lender or directly from the government. Normal practice, however, is that a borrower first should go to a private lender.

On the other hand, if the borrower wants to take a conventional mortgage, he will be eligible to get 75% of the sales price. Therefore for a $30,000 house he will get a mortgage of $22,500. The remaining $7,500 is his downpayment. There is no fixed regulation of the equity required in conventional mortgage, which varies with the particular lender. In any case the conventional mortgage interest rates are higher anywhere from one quarter of one per cent to full one per cent because of the higher risk. In order to handle NHA mortgages, a lender has to file an application with the housing agency of the government. If and when his application will be approved, the lender will be eligible to handle NHA mortgages. This of course refers to the originations of mortgages. Almost anybody can buy NHA mortgages in the secondary market.

LENDER'S PARTICIPATION

There are different types of lenders active in the mortgage market. In Canada, they are broadly divided into two parts : (a) institutional sector, (b) non-institutional sector. Institutional lenders are those lenders whose activities are regulated and scrutinised by government. For example, the Department of Insurance keeps a close eye on insurance companies' activities. The non-institutional lenders refer to almost anybody excepting the ones in the first group.

In the Institutional Sector, life insurance companies, trust and loan companies, chartered banks and fraternal societies are pretty active as lenders in the Canadian mortgage market. Life insurance companies have the biggest share of mortgage loans. About 50 per cent of their investments are in mortgages. But, relatively speaking, trust and loan companies are most mortgage oriented. More than 70 per cent of their asset growth is in terms of mortgages. Trust and loan companies issue debentures in the short-term capital market. They also accept savings deposits from the general public, while life insurance companies depend mostly on their policy issues.

Chartered banks came into the mortgage market as early as 1954. But since 1960 they practically stopped lending in the mortgage market because of the Bank Act which prohibited them to charge more than 6% interest rate on loans. Since 1960 mortgage interest rates were much higher than 6%. From the mid-1967, however, banks reentered the mortgage market as the Bank Act was amended. Banks are now expected to make mortgage loans up to $ 200 million a year for the next five years.

At the end of the year 1967 mortgage loans held by both institutional and non-institutional sectors reached $ 20 billion. Non-institutional sector accounted for roughly 40% of the total. Individual mortgage holdings constitute the bulk of activities in the non-institutional sector. In addition, there are other corporations, credit unions etc. who are active in the non-institutional sector.

RATE OF INTEREST

Normally, the rate of interest for the government-insured mortgages are fixed with respect to the long-term government bond yields. Since 1967, the spread between the two rates has been widened and the mortgage rate is fixed 225 basis points higher than the government bond yields and are revised every quarter. This is done through a complicated formula. The full 225 basis points is added to the four weekly average of the bond yields at the end of each quarter and are rounded to the nearest one-eighth of one per cent. The basic idea behind this formula is the fact that the mortgage rate should be competitive with other long-term capital market yields. Mortgages are not as liquid as bonds. They are also for longer period (between 25 to 35 years). A long-term investor has a choice between different capital market instruments. Mortgage rates have to be competitive to draw enough funds from the capital market. And also most of the lenders borrow from the short-term market. To lend it in the long-term market like mortgages, lenders need special incentive. Therefore, conventional mortgage interest rates are fixed somewhat higher than NHA mortgage rates. The lower the government insured mortgage interest rates, the higher the spread between the conventional mortgage interest rates and NHA rates.

So the novelty of the whole situation lies in the fact that in Canada both the private and public participations are sought. As a matter of fact every encouragement is being given to private lenders who are

looking for a profitable inlet of investment. Housing market behaviour not only reflects the conditions of the economy; it also has a deep sociological connotation. Hence public participation, actively in the form of lending money and inactively through major legislations, cannot possibly be ignored. But if the bulk of the market can be transferred to the hands of the private lenders, government participation can be concentrated on other needed fields like public housing (housing for the low income people). At present, in Canada, Federal Government assists public housing through different programmes. But they are far from enough. Gradually, the whole mortgage market is going to be operated through the private funds and initiatives.

To start an effective mortgage market, one needs to have not only substantial funds but also an effective organisation which would help organise a capital market. A mortgage market is an integral part of the capital market. Effective monetary policy can be implemented effectively through the tools of the mortgage market. For example, to combat a deep recession in the economy, the government by simply changing the loan to value-ratios can encourage residential construction. An example in view was the Winter House-Building Programme in Canada. For the last three years special winter house building programmes have been initiated by providing a 500 dollar rebate to every buyer who would buy a house in winter.

There are enormous problems associated with the mortgage market. To start with, the housing market suffers most when the Central Bank adopts a tight money policy to combat inflation. However, the mortgage market opens up a vast area for potential investors. It is about time both the private and the public sector in India should look into this matter deeply. It should be the duty of Government to orient potential investors to this field. It would also enable a country like India to develop her own capital market which is long overdue.

NOT TOO OLD TO PROPAGATE

Baboobhai Patel, a Sarpanch, and his family. His-daughter-in-law, who has undergone tubectomy talks to the doctor.

BABUBHAI Lalloobhai Patel (65) was the Sarpanch of Malvan village in Gujarat. When family planning field workers approached him to lend his support to the programme, he was glad. Together with Dr Goswami, Medical Officer of the Sevalia Primary Health Centre, some three miles away, he decided to persuade all eligible men and women in his village to plan their families. It was not an easy task on account of age, old prejudices and unnamed fears. But the old man succeeded in erasing their fears.

His own daughter-in-law was the first to be persuaded. She underwent tubectomy after the birth of her second child. Gradually other people followed her example. A number of men and women followed him to the primary health centre till all the 159 eligible couples out of a total population of 1,613 had been covered (74 accepted sterilisation and the rest other contraceptives).

Another Sarpanch

Almost about the same time Babubhai was leading the family planning campaign in Malvan, Sarpanch Chimanbhai Kishorbhai Patel of village Motikhadol in the same district was busy enlisting the support of the local Mahila Mandal for carrying the message of family planning to every household. He himself had two daughters and had taken to famiiy planning.

In just over a year all the 83 eligible couples in a population of 818 adopted one measure or the other to restrict their families. The panchayat made arrangements to take village men and women to the nearest primary health centre at Mahudha or the dispensary at Alina, five miles away. While they were away, the Sarpanch saw to it that their children were looked after by the community. When a woman was hospitalised after tubectomy, Chimanbhai even arranged to have her home run by other village housewives.

More Than Half Sterilised

It was thus that of the 83 eligible couples, 43 had gone in for sterilisation, 10 women accepted loops and 31 men took to regular use of Nirodhs (condoms). The birth rate in Motikhadol had already been showing a downward trend from 22 in 1965 to 15 in 1966 and was 14 in 1967. In 1968 it is expected to decline still further.

A SACRIFICIAL STERILISATION

During a sterilisation camp held at Jam-Jodhpur of Jamnagar District, a young woman aged 22-23 was waiting for her turn to undergo tubectomy.

Finding the woman very young, the Family Planning Worker asked her, "How many children do you have" ?

"Two sons, one is aged one year and the other, two months", she replied.

"Well, because of the tender age of your children, I feel, you should not go in for tubectomy just at present. Let the children grow up. Then you may go in for sterilisation," advised the Family Planning Worker.

In the meantime, the husband of the wife arrived, and he was also advised accordingly by the Family Planning worker.

"I have four children by my first wife, and two by the present one. My present wife is of the firm opinion that unless she goes in for tubectomy, she will not be able to discharge her motherly duty towards the four children of my first wife", the husband explained.

Development Diary

● The Central Government has set up a National Grain Storage Institute at Hapur in Uttar Pradesh to undertake the study of storage problems in different regions of the country It will have two field stations—one at Ludhiana in Punjab for wheat-growing areas and tne other at Bapatla in Andhra Pradesh for rice-growing areas.

● The Agricultural School at Kosbad ih Thana district of Maharashtra has evolved a quick and high-yielding variety of paddy called 'Blue Bella', which is capable of giving a yield of 100 quintals per acre within a maturity period of three months.

● The Bhilai Steel Plant has despatched iron and steel products worth Rs. 11.33 crore in August 1968, surpassing the previous best achievement in September last year.

● The pipe-plant technicians of the Rourkela Steel Plant have devised equipment for giving a rust-preventive coating to the pipes manufactured for export.

● The foundry forge plant (FFP) of the Heavy Engineering Corporation (HEC) has received an order from Jordan for 250 tonnes of castings.

● Two Scientists of the Central Food Technological Research Institute, Mysore, have developed a synthetic hormone which is a safe but powerful insecticide.

● The foundation stone of a hundred-bed ward in the General Hospital was laid In Trivandrum.

● A twenty-six lakh-rupee bridge was inaugurated about 60 kms from Sambalpur in Orissa.

● An insti ute for scientific training in cleanliness has been set up at Ahmedabad.

● In Trichur, a super-market has been opened in a newly built four-story building.

● A Rs 10-lakh floating fund for giving 1,000 scholarships a year to poor boys and girls has been constituted by the State-Level Gandhi Centenary Celebrations Committee in Mysore.

● Electricity to 20 villages in Haryana has been switched on.

● A creche for children of the working class people was inaugurated in Palghat in Kerala by a local club.

● A crash campaign for increasing wheat production in the rabi season has been launched in Punjab. The aim is to increase wheat output by five lakh tonnes by covering an additional two lakh hectares under high-yielding varieties.

● A sub-terranean stretch of water, capable of irrigating 50,000 acres of land. has been discovered at a depth of 400 feet in a 40 kms belt in the Mahindergarh district of Haryana. One hundred tube-wells would be installed in the belt on a top priority basis.

● A hot water system has been struck by geologists in the Pugga Valley of Ladakh district while drilling for fuel deposits at a depth of 45 metres. Hot water shot up to a height of 12 metres from the holes bored there. The temperature of water was stated to be about 70°C.

● The Kota instrumentation plant—a Government of India enterprise—has started production of process control instruments which are used in steel and thermal power projects. The factory expects to sell instruments worth about Rs 80 lakh during 1968-69. Sales worth Rs 5 lakh have already been effected out of the instruments manufactured during the trial production.

The project can also undertake turn-key jobs for chemical and fertiliser plants. Orders and letters of intent valued at about Rs. 10 crore have been secured. These have come from the Bokaro plant and a number of electric supply undertakings in the States, including U. P., West Bengal and Delhi.

● The country has secured an order for the supply of automotive batteries to the Soviet Union.

A contract to this effect was signed at Calcutta by the Soviet Union with a battery-making firm in the private sector. The entire amount of Rs 31 lakh will be earned in foreign exchange. The supply of batteries would start from January next.

PANCHAYATI FISH

MOST panchayats today have been compelled to slow down the pace of rural development because of lack of finance. But by sheer ingenuity some among them have got over their financial problems.

Kalwakurthy Panchayat Samiti in Mahbubnagar District has blazed a new trail. In October 1964 it launched a programme to develop fisheries in the area. The Samiti established a Fish Seed Farm, the first of its kind in the district in Mucherlapalli village on the main PWD Road. The seed farm proved an immediate success. It has now, in addition to the nurseries, a store room, a well, an oil engine and other facilities. It meets the growing demands of the panchayats of the area and other parts of the district.

The breeding of C. Carpio has been started at the Seed Farm. In 1967-68 the farm supplied 60,700 fingerlings and earned an income of Rs 1,540. Thc seeds are being subsidised to the extent of 50 per cent. The Panchayats have found in fisheries one of the quickest and easiest means of augmenting their revenues. Thc seed of C. Carpio can develop rapidly and can attain the weight of 3 kg in a year.

The Seed Farm is also cultivating the local variety of Murral Seed and is supplying them to the Panchayats on the same basis. An acquarium has also been installed at the Block Headquarters in order to convince the people of the benefits. The Samiti has more ambitious programmes to develop fisheries with all possible co-operation from the Director of Fisheries, Government of Andhra Pradesh. The location of the Fish Seed Farm is quite suitable to make it also a picnic centre for the people of this area.

PROTEIN FROM OIL

The Gujarat refinery is to produce protein from petroleum on a commercial basis. A French plant with a production capacity of fifty kilograms of protein per day is expected to start working by January next. The General Manager of the Refinery said in Baroda today that the Plant, which is now at the Indian Institute of Petroleum in Dehradun, would shortly be shifted to the Gujarat Refinery, as Ankleshwar and Kalol crudes with high paraffin content have been found far more suitable for production of protein.

States' Finance

from Page 4

capable. But the judgment should be beyond reproach as far as possible. It may be pointed out in this context that the "unqualified success" of the Australian Grants Commission, as A.H. Birch points out, is "the confidence which Australian politicians have in the Commission's impartiality, rather than in the use of a magical formula". To appoint a Commission which would command the same measure of popularity is admittedly no sinecure task as far as India is concerned. Here political parties and groups multiply and try to hold on without any regard to scruples. The composition of the Commissions and the way they conduct their business probably will enable them to command public esteem in due course.

As a preliminary to the reconstitution of the Planning Commission, a high-powered committee may be appointed (a) to review the Centre-State financial devolutions of the past to see how far they have been consistent with the objectives of planning and (b) to suggest modifications in the planning machinery. Even a casual student of the present-day fiscal position of the State and the Central Governments would point out that the developmental and non-developmental expenditures of the States for normal purposes as well as a planned development have been allowed to increase in utter disregard of the resources of the States and the capacity of the Centre to fill the gaps. The time for a re-examination of the whole question of financial relations is long overdue.

To conclude, federalism is a political device to serve certain social, political and economic ends. In India our declared aim is to usher in socialism within the framework of democratic planning. How far it succeeds in furthening these ends will depend partly on the nature of the constitutional and other arrangements for healthy financial and economic relations, partly on the policies of the political leaders and partly on the effectiveness with which those concerned with economic development take advantage of the opportunities presented to them without being dogmatic.

TWO VILLAGE CO-OPS.

A comparative study of the co-operative farming societies in Odadar and Dharampur villages in Junagadh district was taken up by the Planning Forum of Bahauddin College, Junagadh. Both the villages are about seven miles from Porbunder and use the town for marketing their goods and transportation. The principal crops grown in both the villages are cotton, Jowar and Bajra.

The co-operative farming societies in both villages were started only two or three years ago. However, the membership of the societies in both the villages hardly exceeded the minimum required for registration. This was mainly because both the societies did not possess adequate land resources. In case of the Dharampur society, out of a total of eleven members—from a population of 528—only seven members were able to find work on the farm. As regards the composition of these societies, all the eleven members of the Odadar Society—from a population of 2,331—were drawn from one community only, namely. Rabari, out of which nine were literate. In the case of the Dharampur society, all the members belonged to the Lohana community except one who was a Harijan. Though, normally the Lohana community does not take up farming as an occupation, it was found that all the Lohana members, who were political sufferers from Zanzibar, did possess some farming experience as they were engaged in horticultural and plantation work in Zanzibar.

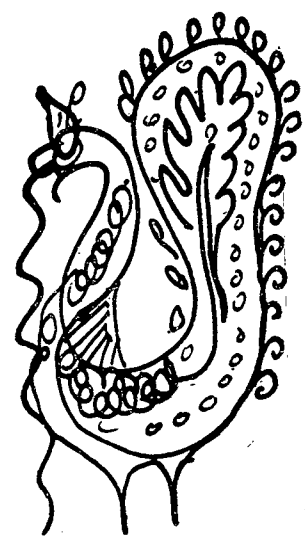
The Odadar Collective Co-operative Farming Society had 100 acres of land with no irrigation facilities, and the Dharampur Society owned about 88 acres, out of which 50 acres of land werc under well irrigation. The society had also built two new wells.

Normally both the societies paid their members in cash at a fixed rate and according to the number of days of work. However, the wages paid by Odadar Society (Rs 3 to 3.50) were even higher than those paid by the Dharampur Society (Rs 2.50–3.00) which were even lower than the rates prevalent in the area.

Both the societies received financial assistance from the State Government. While the Odadar Society had so far received Rs 9,000 for land development, procurement of implements, seeds and manure and for a godown and cattle-shed, the Dharampur Society had received Rs 14,520

The chief distinguishing feature was that while Dharampur had matched the total governmental assistance by its members' contribution, the members of the Odadar society contributed only 6 per cent.

The reason for this was that the membership of the Dharampur society was mainly drawn from the Lohana community who had returned from Zanzibar and were comparatively better off. Because of this, the Dharampur society had been able to undertake a lot of development activities. The society had installed an oil engine, dug wells, constructed a godown-cum-cattleshed and a boundary wall around the land. However, both the societies had increased deficits and no profits, mainly because both the societies were still at the initial stage of development.



BIG DEEDS
HUMBLE MEN

In this feature Yojana seeks to present the outstanding achievements of some of the many millions of obscure farmers who are fighting the nation's battle for food.

TEN TIMES MORE BAJRA

Gobarsing Rajalsing Rathod of Bhabhar, a border village in Banaskantha district, won the first prize of Cs. 300 for the highest yield of bajra at the district level this year. He got 1,262 kgs. of bajra per acre. About 5 to 7 years ago he got only 80 to 100 mds. of bajra from his 40 acres of land which is devoid of irrigation facilities. But now, due to improved methods adopted by him, he is able to reap 700 md. of bajra from the same fields.

He used Bajra-207 seeds and applied 50 cart-loads of farm yard manure and 300 kgs of ammonium-phosphate. Farmers of surrounding villages, namely Khara, Mitha, Kaprupur and Undai, visited his farm and enquired about the methods employed by him.

COARSE GRAIN BUT MORE YIELD

It was a proud day for A.N. Mallanna of Agrahara in Tumkur district of Mysore when he harvested the year's third crop. He had about 12 acres under Taichung-65. The crop was harvested recently and weighed 40 quintals per acre. This was two quintals more per acre than his second crop. His first crop was only on an experimental basis in just an acre of land. Mallanna is now an expert in growing Taichung-65.

He admits that the grains is coarse but it tastes well ; the older it is the better is its taste. Then, it yields comparatively less fodder but the cattle enjoy it as it retains greenness for a longer period.

Mallanna considers January 15th onwards the best period for growing Taichung-65 in this area.

TALK OF THE VILLAGE

A year ago, the talk on a particular day of village Pichandipalayam in Coimbatore district was farmer Narayanaswamy's harvest of 1,698 kilograms of HB 1 bajra an acre. No one had previous experience of cultivating HB 1 in this area. The farmers, big, medium and small, who saw the standing crop with thick green leaves and fat earheads, pleaded guilty in not accepting the advice of the Block Development Officer to raise this strain of *Kambu*.

"We have been agriculturists for generations but we had never reaped a bumper harvest of Kambu (Bajra) as I did," was P. N. Narayanaswamy's comment when he bagged the second prize in the Madras State Crop Competition of 1966-67. "I should have got the first prize, but for my lack of experience in threshing the grain", he said.

A special feature of Narayanaswamy's method of cultivation is in preparing the nursery. He thinks that transplantation, instead of sowing or dibbling bajra seeds, helps increase productivity. He ploughed the 3 cent nursery land five times in advance, and applied three cart loads of farm yard manure as basal dressing. He used 4 kg. of No. 2 mixture before the last ploughing. Two kgs. of seeds treated with sulphur were used for the nursery. The plants grew strong and healthy with one spraying of endrine.

He used farm yard manure No.2 Mixture as basal dressing, and urea as top dressing. He ploughed diligently and watered regularly and sprayed insecticides twice. After 82 days the crop was harvested.

Narayanaswamy is one of the many young educated farmers in Coimbatore district. He has entered his 3 acre HB 1 bajra field in the National Competition of 1968-69.

AN INCOME BOOSTER

High yielding varieties and improved methods of cultivation have helped Rewabhai Shankarbhai Patel, a Gujarati farmer, to raise his total agricultural income by more than seven times, from Rs. 3.000 to Rs. 22,000. The young farmer, belonging to Villiampura, has won the first prize of Rs. 300 in the Sabarkantha district Level Competition for wheat production last year. His yield per acre was 2498.5 kgs. whereas the average per acre yield in the district was only 400 kgs. His own average output earlier was about 1,000 kgs.

Shri Rewabhai owns 30 acres of medium quality land, of which ten acres are under wheat.

IR-8 FAVOURITES

Ramakrishna Pharikal of Puisara village in West Bengal's Hooghly district is a teacher who has taken to farming to supplement his meagre income. He owns a small plot of land, a little more than an acre, but cultivates a few more acres as a share-cropper. Till last year he was raising a single crop of paddy using the local varieties. His yield used to be, on an average, about 15 maunds per acre. It could hardly feed his family round the year. Pharikal adopted Taichung and Trinan varieties of paddy in turn during 1966-67 and finally IR-8. He has set a record in the district in the 1967-68 boro season by harvesting a little more than 132 maunds per acre. Pharikal has now become an honorary extension worker.

Shiv Charan Lal Verma of Mohoda village in Madhya Pradesh is another farmer to whom IR-8 brought rich dividends. His yield of 128 maunds per acre was the highest yield in his block, Tilda.

One third of the world's children have no milk today

DIY 707

And they won't have milk for a long time to come. Yet the child needs food of a higher nutritional value. A six month old infant needs twice as many calories; five times as much animal protein per kilogram of body weight as the average adult. A four year old needs 50 per cent more calories and 100 per cent more animal protein. Milk meets nutritional deficiencies. But it's just not enough—not for all the world's 500 million children under 15 years of age.

UNICEF aims at meeting their basic needs. One way is by setting up dairies all over the world. In India, we have a string of UNICEF aided projects. The First Amul Dairy at Anand, and the dairies at Worli, Hyderabad, Madurai, Vijayawada are a few...These dairies range in capacity from 50,000 to 5,00,000 litres of milk a day. UNICEF assistance for plant and equipment will be repaid by distribution of milk at subsidised rates to children, expectant and nursing mothers for a given period of years.

For the First Amul Dairy and the dairies at Worli, Hyderabad and Madurai, L&T carried out the entire mechanical and electrical installation including piping, testing and commissioning.

For Vijayawada Milk Products Factory, L&T will be installing a Niro Atomizer spray drying plant—the second milk powder plant in India to be put up with UNICEF aid.

Dairy Division **LARSEN & TOUBRO LIMITED** P.O. Box 278, Bombay 1

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YOJANA

TWELFTH YEAR 21 OCTOBER 27 1968 25 PAISE

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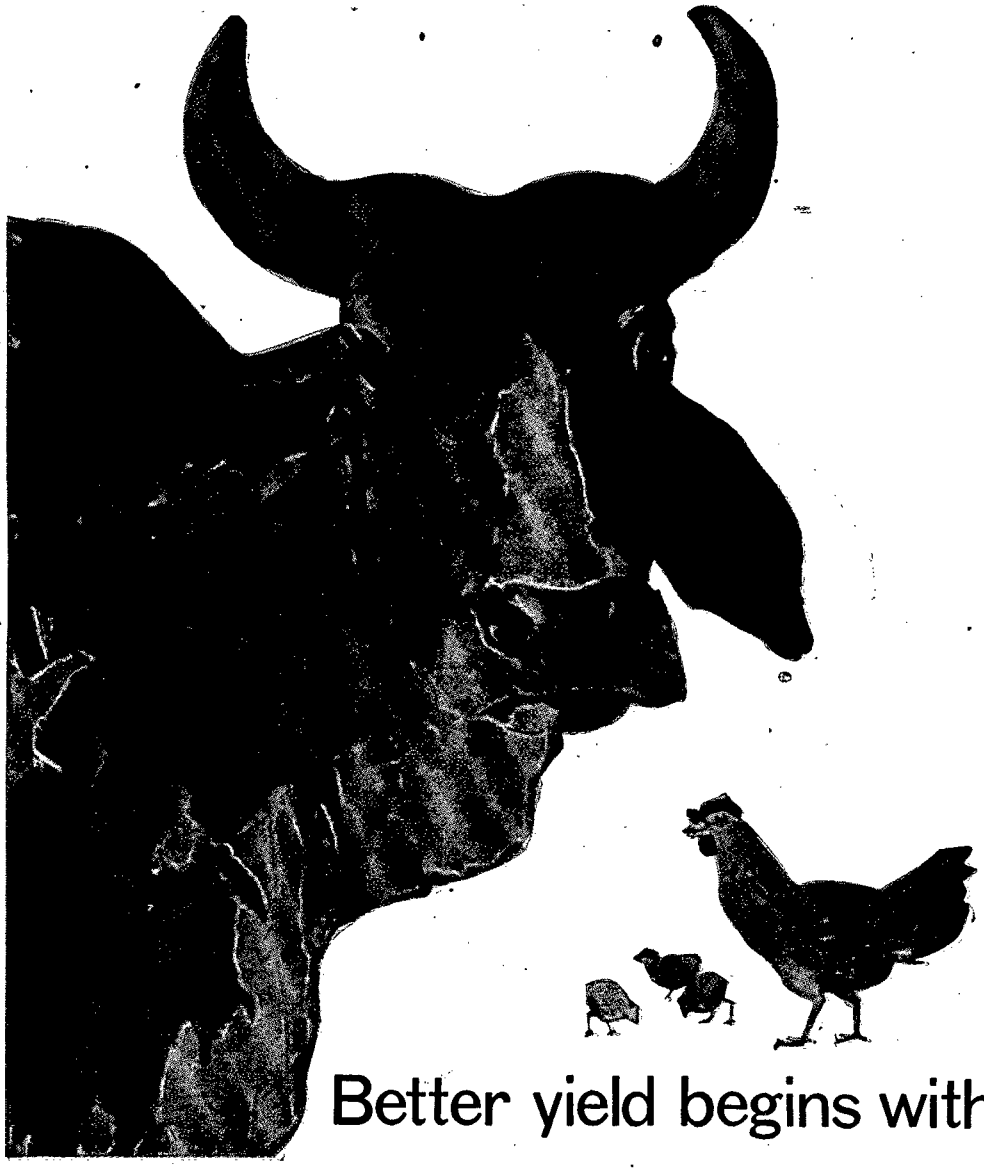

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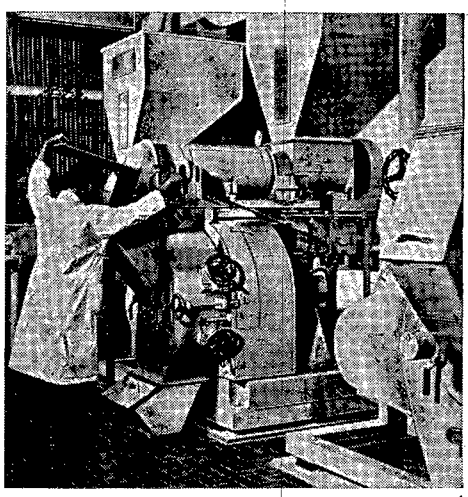
- Large scale feed milling reduces costs by utilising seasonal products, cheap materials and damaged grain.
- Prevents adulteration as feed is made in pellet form which is clean and simple to handle.
- Weighing and mixing is done automatically with punch card control maintaining secrecy of formula.

L&T has supplied the Buhler feed milling plant with a capacity of 10 tons per hour, for the Kaira District Co-operative Milk Producers Union, Anand.



Pellet Mill—part of the Buhler cattle feed plant.

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YOJANA

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LEST WE FORGET

The forest is a peculiar organism of unlimited kindness and benevolence that makes no demands for its sustenance and extends generously the products of its life activity; it affords protection to all beings, offering shade even to the axeman who destroys it.

—*Gautama Buddha*

IN THIS ISSUE

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GROWTH WITHOUT AID

In the last few years there has been a progressive decline in the quantum of foreign aid with the result that what used to be a flow has been reduced to a mere trickle. For instance, in 1966 India received $ 385 million from the United States alone, which came down to about $ 320 million last year, and is likely to be as low as $ 160 million this year. The reasons for this, apart from a shrinking of funds at the disposal of the World Bank and the International Development Association, are the economic problems with which the donor countries are faced. All these factors have somewhat fouled the climate for foreign aid. Whatever the reasons, however, the fact remains that this amorphous pattern of aid-giving has been having a highly deleterious effect on India's development programmes.

What adds to the gravity of the situation, particularly in the current year, is that we find ourselves in the unenviable position of having to be a net exporter of capital because of the need to find $588 million in repayment of existing debts. When this is set-off against the sum of $ 500 million which we expect to receive, the country will still need $ 88 million to satisfy our creditors.

What is the way out of the dilemma that confronts our planners? Since our planning is aid-based, even aid-propped, we cannot do entirely without aid. Nor can we allow planning to come to a grinding halt, except at the grave risk of putting the clock back. Can we then trim the yet-to-be-finalised Fourth Plan in keeping with our available resources? Or, should we seek special financial accommodation from the members of the aid-India consortium to tide over our current difficulties? Or should we seek to obtain the maximum of that quick-yielding variety of aid called 'untied-aid' on a long term basis and on easier terms? These are the alternatives before us.

There are, besides the obvious alternatives, certain self-help measures which can help ease the situation. Among these, import substitution, increased exports, full utilisation of idle industrial capacity, rigorous economy in unproductive expenditure and planning on a rational basis to maximise production come readily to mind. At the same time, foreign aid should be regarded as a "walking stick and not a stretcher to lie upon!"

It is understandable that the country should expect a great deal from the United States, which has always played an important role in assisting the developing countries in their efforts to improve living conditions. Even otherwise, economic aid given to developing countries is, in the ultimate analysis, in the enlightened self-interest of the donor. For, as has been well said, prospertiy like peace is indivisible, and the few islands of prosperity, which are the more affluent nations, in a sea of misery cannot possibly be allowed to continue. Such a situation will not be in keeping with the ideals of the Development Decade, nor will it advance the cause of world peace. As matters stand, the impression is inescapable that aid given at the whim or fancy of the donor can degenerate into a game of financial puppetry.

The need to reduce dependence on foreign aid to sustain the economy and to carry the country forward on the high road to prosperity has been stressed time and again. In spite of this, most of us seem to be psychologically unprepared to go it alone, whatever the sacrifice and however great the privations. Mr. Morarji Desai's forthright declaration that whatever be the prospects of foreign aid, India would maintain its development tempo, is the obvious answer.

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UNICEF/Mellet

UNICEF Helps Build Tomorrow's Indians

by GORDON CARTER,
UNICEF DIRECTOR,
SOUTH-CENTRAL ASIA

In its early days, UNICEF meant skimmed milk powder to most people. Later it came to mean a midwife kit, a jeep with the familiar blue and white markings on the side, and a set of garden tools. In due course, I am sure, perhaps by the end of the Fourth Plan, UNICEF will be associated in people's minds not so much with these material symbols as with children growing up better-fed, healthy, educated with a purpose, to take their active place in building tomorrow's India: for this is basically what UNICEF, the United Nations Children's Fund, is about.

UNICEF occupies a special position in the UN family. Its concern is not with a particular field of development as such but most definitely is with a particular age group: children and youth. Its task is to help countries in their long-term efforts to meet the needs of children and youth in areas vital to them: health, nutrition, education, and social service.

In programming its work, UNICEF helps to identify needs, and considers with Government prioritics and plans to meet these needs. It turns to the UN Social Development

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WORLD'S BIGGEST EDUCATIONAL

Division, FAO, ILO, UNESCO and WHO for technical expertise. It co-operates with UNDP, the WFP and bilateral and non-governmental aid.

The projects which it agrees to assist are then carried out by the appropriate ministries and other authorities in the country. UNICEF itself provides a significant share of the extra material support needed to get services for children "off the ground." It also tries to encourage a co-ordinated approach to the needs of children and youth at national and local levels.

Since Independence, India has made impressive strides in many fields of development, and it has been UNICEF's privilege to assist a number of national programmes answering, at least in part, the needs of children and youth. All told, UNICEF's contributions in India have come to about Rs 50 crore. Among other things, UNICEF has provided supplies and equipment for about half of India's 5,000 primary health centres and for a third of its 20,000 sub-centres. Nine UNICEF-equipped milk plants, with a total capacity of over 2 million litres a day, are now in operation, and equipment is being installed in two new plants. Village-level nutrition programmes, emphasising poultry, fisheries, and vegetable gardens, have been launched in more than 700 Community Development Blocks with UNICEF assistance.

UNICEF support has traditionally taken the form of supplies and equipment (everything from garden seeds to drilling rigs and spectrophotometers) but in recent years there has been an increasing emphasis on training grants for the various categories of workers needed to carry out the programmes. For example, UNICEF's Executive Board has made an initial allocation of Rs 2.1 crore to foster the reorganisation and expansion of science education throughout India's school system. When the project gets going, it will be the largest UNICEF-assisted education programme in the world and additional funds will follow. A large proportion of the money allocated will

A rig at work in Anantpur (Andhra) drilling for water. (UNICEF/Tom Sennett)

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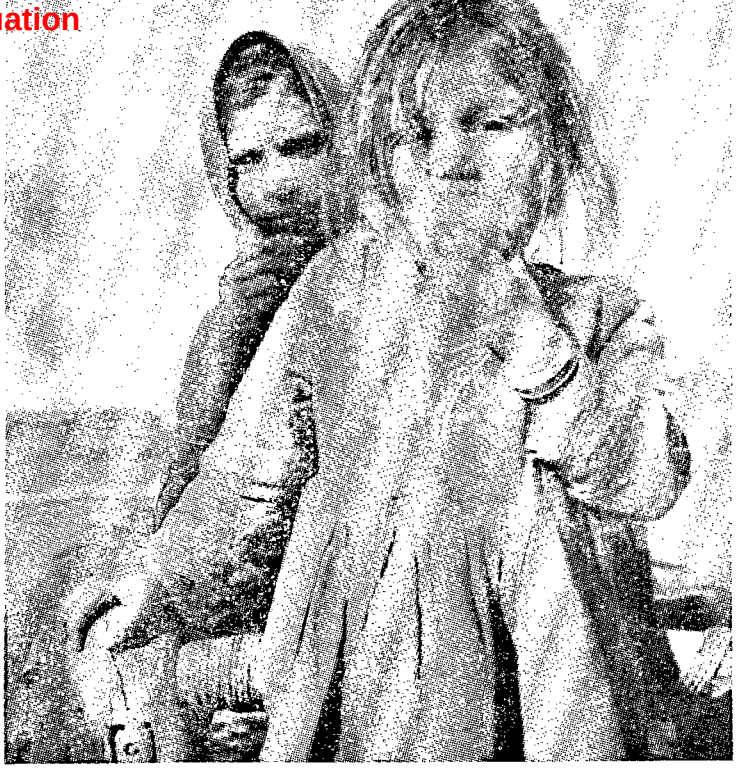
PROGRAMME

be available for training and for the support of teacher and science training institutions.

Currently, UNICEF's annual allocations to India average Rs 4.5 crore and are about equally divided among health, nutrition, and education, with a modest amount going to family and child welfare. The Government's decision to start the Fourth Plan in April 1969 is giving UNICEF an opportunity to co-ordinate its five-year programme projections in India with the Plan. For several months now, the UNICEF staff has been conferring with members and officials of the Planning Commission, of the various ministries, and of the other agencies working in India. UNICEF's principal fields of aid



The Applied Nutrition Programme is under way in more than 700 Blocks in the country. A child in a village near Nilokheri eating a tomato grown in the school garden. (UNICEF/Balcomb)

UNICEF provides garden tools to schools. A teacher and his pupils near a Nabha/Punjab village have a look at a newly arrived consignment. (UNICEF/Balcomb)

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A Gram Sevika gives lessons in tailoring to women in a village in Panthalgaon in Madhya Pradesh. (UNICEF/Spaak)

will continue to be health, nutrition, welfare, and education—the last of these to include programmes for out-of-school youngsters. But the UNICEF approach will be tailored to the priorities which the planners establish in the various areas of special concern to UNICEF.

In the field of health, for example, the Government of India's and UNICEF's joint priorities are now the following : public-health staff training, the strengthening and expansion of basic health services at district and block levels, mother and child health, including family planning, disease control, and rural water supply. Two years ago, UNICEF's Executive Board approved aid to family planning as part of mother and child health services. Almost all the rural health centres which UNICEF has assisted are carrying out family planning work, and a further step-up of UNICEF aid to MCH/family planning can be anticipated. This year UNICEF will equip 200 urban centres for MCH and family planning work.

Drinking Water for Villages

As for rural water supply, it is my hope that this will develop into a very important field of UNICEF activity. Even with the tremendous investment that India has made in rural health services over the past generation, many crores of rural people are not yet being reached in an effective way by health services. An important way to begin to protect these people against diseases is by providing safe drinking water which can be combined with village-garden irrigation projects, and which bring a new hope and opportunity to rural communities. Rupee for rupee, water supply schemes in villages previously deprived of clean water may pay greater dividends in child health than any other immediate investment. Last year's emergency well-drilling project in Bihar and Uttar Pradesh provided UNICEF with valuable experience in how international assistance can be best employed in this field, and an encouraging extension to this work has been made this year in Andhra Pradesh with UNICEF rigs as well as in other States by other organisations.

In other fields in which UNICEF is active in India—including the very important field of nutrition, which is inseparable from health—there are likely to be certain shifts in emphasis in our work in the years ahead as it becomes more closely co-ordinated with the Plan. The key-note of the Plan, as foreshadowed in last May's published "Approach", is self-reliance. UNICEF, in co-operation with the other UN agencies, will, to take but one example, assist the Government's drive for self-reliance in the field of protein-rich food supplies. An example of this is the hoped-for development of

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WOLFGANG BERGER

examines the question

IS THE COMMISSION'S APPROACH TO PLANNING ADEQUATE ?

THE attempt here is to demonstrate the inadequacy of the overall approach of the Planning Commission to planning. There is an alternative approach of calculating targets from actual conditions and feasible achievements, instead of deducing the necessary achievements from desirable goals. There are four specific topics in which the Planning Commission has ignored crucial aspects or decided without sufficient realisation of the implications.

1. The recommendations in the Approach Document concerning foreign trade will not better the Balance of Payments situation, but will leave it unchanged and, in addition, induce domestic inflationary effects.

2. The anti-concentration policy suggested is based on liberal theorems of atomistic competition that have been disproved in the last decade. The suggestions of the Planning Commission might prevent India from becoming competitive in the world market and earning valuable foreign exchange. It further seems that some notions of managerial economics and social policy, basic in this context, are ignored in the Approach Document.

3. It cannot be excluded that a balanced regional development has to be paid for in terms of growth possibilities, and, hence, the decision between a predominance of pure economics or general structural policy should be left to the politicians.

4. The Approach Document is unclear with regard to the mechanisms to be relied upon to guarantee efficiency and Plan conformity. The gap between planning and implementation seems due to the failure of cutting down the desirable to the feasible.

Finally, education does not guarantee social change as the Approach Document seems to suggest. The manpower estimates required by the Planning Commission are impossible to calculate. The limitational production function, which the Commission implies, should be dropped. The adoption of a continuously substitutional function will require a different approach to educational planning.

I propose to discuss in the following paragraphs some ideas on the Approach to the Fourth Plan which might be useful in clarifying the issues, that is to say, in making explicit the preference functions and assumptions that underlie the drafting of the Approach Document. Once that is done, possible alternatives can be stated.

There are two possible systematic approaches to economic planning. One of them is goal-oriented and the other resource-based. The first method postulates a target and deduces the measures and sub-targets necessary to reach that target; the second states actual conditions and calculates developments based on them.

The Fourth Plan seems to have been approached in a goal-oriented way. For example, the target of a 5 to 6 per cent growth rate is looked upon to be imperative and hence an increase of the average rate of domestic savings from 8 to 12 per cent has been considered inescapable. Similarly, the target of reducing net foreign aid to half of its present value has been postulated and to achieve the target, import substitution and a rise of exports by seven per cent a year have been deemed necessary.

The goal-oriented approach as such is not untenable, if only one makes it explicit and is aware of its implications. The Approach Document does not seem to do either. To a great extent, the implications of the goal-oriented approach depend on the general conditions of the national economy. For example, if there is a fully employed consumer society, the Planning Commission can decide to increase the growth rate by 2 per cent and easily realise this target by taxing consumer goods and subsidising investment accordingly.

In the Approach Document the Planning Commission admits that fiscal and pricing policies are not applicable in a poor country. Hence there are no appropriate means to attain the given target unless freedom is given up and coercion is used. It follows that, if freedom is not to be questioned, the goal-

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oriented approach cannot be applied. On the other hand, if the deductive approach is to be applied, there is need of coercion in order to attain the target. Any neglect of this inter-relationship will lead to a significant gap between planning and implementation and thus make any planning activities superfluous.

COMPULSORY WORK CAMPS

For India there is a choice of continuing to fix *a priori* targets and to enforce their attainment either physically (or not at all), or to start from the present situation and calculate what can be achieved through liberal policy. The former path would require putting any market or price mechanism out of operation, the establishment of extensive compulsory work camps to build up the country only for subsistence food supply and to decide on the degree of extensiveness according to the target to be reached; the higher the growth rate that has been decided on, the larger the percentage of the population to be included in the work camps. Crucial elements of this economic policy have been, or are, applied successfully by the Soviet Union in the first decades after the Revolution, by Nazi Germany to overcome the economic crisis, by Communist China, and by Cuba.

There is another path. That is to estimate the possibilities of the country's future development by statistical procedures of which extrapolation is the simplest, to choose a preference function to be maximised or to set up clear and explicit priorities. The Planning Commission seems to consider freedom within the mixed and state-controlled socialist economy as a datum or even to favour it (Pages 15, 17, 31, 33 of the Approach Document). Hence it should not fix an *a priori* growth target, but draw the planned growth rate from what is realistic and elaborate in Indicative Plan for the whole economy instead of discouraging any economic unit by unattainable dreams, like raising exports by 7 per cent, whereas 4½ per cent has been the highest rate hitherto, or of increasing domestic savings by more than 50 per cent (*Ibid*).

The following analysis is based on the assumption that the political decision-makers have decided in favour of a free society.

The Planning Commission's eagerness to reduce foreign aid received by India while asking for credit facilities in order to finance deferred payments seems paradoxical. India is short of foreign exchange in hard currencies, which is capable of buying for her imports of sophisticated investment goods to stimulate growth possibilities. This precious foreign exchange, however, will not be forthcoming if emphasis is put on exports to developing countries and if these trade partners are given financial assistance which will consequently be denied to domestic projects.

An unsatisfactory Balance of Payments situation cannot be set right by offering credit facilities to India's customers abroad. The increased purchasing power, which goes along with increased exports, but not with increased domestic supplies, could not be met by increased sales offers. Inflation with all its well-known induced instabilities would result. If the Planning Commission wants to avoid this, the Fourth Plan should be approached differently. Stress should be laid on industrial production that is labour intensive, because this is where India has a considerable comparative advantage over the U.S.A., Europe, and the Soviet Union. These labour-intensive products should—in collaboration with marketing consultants of the prospective customer country—be brought to a level of sophistication in style and quality which will satisfy consumers in, say, the U.S.A. or Western Europe. The currency thus earned will, in turn, enable India to import investment goods for the production of domestic consumer goods in order to satisfy domestic demand.

There will be inflationary effects because of the time lag between the initial creation of income and the final satisfaction of the resulting consumer demand. These effects could possibly be lessened through investment salaries, the workers being offered a relatively low cash salary and a book salary to be deferred by the period of the time lag mentioned above.

The Planning Commission seems eager to fight economic concentration and, in doing so, obviously adheres to Nineteenth Century European liberalism, the effects of which European countries are trying to get rid of at the present time. It took Europe half a century to recognise that the technological gap in production, organisation, and marketing between the Continent and North America as well as America's economic world power are, to a great extent, attributable to an economic philosophy in the United States favouring concentration. Will it take India another half a century to learn the same lesson?

If India decentralises her industries while European countries are making every effort to concentrate them, any exports from India, worth mentioning, to Europe or America will be blocked. Even in simple technology industries the superiority of the larger units will be impossible to attain. It is wrong to believe that "industries, where size has a pronounced impact on economies, are not many". In Managerial Economics the notion of "optimum size" has been developed long ago. Industrial organisation research has revealed that in labour-intensive industries the bigger the optimum size, the simpler the technology of the production process. Only for capital intensive production does the contrary hold good. Hence, recommending that "big industrial houses should take up ventures in challenging fields" would mean that India should favour capital-intensive industries. This, however, as can be inferred from the comparative cost theorem, would be the worst policy that can be chosen to achieve an economic take-off.

CONFUSION BETWEEN ISSUES

There seems to be some confusion between social and economic issues in the Planning Commission's Approach. Just as general objections to economic and technological concentration can be detrimental to economic and technological progress, so can the concentration of property and income inhibit social progress. It would be fatal for the Indian nation if her leaders repeat the

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early mistake of Soviet Russia which, for example, abolished the notion of interest as a capitalist evil, not realising that it is easy to change the names of economic phenomena, but not their nature. The Indian Planning Commission will not reverse the Laws of production either, just as the Catholic Church could not reverse the heliocentric truths.

Concentration of economic units, however, can easily go hand in hand with a more equal distribution of income and wealth. This is not the place to elaborate on the procedures that have been developed by scholars of social policy and welfare economics and tested by politicians in quite a number of countries. The Fourth Plan should favour expansion of the most successful industrial houses in order to have some firms, at least, that are able to compete in the World market. (In agriculture, the Planning Commission mentions the very success of the intensive development approach).

India can survive in the World market not through "ventures in challenging fields", but only by concentrating in large-scale, simple technology, labour-intensive production. At the same time, everything possible should be done towards readjusting the distribution of incomes and private assets. This requires, as far as the necessity to attract foreign capital allows, a division of capital ownership and management; to the former, everybody, and especially workers and employees of the respective company, should have access; for the latter, free self-recruitment without state interference and control through competition have proved to be most successful.

REGIONAL DEVELOPMENT

Whereas concentration of economic units does lead to an efficient national economy in the international scene, regional concentration will lead to an unbalanced economic development. There is some price to pay in terms of short term growth possibilities for regionally balanced development. The Approach should have mentioned these implications and stated possible alternatives.

While it is correct that the socio-economic costs of servicing industrial centres above a given size are heavy, the advantages of a dense infrastructure for the location of industrial plants are considerable. Unfortunately, to our knowledge, no comparative computation of costs and benefits has been completed yet, either in theory or in a field survey. But spread effects of highly developed urban centres might encompass continuously growing areas and possibly lead to faster growth than an even infrastructure all over the country. At a rather late stage of the process, regional compensation or transfer payments might even out the differences.

It seems to us that an equal development process everywhere, as desirable as it might be in terms of social and political justice, has to be paid for by a certain amount of the maximum possible growth rate. A "selective approach" with regard to regions might lead to a take-off of at least some areas, which is certainly better than none. In spite of this, a decision in favour of regional equilibrium sounds reasonable to the economist too, specially if this decision is viewed in the very long run. In the Approach Document, however, this recommendation is given without reasoning and without the awareness that pure economics might just as well lead to different results.

Thus a purely political decision is transferred from political decision-makers to planning officers. If this principle is accepted generally, there is little reason to leave any decision to politicians. From the standpoint of pure economics and in terms of growth the authority of a central brains trust would be more efficient. This refers our reasoning back to the introductory passage.

IMPLEMENTATION SYSTEMS

As has been mentioned above, a gap between planning and implementation is inescapable if the targets set up in the Plan are not realistic. The possibility of controlling the Plan fulfilment thus depends on whether the resource-based approach is applied or not. If this approach is adopted, however, control should have the function (1) of counterbalancing excesses and fluctuations in the market, and (2) of providing achievement incentives wherever feasible.

Buffer-stocks are certainly an excellent way of reaching the first aim. One wonders, however, how the limit of total salaries and benefits of chief executives can be enforced if it is admitted that a thorough regulatory system is unattainable even for the commodity market. Certainly a limit for benefits is desirable; but if there is no way of enforcing it, the Government should rather take advantage of the benefits by increasing tax progression rates. And if this cannot be enforced either, it is still better to have no restriction than one that is not observed and thus undermines the authority of the Plan.

The same holds for the compromises of the "selective process of delicensing". If the control system works, there is no valid reason to de-license. If it does not work, this should be admitted frankly. If it can be improved, again there is no good reason to de-license. If it cannot, one should not hesitate to introduce the alternative mechanism of efficiency through competition, free entry and operation. The compromise of selective delicensing will lead to complete inefficiency because neither mechanism will induce efficiency. In this connection the effectiveness of parliamentry review of public enterprise performance may also be questioned.

The basis of successful planning includes a whole frame of social conditions, of which education is one. The authors of the Approach Document seem insufficiently aware of the complexity of factors involved if they merely deem education to be the "main instrument of social change" and "the most effective means for progress".

The effects of education do not occur in an isolated manner but have to be viewed in relation to traditions, customs, religion, family and community background and financial assets. The Planning Commission is wrong in believing that education will always induce social change. Social development implies equal opportunities for all castes and classes. Generally,

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however, higher castes and classes are given better education opportunities. Thus education, instead of inducing change, preserves the existing social stratification. Furthermore, education can induce conservative attitudes just as well as it can induce progressive attitudes. It all depends on curriculum policies in the widest sense.

If the preserving features of education are to be corrected, there is, first of all, need for an awareness of the problem. But even if one is aware of it, providing equal opportunity in education is not an easy matter. If compulsory primary education is realised for everybody, *upper class children may still be at an advantage*. They will learn a larger vocabulary in their homes and achieve greater sophistication in expressing themselves. Their family background will provide more learning incentives and lead to a higher need for achievement in the *McClelland sense*. They will tend to be more successful and be preferentially selected for secondary, college, and post-graduate education. Lower class children will have little opportunity to break the limits of their class or caste. It is probably impossible in the short run (which in education is about 20 years) to do anything about this, because sophisticated educational measures for lower class children and their parents would be difficult to take during the period. This, however, does not exempt planners from realising that there are limits to the results that can be achieved through education in the field of changing and evening out social stratification.

MANPOWER PLANNING

It is much easier to relate education to sectoral manpower requirements (vertical strata) or to horizontal proficiency strata than to the over-all economic progress in a simple functional relationship. However, the techniques of manpower planning necessary to estimate future demand for trained personnel "on the basis of a commitment to a certain pattern of long-term development" have not been elaborated yet. In no country has manpower planning been successful hitherto and many unfortunate and expensive experiences of explicit and disguised unemployment or graduates, going along with serious shortages in other branches of qualification, have been made in both developed and developing countries. The minimum time horizon in educational planning is 20 years. If at all, manpower demand can be fixed in detail for, at the most, five years in advance. This inconsistency cannot be overcome. Scholars of the field have come to the conclusion that the task as it is put in the Approach Document cannot be solved.

Furthermore, it has to be questioned whether there exists anything like a fixed manpower demand. How should one decide on the number of engineers demanded? Can't an engineer, to some extent, substitute a business manager or an organisational specialist, or a physicist a mathematician? In the real world, and especially in the macro-analysis, there is no limitational production function of the *Leontief type*. The concept of a substitutional production function, however, does not allow for the type of estimates required in the Approach Document. Hence, educational planning cannot be based on long-term requirements for qualified manpower.

However, planning is probably more imperative in education than in any other field. It must, then, be based on alternative principles, and we shall indicate one of them briefly. The impossibility of long-term predictions requires manpower to be highly flexible, that is, to have a wide general basis to which the specific qualification necessary for performing a specific task is added in a minimum of time, say, one year. Any considerable change in demand and supply can be predicted one year ahead and even if it is not, general economic frictions and individual sacrifices are minimised, as adaptation to new conditions has become easy in the field of manpower. As economic development proceeds, the demand approach to education may be adopted and warranted emphasis can be laid on indirect incentives. This presupposes that the limitational production function, which the Commission has implied, is dropped and that the new approach to educational planning is based on a continuously substitutional function.

A.I.R.'S COMMERCIAL SERVICE

All India Radio's commercial service has been extended to Calcutta. The Calcutta station started broadcasting commercial programmes from October 15.

The Service broadcasts on a 20 KW medium-wave transmitter. The 'Vividh Bharati' supplies the sustainer programmes.

The Calcutta station will be the second centre in the country to switch over to commercial broadcasting. The Bombay Centre started functioning as a pilot project from November 1, last year.

The Commercial Broadcasting Service of Calcutta will have an effective primary range of 70 miles. In addition to Greater Calcutta, Howrah, Hooghly, 24-Parganas, Burdwan, Nadia and Midnapur districts will be served. The number of licenses within the primary licensing zone is estimated at over nine lakhs.

The Calcutta Centre is audible over about 90 per cent of the area of West Bengal. It will cover about 75 per cent of West Bengal's population.

Commercial advertisements from A.I.R. Calcutta can be broadcast in any language. The advertisements are accepted as tape-recorded spots with a duration of 15 seconds, 30 seconds and one minute. The total time devoted to commercial broadcasts will be 75 minutes a day, about 10 per cent of the total transmission time of Vividh Bharati Programme.

The Calcutta Commercial Broadcasting Service is expected to yield an annual gross income of about Rs. 52 lakh.

The revenue in Jammu and Kashmir State has increased about eighteen times during the twenty years of the State's accession to India. At the time of the country's Independence, the State's revenue was Rs 2.7 crore. Last year the figure was Rs 48.5 crore. The revenue from the forests increased seventeen times.

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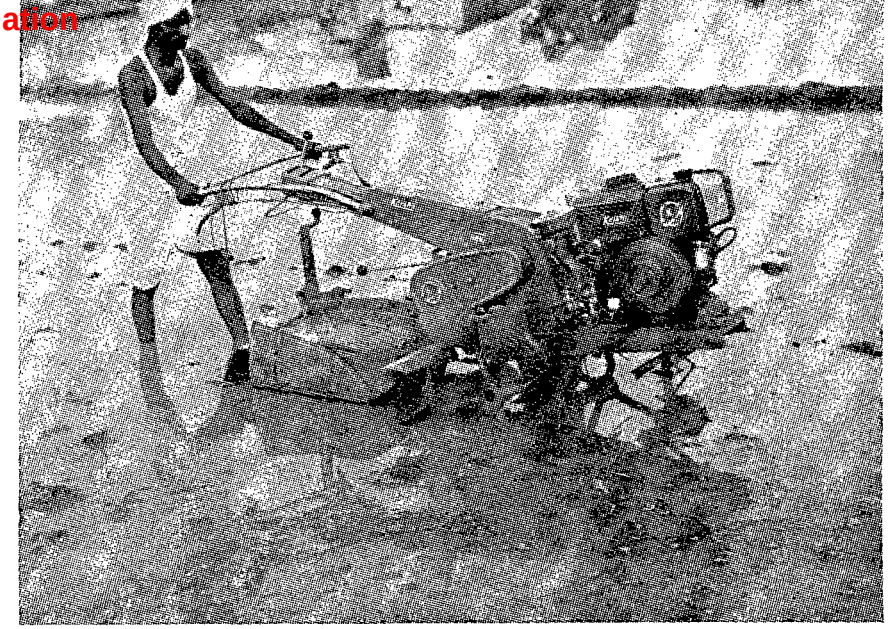
Two Engineers Trained Abroad Set Up Country's First Power Tiller Industry

RAM K. VEPA



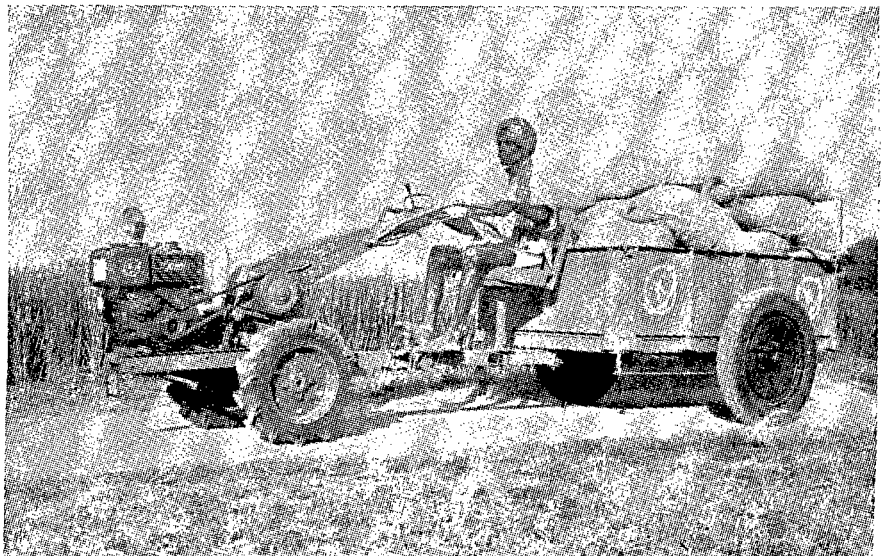
ALTHOUGH much is said about the need for developing indigenous know-how, it is not adequately realised that there are already skills and resources available in the country which, if properly encouraged and developed, could make it completely self-reliant in the near future. This brief article describes the efforts made by two enterprising young engineers for the development and manufacture of Power Tillers suitable for the soil conditions in this country.

Mr. V.R. Reddy, who holds a Master's Degree from the University of Illinois, and Mr. G.K. Reddy who holds a Master's Degree in Production and Automobile Engineering from the University of Michigan, organised a company in 1962 at Hyderabad under the name M/s Krishi Engines Private Ltd. for manufacturing power tillers for the first time in the country. No suitable engines were being produced in the country which could be fitted on power tillers and they therefore took up the manufacture of compact 5 hp. engines. Since proprietory items like carburettors and magnetors had to be imported, they entered into a collaboration agreement with M/s Daikin of Japan, who were manufacturing suitable 5 hp. kerosene-operated engines. This collaboration was purely for the purchase of design drawings and patent rights while the selection of machinery, design and manufacture of jigs, fixtures and even some special machines were made by the Krishi Engineers themselves.

These engines mauufactured by

A power-tiller in use as a plough (above and as transport (below)

ENTERPRISE AT HYDERABAD



Mr Vepa is the Andhra Government's Commissioner in New Delhi.

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the firm were at first sold as pumpsets till the manufacture of power tillers was taken up in 1965 by doubling their share capital from Rs 5 lakh to Rs. 10 lakh and an additional loan from M/S I.C.I.C.I. of Rs. 7 lakh. Although they did so under collaboration from Japan, they bought only design drawings and patent rights at a nominal fee without payment of any royalty.

Being technical personnel, the Krishi Engineers did not have adequate experience in the marketing field and therefore did not visualise the problems that would arise in introducing a new product like power tillers to the Indian farmer for the first time in the country. In the absence of adequate rural credit facilities and aggressive mass media, improved agricultural implements have not been popularised in the country with any considerable success because of the difficulties in transmitting new ideas to the uneducated farmer in the village. Krishi had considerable difficulty in pushing their products into the market and it must be confessed that Government Agricultural Departments did little to help the firm in making these products popular. The acute scarcity of kerosene fuel since 1966 worsened the situation further.

NEW MODEL

In these circumstances, Krishi decided to manufacture diesel engines, as no suitable engines were being produced in India which could be mounted on power tillers. Since some of the well-known Japanese manufacturers were demanding a large fee with 2 per cent royalty, the company decided to go ahead on their own. Within a period of 18 months, Krishi successfully designed and developed a 6.5 hp. diesel engine and introduced a new model power tiller V-600 into the market. This engine has been thoroughly tested by the Indian Institute of Science, Bangalore, who gave a very satisfactory report on its performance.

The company meanwhile learnt a great deal from its past experience in marketing and has organised an effective marketing network to push their products. The climate in the agricultural sector in the country has also improved a great deal in favour of mechanisation. As the prices and the maintenance cost of bullocks and the wages of agricultural labour have risen steeply, the demand for such machines is increasing many times every year. Therefore, at present the company is very busily engaged in raising the production of diesel engines and power tillers from 75 to 150 a month in the next six months or so. It is planning to set up a new plant to manufacture up to 6,000 tillers per annum, which is its licensed capacity by 1970. In fact, the Krishi Engineers feel confident to design and develop even a small four-wheel tractor and higher horsepower engines. The Company is also planning to manufacture its own single-purpose special machines to increase the production at a low cost and thus offer its products at very competitive rates to the farmers. Krishi has also promoted more than 24 ancillaries in and around Hyderabad who are supplying various components for these engines and tillers, and, as the production increases, this number is likely to increase proportionately.

Mr. V.R. Reddy, the Managing Director of the Krishi Engines, is naturally pleased with his success in the design of the new power tiller. He is confident that with the experience gained in this process, his company would be able to provide know-how to other parties intending to manufacture similar units in the country. "There is no reason", he says, "for the entrepreneur to seek foreign collaboration for power tillers at this stage of the country's development." He is somewhat perturbed at the fact that the Government of India and the State Governments still continue to import power tillers in large quantities into the country. He feels that there is no need for the Government of India to permit the import of power tillers into the country, when his company (and another unit at Bangalore) is able to meet the requirements. "If we are not encouraged", he complains, "how can we show adequate progress in a field which can revolutionise the entire agricultural sector."

The story of Krishi Engines is a fine example of what enterprising young engineers can do in providing to Indian agriculture new machinery suitable for the conditions in the country and which would help the cultivator to attain increasing level of productions in agriculture.

HUGE MOTOR TESTED AT HEAVY ELECTRICALS

Bharat Heavy Electricals, Hyderabad has completed the overspeed test of a 60,000 KW Turbo Alternator rotor. The test was carried out at the Heavy Power Equipment Plant. The 22-ton rotor was run for 5 minutes at 20 per cent overspeed, that is, at 3,600 revolutions per minute (rpm) whereas the rated speed is 3,000 rpm. The rotor is a part of the Turbo-set to be supplied to Harduaganj power station in U.P.

It is the first time that a rotor of this size was tested in India for the soundness of the parts and fittings and the workmanship as well as its smooth mechanical run. Before the overspeed test, the rotor was dynamically balanced, which is an important preliminary.

The test was conducted in a centrifugal tunnel of special construction with 11 ft. thick reinforced concrete side walls and arch. In addition, the inside face of the tunnel is lined with teak wood sleepers of one foot thickness as a precaution against mishaps.

A 195-metre-long concrete bridge, on the river Anas linking Rajasthan with Gujarat by road, has been opened to traffic.

Rajasthan has achieved a major break-through in wool export. This year 17,080 kilogrammes of graded wool have been exported to the U.S.A

The Regional Forage and Grass Research Station at Chearabra near Simla has evolved some high-yielding and nutritious varieties of grass which will help remove fodder shortage in hill areas and also improve their cattle wealth.

In Bihar, 2,25,000 acres of land have been put under high-yielding varieties of paddy and maize this year.

The Oil and Natural Gas Commission has evolved a scheme to extract oil from isolated wells. Based on the Russian pattern, the scheme will help increase oil output and ensure speedy development of new oil fields.

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THIS INDIA

YOJANA invites contributions to this feature from its readers. Each anecdote must be true to life, of less than two hundred words, capturing something significant of India's rich and varied life. Each published anecdote will be paid for.

Last week, one day as I was leaving the office in the evening, I happened to hear the conversation between two officers who were passing by. One said : "I say, we have fixed a meeting tomorrow at 10 A.M. You please make it convenient to attend." The other enquired : "What is the menu for the meeting ?" The former replied : "Arey, you don't call it menu, it is agenda, you call it." The latter said with a hearty laugh :" "Arey Bhayee, I am interested in the menu, I mean whether Kaju and biscuits will be served."

Bhopal T. R. RAMACHANDRAN

Once I went with my boss, a Harijan Welfare officer, to a village in Kallakurichi Taluk in South Arcot District. Some Harijans there complained that the Caste Hindus did not allow them to take water from the public well in the village proper. Some Caste Hindus said that there was a well in the Harijan Colony and the Harijans were not using it. To the query why they were not using it the Harijans said the cobblers were taking water from that.

There are 'untouchables' among 'untouchables' also !

Cuddalore (Madras) R. RAJA

When I was travelling to Delhi, I had an occasion to meet an M.L.A. belonging to a particular political party in my compartment. In the course of our talk, he spoke of the high principles of his party. After a month I happened to meet him again. By then he had defected to another party. A few days later, when I called on him seeking his help in some matter, he told me that he had decided to change his party once again. When I asked him for the reason, he said that just as officials move from one job to another for bettering their prospects, the politicians also change from one party to another.

Mysore P. N. REDDY

There is a rickshaw-puller called Raju whom I have known for well nigh a decade. Though without any education to boot, he has a reputation for honesty and integrity in our locality in South Madras. Raju has been in the habit of telling me now and then that his life's ambition is to don the livery and serve as a peon in an office.

A month back I recommended his case to a friend of mine who has just started a big industry. A few days later, Raju called on me at my home dressed in a fine khaki uniform and gave a smart salute. I felt happy that he had at last achieved his desideratum. He smirked and said in a muffled voice, "Sir, I am deeply beholden to you for your kindness. But as a peon I find it difficult to be tied down to my stool at the threshold of my officer's room for hours on end. As I have missed my sauntering as a rickshaw-puller, I feel bored and, consequently, I suffer from headache. I have therefore decided to relinquish my new job from today."

Madras N. RAMA RAO

A colleague of mine had undergone an operation for hydrocele and vasectomy simultaneously last month in the local hospital. He was hospitalised for a week on the advice of the doctor. We used to meet him in the hospital at least once a day. One day, while we were there, a short discussion took place regarding the scope and prospect of the various methods of family planning. In the meantime a person, who was holding a very responsible post in one of the local institutions, happened to visit my colleague. He enquired about the nature of the operation our colleague had undergone. When he was told that my colleague had undergone an operation for hydrocele along with vasectomy, he quipped "Of course I know about his suffering from hydrocele but how long was he suffering from vasectomy?"

Godda (S.P.) K. BAHADUR

In the bachelor's mess in our Block colony we had a maid-servant to cook and do other household chores. A month ago she was taken ill and did not turn up for work for many days. The members of our mess looked for a substitute. It occurred to some of us that we should try to practise Gandhiji's teaching at least when we had a real opportunity during the centenary year. We decided to appoint a Harijan to cook for us and we employed Tinku, a Harijan boy who used to work in the orchard of the Block colony. The boy gladly did the chores. He used to fetch water for cooking and wash utensils. In a few days the news spread like fire all over the place that a Harijan was cooking for us. Four days after he was first engaged, Tinku failed to turn up. We learnt that he had been threatened by a group of people and was turned away. Everybody began to look at us as if we were denizens of a zoo.

Binka (Orissa) BISWESWAR BANERJI

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NOBEL SURPRISES

THE announcement of any prize brings in its wake a mixed fare: joy and glory to the winner and disappointment to the many losers and aspirants. Sometimes it also raises the dust of controversy over the justness of the selection. The yearly announcements of the five Nobel Prizes, acknowledged as the highest awards for creative human endeavour in certain fields, have been no exception.

Over the years since 1901, when these Prizes instituted by Alfred Nobel began to be awarded, they have come to acquire universal recognition and acclaim, although, at times, the awards are said to have been politically motivated. As the scanning for the most deserving in different fields is done all over the world, the interest aroused by the awards is also worldwide. And doubtless, the choice of winners, kept a closely guarded secret till the end, throws up a few surprises.

This year too has its share of surprises. After several long years, two Nobel Prizes, those for Medicine and for Literature, have been won by Asians, and the Nobel Prize for Peace has gone to a Frenchman for a piece of work that he did twenty years ago.

After a gap of 37 years, an "Indian" has won a Nobel Prize. Earlier, Rabindranath Tagore got it in 1913 for Literature, and C.V. Raman in 1930 for Physics. In fact, Tagore was the first Asian to be honoured.

India is naturally elated over the selection of Dr Hargobind Khorana (46), a son of the soil, for this year's Prize for Medicine, although he is now an American national and has won the Prize for the work he did in the United States and shared it along with two American scientists, Mr Robert Holley and Mr Marshal Nirenberg.

It has to be recognised that for Dr Khorana's outstanding achievement a great deal of credit should go to the U.S A., which gave him the proper environment, facilities and encouragement to attain this distinction. But it has also to be agreed that India can also claim him as "genetically" belonging to her. Anyway, Dr Khorana himself has, in all humility, acknowledged in his hour of triumph: "Our work is really an outstanding example of team effort", as all modern scientific research essentially is.

Like all such awards, the Nobel Prize for Dr Khorana also came to him the hard way. He was born in a lower middle class family in Raipur. He started winning scholarships and distinctions from early childhood and these helped him to go through his school and college. After getting his M.Sc. degree, he won a Government of India scholarship to work at Bristol in the U.K. After his return when he failed to get a good berth in India's laboratories, he joined Cambridge University. He had his first firm grounding in what is known as microbiology when he worked with Sir Alexander Todd, a Nobel Prize winner, on building a complex biological substance called nucleotide. From the U.K. Dr Khorana gravitated to more favourable climes, first in Canada and later in the U.S.A.

At Wisconsin University, where he is now working as the Director of the Enzymes Research Laboratory, his Nobel Prize winning-work has led to the decoding of the genetic code for amino acids which are the chief constituents of proteins. This discovery, it is believed, would pave the way to the eradication of hereditary illnesses and to a greater knowledge of life's processes.

Dr Khorana's achievement abroad has given impetus to fresh thinking in India on the country's non-recognition or neglect of talent and the lack of opportunities here. So far so good. But one is prone to agree with a "scientist" who wrote in a Delhi daily on Dr "Khorana": Had he "catapulted himself to a high position, all his time would have been lost in participating in innumerable inconsequential meetings and conferences all over the country." As long as we cannot provide right conditions of work, it is better that such brilliant scientists are sent abroad to work for the benefit of science and, ultimately, of mankind.

Mr Yasunari Kawabata (69), the other Asian Nobel Prize winner, this year, is a Japanese novelist. This is the third time that Japan gets the Noble Prize and the first time for Literature. The earlier two were given to Physicists, one of whom, like Dr Khorana, was an American national.

M. Rene Cassin, the winner of the Peace Prize, has got it mainly for his important contribution to the drafting of the Universal Declaration of Human Rights, of 1948, and its application. It is anybody's guess why he has been chosen now for the honour after twenty years of the promulgation of the Charter. It is, perhaps, an example of belated recognition. M. Cassin, who is now the President of the European Human Rights, has devoted his entire lifetime to humanitarian causes and to the faithful service of the ideals of the United Nations. As long as peace remains a dream, any person who helps in taking the world towards it even by a step deserves humanity's gratitude.

IGNORAMAN
Wants to Know

If a Genetic Engineer can transform an Indian into an American

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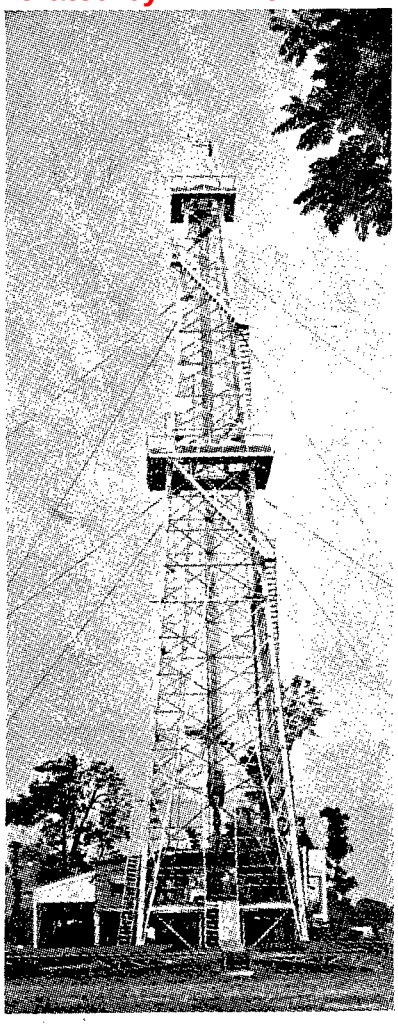

A DERRICK AT DEHRADUN

SEARCH FOR OIL

AGAINST the backdrop of the Himalayas a 130-foot derrick, with a drilling crew not expecting to strike oil, is nevertheless playing a role in India's search for oil to meet expanding industrial and transport needs. The rig is part of a cluster of laboratory and classroom facilities rising from a valley outside Dehra Dun, which is part of the Institute for Petroleum Exploration, the research and training arm of India's Oil and Natural Gas Commission. The Institute has been given two basic assignments. These are: (1) to help improve methods of searching for new oil deposits, and (2) to help find ways of operating existing fields most efficiently, with maximum production at minimum expense, especially with minimum costs in foreign exchange.

The Institute has been operating since late 1962 as a joint undertaking of the Government of India and the United Nations Development Programme (UNDP). It is one of the 49 large-scale pre-investment projects in which UNDP is co-operating with India. Nine of them are being executed with the help of the U.N. Department of Economic and Social Affairs. These relate to the development of natural resources—water, minerals and petroleum—and to aid in surveying and mapping. The Institute is designed to speed the training of specialised personnel and extend the use of modern techniques in oil investigations and production. The development of the Institute, undertaken in two phases, is to be completed this year after six years of international co-operation. The entire project has cost 4.2 million dollars. In this period Indian technicians and a United Nations team of specialists, working together, have built up a fully operating Institute with a staff now numbering more than 400. A number of its divisional heads and senior officials have received advanced training abroad. Research and instruction are being carried out in laboratories equipped with apparatus from a dozen countries and instruments made by the local staff.

More than half of India's needs for petroleum must be met through imports, and oil consumption is continuing to grow as the population increases and with greater industrialisation. With consumption totalling roughly 16 million tons a year, and current domestic production of crude oil estimated at 6 million tons, some 10 million tons must be imported annually, at a cost exceeding 100 million dollars. To avoid still larger imports, and still more spending of foreign exchange, the country must find new deposits and use existing fields to best advantage. In both these directions the Institute for Petroleum Exploration at Dehra Dun is playing a big part.

THE WIDENING SEARCH

India's search for oil goes back nearly a century, but as late as 15 years ago only one corner of Assam was in production, meeting only about 1 per cent of the country's needs. Then two more oil fields were discovered, and in 1956 the Oil and Natural Gas Commission (ONGC) was formed to intensify exploration and production. Investigations were extended through geological work, geophysics and drilling into many parts of the country and offshore. Two main land areas are now producing in Gujarat and Assam, but many more are being explored. Ten years ago there was only one drilling rig; now there are nearly 50 for deep drilling. The first producing well under ONGC went into operation in 1961. Now there are more than 500. The Commission has some 18,000 employees, including those in the research and training institute, and 25 geophysical parties are carrying out work in the country as a whole.

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As the work expanded, the Commission felt the need for facilities to solve problems being encountered in the field and to prepare personnel for specialized tasks. The United Nations was asked for help, and a proposal to set up the Institute for Petroleum Exploration was approved in 1961. For the first phase, which ended in October 1966, the support by the Government and the UNDP amounted to about 1.8 million dollars. A second phase of operations was approved for a two-year period, to end later this year, which is estimated to cost another 2.3 million dollars.

A United Nations Project Manager, Mr. Nikolay A. Eremenko of the Soviet Union, arrived late in 1962. Soon afterwards, the Institute started work in a four-room house. The first laboratory was in a garage in Dehra Dun, and the first lecture was given under the sky. Then new buildings started coming up on the grounds of a tea estate in the Kaulagarh district, west of Dehra Dun. The installation was completed in 1967, its location marked by the looming derrick and rig provided for training and experimentation. Today the Institute has separate divisions for geology, chemistry, geophysics, production, drilling, and training and documentation.

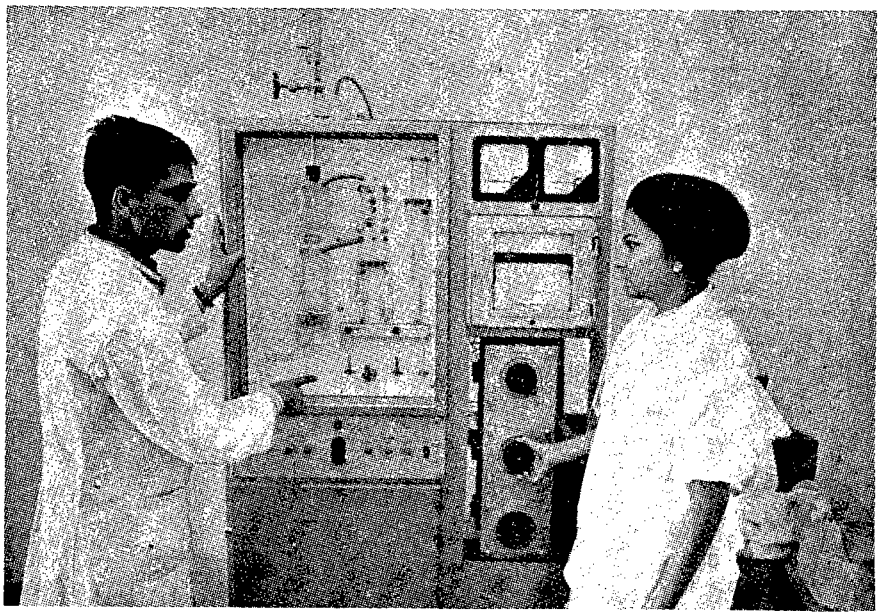
AREAS OF WORK

The Institute has so far provided instruction of two types to more than 400 trainees. First, all new employees of the ONGC, after graduating from a university, receive detailed orientation, including classroom and laboratory instruction, practical work on the drilling rig, and first hand experience in oil field. Second, refresher courses are provided for scientists already serving with the Commission.

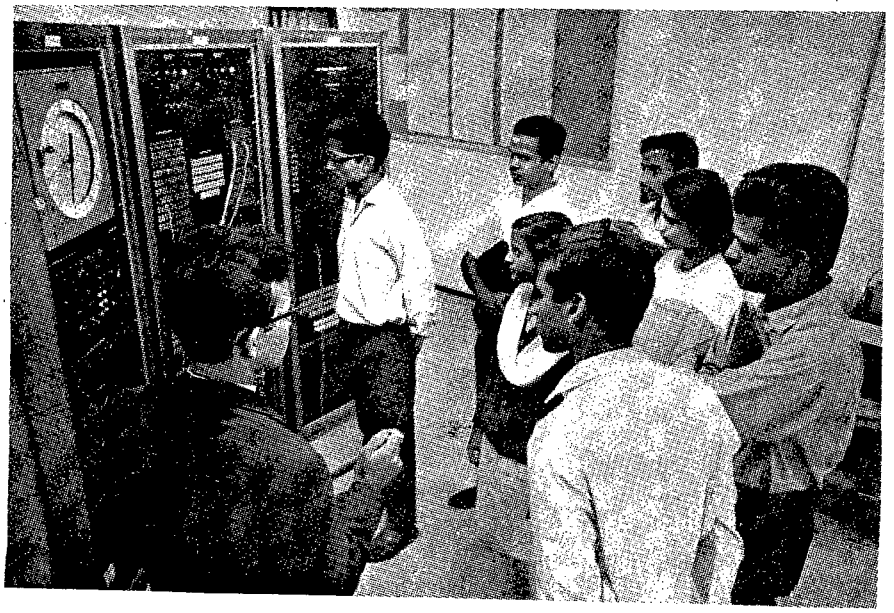
The Institute has helped the ONGC in investigation of nearly 20 oil and gas fields, through studies of major basins and through field trips by staff officers. On the basis of some of its studies, the Institute has recommended resumption of work in areas previously considered to have little promise, for example, in the Ganges Valley and parts of West Bengal and Gujarat.

New methods of prospecting, such as use of directional reception of seismic waves, have been introduced under the Institute's guidance. Drilling costs per metre have been cut following Institute studies. For example, at one field near Ahmedabad it was found that a given amount of work could be done in 22 instead of 45 days through use of improved technology.

As one of its major tasks, the Institute has drawn up "technological schemes" for development of numerous oil fields and, later, full-scale "plans of development". Previously, foreign exchange was spent for such plans; but now locally available materials are being used in various types of prospecting equipment, which otherwise would need to be imported, and Institute scientists are seeking satisfactory methods of preparing cement and drilling mud without the use of imported additives. When drilling methods were improved, one effect was to cut the number of drilling bits—which are



Organic Chemists at the Institute for Petroleum Exploration discuss the operation of an apparatus which distils crude oil. Trainees (below) learn the use of a Programming Analyser which predicts the behaviour of an oil field.



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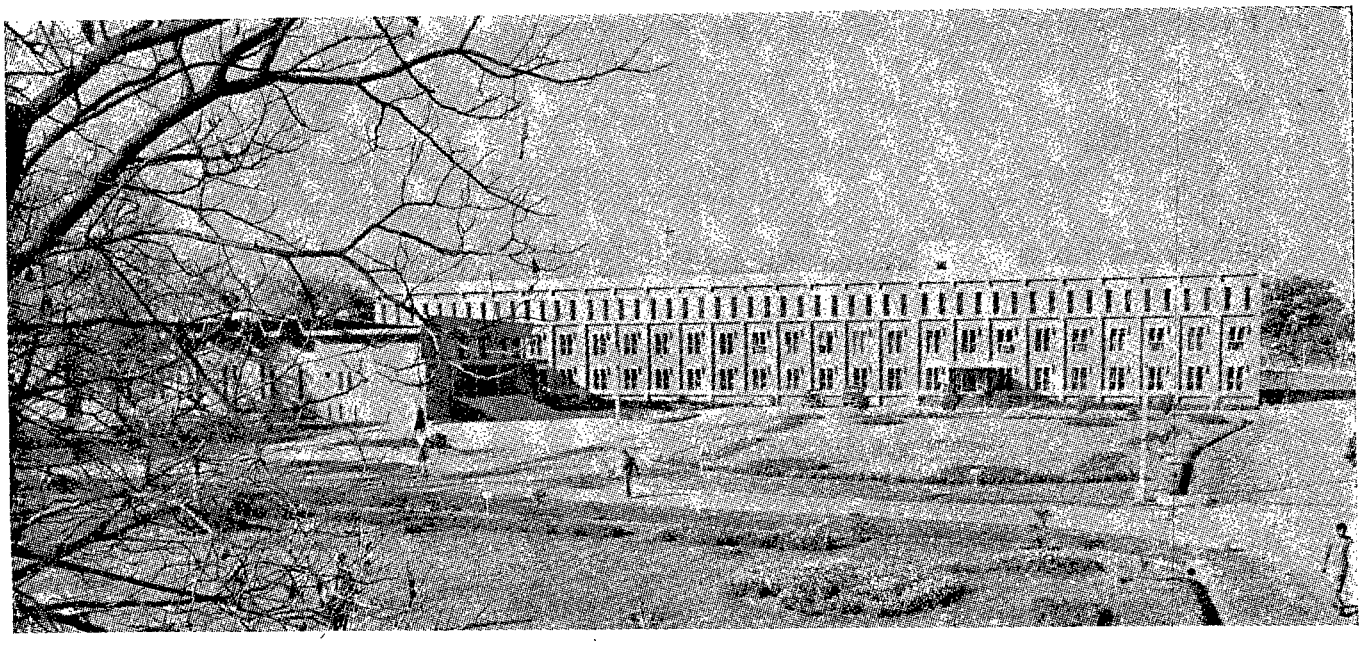

A view of the Institute for Petroleum Exploration

imported—required to complete a well.

A walk through the buildings and grounds of the Institute shows that nearly a score of other countries also have been involved, in some way, in its development. Altogether, some 30 fellowships have been granted for advanced, specialized training in France, Japan, the Netherlands, Romania, the Soviet Union, the United Kingdom and the United States. Training has ranged in subject matter from oil-field production techniques to problems in the use of gas condensate and the processing of seismic data by computer.

Since the beginning of operations, a team of United Nations experts has worked with Indian personnel in developing the Institute's research and training activities. From December 1962 to December 1968, the international team has included experts and consultants from the Soviet Union, Czechoslovakia, the United States and Canada.

For the laboratories of the Institute, equipment has been purchased from 11 countries at a total cost of more than 800,000 dollars, which has been the UNDP's contribution. For its part, the Government of India has made available land for the Institute's 20-acre campus; the buildings, which include offices, classrooms, laboratories, a separate auditorium, a workshop and a hostel; certain equipment and supplies available locally; and the drilling rig, which originally came from Romania. In all, the Government of India has provided some 2.4 million dollars and the UNDP has earmarked about 1.8 million dollars of its funds.

The importance of the Institute's training and research activities cannot be over-emphasised. India's manpower for its expanding oil undertakings "is very good at the middle and lower levels", but at the upper level of technology there have been two lags, in exploration and operations. The Institute is providing technical training to help meet the need. As for research, the Institute's activities are practical and "problem-oriented", not academic. When ONGC runs into problems, it can ask the Institute to tackle them.

For the Institute's experiments, the well on the former tea estate, where the crew never expects to strike oil, has been drilled to a depth of 550 metres (about 1,800 feet).

The Institute's help in exploration and development of oil fields begins with aiding the ONGC in the choice of an area where investigation should take place. Then comes the prospecting stage, when geophysical parties search for oil-bearing layers below the surface by studying the earth's physical properties, such as magnetism and density, and by recording, in seismic surveys, the time taken for sound waves to pass through various types of underground formations. A field party surveying an oil field is backed up by personnel in the geophysics laboratory at Dehra Dun.

For example, when breaks occur in the seismic cables used to measure wave velocity, a field team often has trouble finding the point of failure. The laboratory has built a "cable fault locator" that can be carried by a team and used on the spot for quick detection of a break. After successful trials, 30 sets have been fabricated and are in use by field parties. Another device built at the laboratory is a portable seismic amplifier, normally imported at a cost of about 30,000 each. A prototype of the apparatus has been completed for field testing, and the feasibility of local manufacture is being investigated.

In addition, the laboratory has built a "gamma-gamma-sonde" device described as a sophisticated instrument for measuring characteristics of formations deep in a borehole as a well is drilled. In the past, the device has been imported. The Institute has completed one and tested it in the field.

HOW MANY WELLS

The Institute helps ONGC by preparing a "technological scheme"

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for actual development of a field that has promise. First comes the calculation of reserves to show how much investment would be warranted. Then answers must be sought for specific questions, such as, how many wells are desirable to tap the oil field most efficiently, how wide apart should they be drilled, and how much oil can be expected from a given well during its lifetime? Technological schemes have been prepared by the Institute for two fields in the eastern region and others in the west. Some of these schemes are "massive" undertakings, involving laboratory research of many types.

After one or two years of trial production, the Institute prepares a comprehensive "Plan of Development" for a field, covering economic as well as technical questions. Such plans, for example, have been drawn up for the Cambay gas field in Western India, and one of the major oil fields in Gujarat State.

In its various divisions the Institute is also helping with specific problems such as the transport of oil from field to refinery. In some areas, crude oil is particularly thick and difficult to pump through a pipeline, and the Chemistry Division is working on "crude-conditioning" processes.

Both practical and theoretical information needed in petroleum exploration and production is provided in the Institute's instructional programmes. Young engineers or scientists newly employed by ONGC spend six months at the Institute and six months in the field. Courses of instruction deal with subjects such as well-site subsurface geology, and mud and cement chemistry, exploration geophysics, and petroleum production practice. Shorter courses for relatively senior officers are intended primarily to provide the latest information in their special fields and also to increase their flexibility.

One question often asked is about the prospects for India's self-sufficiency in oil production. The ultimate goal is to wipe out the deficit and produce a surplus, if possible. There are certain hopes, but they are purely hopes, depending on ifs and whens. Most of the central area of India is covered with a shield of rock where one wouldn't expect to find oil. Hope lies mainly in sedimentary areas near the coast and offshore on the continental shelf.

At present, work is under way mainly in Gujarat State and Assam, but many other areas are under investigation. Among them, Rajasthan is one of the prime targets, but with difficult terrain because of heat, desert conditions and lack of transport. The others are the sub-Himalayan area and the Bengal basin. Offshore, an Indian coastal vessel has operated in shallow waters, in the Gulf of Cambay; and in 1965-1967 a ship and scientists from the Soviet Union found some promise on Cambay Gulf and the Bay of Bengal. On the basis of early investigations, there is evidence of good possibilities for offshore fields. In addition, India has acquired interests in the Persian Gulf and will soon obtain some oil from that source. As a result of its activities, ONGC had discovered a new oil-bearing area in the state of Gujarat—where nobody realised oil would be, as well as in other fields in Assam. Work is in progress in several other oil and gas fields, now either in commercial production or in various stages of exploration and development. In this task the Institute has helped to improve techniques of interpreting field data; to draw up plans for field operations to obtain maximum work at minimum cost; and to find the best ways of assessing the potentialities of various formations.

UNICEF

from PAGE 6

groundnut protein concentrates as a gradual substitute for imported skimmed milk powder that is still widely used in feeding programmes and for "toning" the high-fat buffallo milk that supplies most of India's dairy plants.

Self-reliance also implies the development of inactive young human resources. UNICEF has already equipped 65 prevocational training centres in India to give primary school drop-outs "a second chance", so to speak—but this is a bare beginning. The majority of rural youth are out of school and "in-and-out" of work, or if they are working, often working at a fraction of their potential capacity. The Government envisages a National Youth Commission to devise practical measures of dealing with this widespread problem. UNICEF is following developments in this field closely.

The Fourth Plan contemplates reduction in reliance on foreign aid. UNICEF aid is not foreign aid in the usual connotation, as the only "obligation" it carries is to keep the work going, once started. UNICEF is an international co-operative to which 123 countries voluntarily contribute, all-in-all according to their ability. India currently contributes Rs. 64 lakh a year to UNICEF's general and administrative fund. The Government has announced its intention of raising its contribution to Rs. 72 lakh by 1969. In addition, people in all walks of life in India support UNICEF through the purchase of UNICEF greeting cards. We expect to sell eight lakh cards in India this season, which would place India first in Asia and thirteenth in world-wide sales.

A child in an Andhra Village looks on fascinated by the sight of a drill digging deeper into the soil for water. (UNICEF/Tom Sennett)

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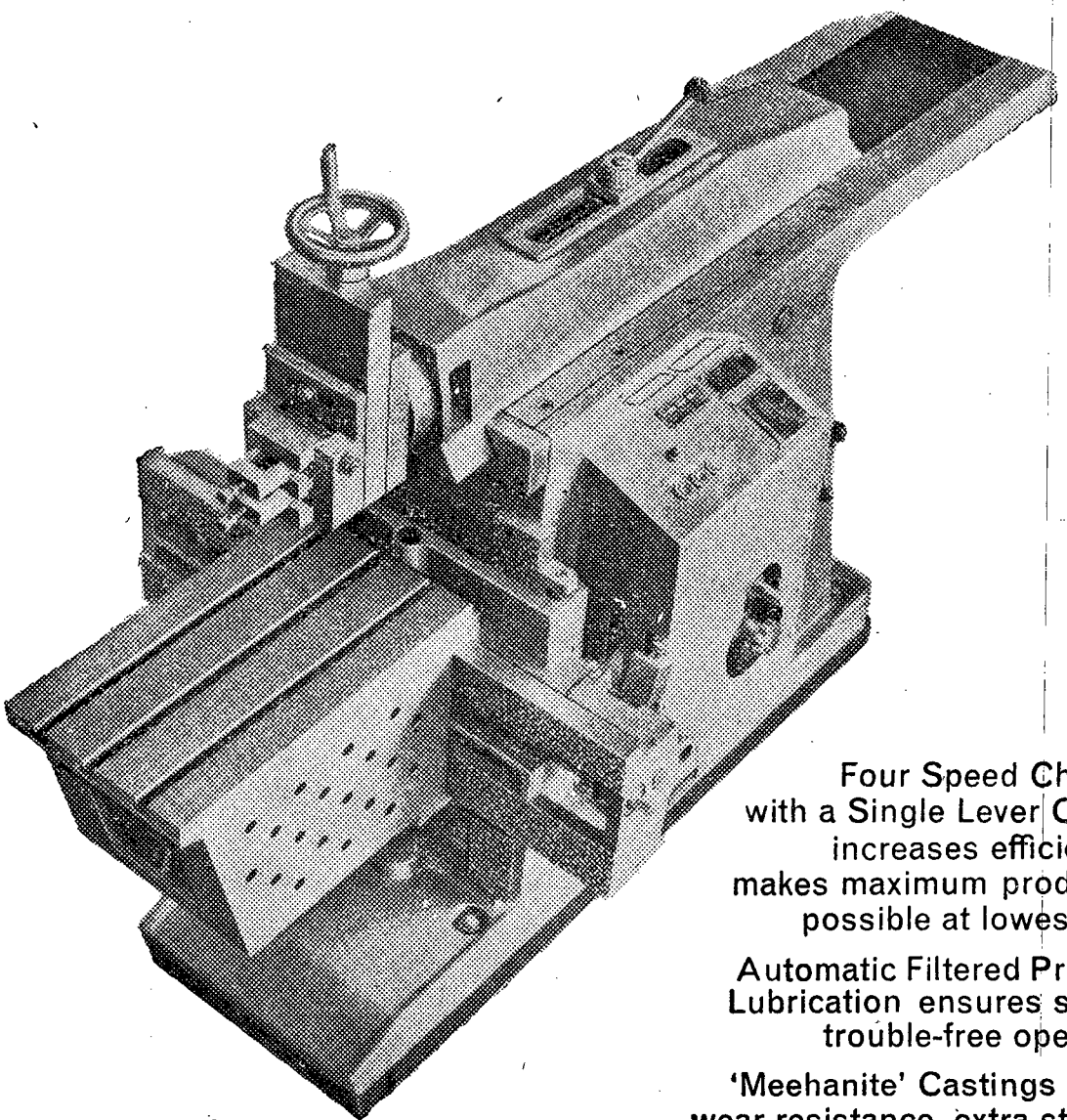

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"PROFIT" IN SOCIALIST ECONOMY

R. B. YADAVA

'PROFIT' is one of the most deprecated terms in Marxian philosophy. According to him, labour is the only source of all economic value created in the productive process, and, hence, it alone has a moral claim to all the wealth created through production.

The capitalists, say the Marxists, have all along usurped such wealth from labour by a process of distribution of something less than the total wealth created on the basis of the market value of labour. The difference between the total wealth created and the total wages paid is described in the Marxist literature as the 'Surplus Value', which is the synonym for private profit.

Proceeding from the theory that labour alone is economically productive, Marx goes on to enunciate his main thesis that capitalism will inevitably give way to communism through revolution, and from then onwards, labour will be the sole beneficiary of the fruits of his work. The expropriators will be expropriated eventually and the proletariat will become the owners of the means of production in the developed economies.

Marx's dream has come true in some countries at their earlier phases of industrialisation, with the result that the system has become a means to development and not a consequence of it. In the circumstances, socialist countries have had to carry out industrialisation themselves, and this naturally has led to a process of forced accumulation in those countries. Economic development has inevitably carried nations not towards Marx but away from him—more distressing expropriation of labour is taking place in the name of social good. A glance at the Soviet and Chinese economies would show that the surplus value in Marx's sense has in reality been used for further development and hardly for better consumption.

How has this been done? Broadly speaking, prices have been deliberately manipulated to accumulate capital. Suppose the price of wheat is too low from the point of view of the Soviet Government. Then the price of wheat will be artificially raised by the imposition of a heavy turn-over tax. It is estimated that more than one-third of the consumption expenditure in the Soviet Union before the Second World War was collected as turn-over taxes by the Government. Turnover taxes are usually high for essential consumer goods like bread and salt, and relatively low for capital goods and also durable consumption goods, like automobiles.

Prices in the Soviet economy have, therefore, no relationship to production costs or the scarcity value of products. In fact, they are nothing but the addition of a large turnover tax to the production costs, a major source of revenue for the Government. Prices are usually fixed in such a way that people receive no more consumer goods than can be made available by the State. It is this exploitation of the consumers, who are mostly wage-earners and peasants, that has made capital formation and economic development possible in the USSR.

In this kind of profit it is an improvement over that made by the private enterprise in the developed world. The typical defence of the system is that profit is the workers' contribution for society at large. Professor Libermann argues that 'since profits in our country are used in the interests of society, they become less and less an expression of surplus (unpaid) labour and come more and more to express socially necessary labour'. This kind of argument essentially involves value judgement and is absolutely devoid of any semblance of logic. Capitalists everywhere have performed the function of innovators and secured accumulation for the society at large no less efficiently than the State organs in the socialist countries of today. In the Language of Keynes "Like bees they saved and accumulated, not less to the advantage of the whole community because they themselves held narrower ends in prospect." To argue that profits made by the State are sacrosanct and do not lead to the misery of the common man is nothing but a dogmatic statement.

DISTORTION

The accumulation of investment fund in this way, that is by manupulating price through the monopoly power of the State, has not helped the progress of the Soviet economy in the long run. First of all, the process has led to a distortion in the scarcity price relationship. The factory managers have shown tendencies to produce commodities with a high price on the centrally fixed list without any consideration whatsoever for the demand of the consumers. This may have fulfilled the plan targets and earned them a bonus, but it has not given the ordinary man a higher standard of living. Secondly, the neglect of the principles of market economy has adversely affected the growth of agriculture and Soviet Russia has still a long way to go before becoming self-sufficient in foodgrains. Last but not the least, the failure to allocate capital in accordance with profitability has given rise to misuse and wastage of capital resources to such an extent that the Soviet economists are now forced to underline the necessity of making productive equipment profitable. Since the publication of Professor Libermann's article in the *Pravda* in September 1962, a return

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of invested capital in certain plants has become compulsory so that more efficient use is made of capital. It has also been decided that long term capital will henceforth carry an interest charge. It appears that the Soviet economy is moving away from Socialism in the Marxist sense.

The Chinese communists also have not so far attempted to establish a truly socialist economic system. This fact is clearly depicted by Barry M. Richman in a paper entitled "Capitalists and Managers in Communist China" in the January-February 1967 issue of the *"Harvard Business Review"*. He observes that China has learnt much from the failures and mistakes of the Soviet economic experiments and is rather reluctant to abolish private entrepreneurship once for all.

NEGATION OF MARX

As a matter of fact, some kind of "profit" is allowed to accrue to even private individuals there, and this is plainly a negation of Marx's conception of socialism. For instance, China has allowed individual businessmen and industrialists to manage and control the joint state and private enterprises which have come into existence since 1950 when private business and industries were nationalised.

Moreover, capitalists are allowed to receive a return of 5 per cent on the value of their invested capital and also an interest on the amounts deposited in the banks. They are also permitted to spend their income on luxury goods, such as imported foreign cars. Dr. Richman estimates that there are altogether 5,00,000 capitalists in Red China and they enjoy a standard of living much higher than workers, departmental heads, engineers, party-secretaries or Directors of factories. On the other hand, workers in the communes are expected to consume less so that capital formation can take place rapidly.

China has allowed capitalists to flourish so that their experience and skill may be used in her industrial development. Soviet Russia and other East European countries are gradually moving away from the economic order contemplated by Marx. This inevitably shows that socialist planners and policy-makers have realised that elimination of entreprenurial profit is not an economic proposition even for a socialist country.

But curiously enough we in India have doggedly undermined our economy during the last two decades in order to establish a "Socialist Pattern of Society". In the process, we have managed to lead the country to its present economic stagnation. Unless our politicians, policy-makers and planners can free themselves of dogmas in matters relating to economic development and realise that private enterprise has still a positive role to play in the economic growth of the country, the future is going to be bleak indeed.

LIGHTS IN TWO-THIRDS OF RURAL MADRAS

Madras has been a pioneer in the field of rural electrification. About 62 per cent of the villages, in addition to numerous hamlets, have been electrified in the State thanks to the State Electricity Board. The Board is now in a position to meet any additional demand for power anywhere in the State in the coming years.

According to the 1961 census figures, there are 15,078 towns and villages apart from about 39,000 hamlets (exact figure not available) in the State. Out of this, 9,354 villages and 18,877 hamlets have been electrified. Another praiseworthy feature is that along with this electrification about 3,41,649 pumpsets have been energised.

The targets and achievements of rural electrification in the Board's area during the Five Year Plans and during the last two years are given below:—

During 1967-68, in the Board's area alone 51,746 pumpsets were connected to power. The total number of irrigation wells existing in the State as per 1961 census handbooks is 9,09,115. Out of this over 3,41,649 pumpsets are now working on electricity as on May 31 this year. Apart from these, the licensees have also energised about 2,000 pumpsets. About 23 per cent of the total consumption in the State is by agricultural pumpsets.

The State Electricity Board has also been very keen in the electrification of Harijan Colonies in the State. More than 500 Harijan colonies have been electrified every year in recent year. In 1967-68 alone, 443 Harijan colonies were electrified. Over 2,700 Harijan colonies had power supply as on March 31 this year. The State Government was giving subsidy of Rs 3 lakh per annum towards the electrification of Harijan colonies attached to the already electrified villages. During 1967-68, the Government enhanced the subsidy to Rs 4 lakh.

The Government continues to lay emphasis on agricultural production and associated programmes to increase the food production in the State. This will call for the extension of facilities for lift irrigation, and the programmes relating to sinking of wells, borewells, filler point tubewells and installation of electric meter pumpsets acquire special importance.

In the current year's budget, there is a provision of only Rs 6 crore. With this allotment it is possible to connect only 24,000 pumpsets and supply electricity to 1,700 hamlets. In the context of intensification of agriculture, the target for connecting pumpsets has been fixed at 50,000 this year. To achieve the target of connecting with power 50,000 pumpsets and electrify 3000 villages and hamlets, would require Rs 12.5 crore. It is expected that funds will be made available to the full extent. About 350 Harijan colonies are also likely to be electrified.

It has also been planned to connect 1,500 filter points and open well pumpsets in Thanjavur during the year 1968-69 at the cost of Rs 75 lakh. The State Government have agreed to sanction a separate loan for this.

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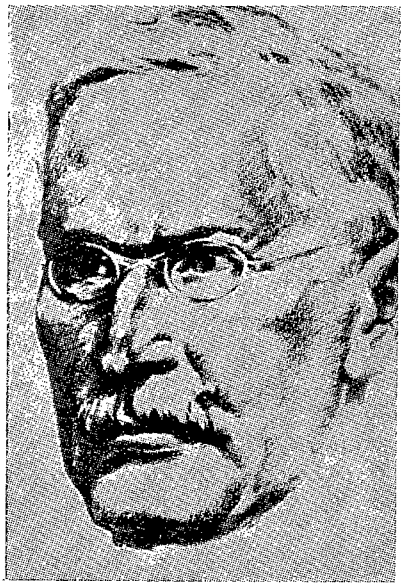
FOUNDER OF RURAL CO-OPERATIVES

Friedrich Wilhelm Raiffeisen (1818-88), whose 150th birth anniversary was observed throughout the world earlier this year, was an idealist with a strong practical bent of mind. His experiment in co-operative endeavour in an obscure village in Germany in 1846 to combat famine is today a world-wide movement. The beneficiaries are the millions of farmers in every corner of the world. In honour of the great pioneer of the co-operative movement, an institution called the 'Raiffeisen International' has been set up in West Germany.



BASICALLY, the Raiffeisen movement is an organisation by which small farmers, and others in similar rural pursuits, co-operate in buying and selling, and which at the same time acts as a small farmers' bank.

It all began at Weyerbusch, a small village in the forests of the Westerwald to the east of the Rhine between Bonn and Frankfurt. The year was 1846, when famine stalked the land.

The newly-elected Burgomaster of the village was desperate to try and do something to alleviate the lot of his famine-stricken people. Then he had an idea. With the help of some of the villagers who were in rather less straitened circumstances, he founded the "Weyerbuscher Brodverein", which means the Weyerbusch Bread Association.

The members of the Association —rich and poor alike—almost literally put their hand to the plough. Work was paid for in bread—to every man according to his need.

Raiffeisen and his bread association did the trick. The people of the village had enough to eat—and not only for that winter.

But the lesson of co-operation had left its mark on Raiffeisen. Once the immediate crisis was over, he developed his idea of co-operative action to try and improve the often miserable conditions of the peasants and the small shopkeepers of the parish.

At a very early stage he discovered that one of the basic needs was short-term credit for usually rural enterprises. That principle is still one of the pillars of the Raiffeisen credo to this day.

Applying the lesson of the bread association, he decided that the best solution for the granting of credits was a co-operative. With this aim he founded the first Raiffeisen society in his parish.

In the social crisis of the mid-19th century, his basic objective was charitable—not unlike that of another founder of a German co-operative movement, Hermann Schulze Delitzsch.

But Raiffeisen did not take long to discover what other benevolent social reformers also discovered—that charity was anathema to hard-working, honest, decent people. In addition, charity involved support from the rich, which was difficult to maintain at fever pitch once the crisis was passed.

Raiffeisen became convinced that his organisations worked best when based exclusively on the principles of self-interest and mutual self-help.

With those two principles as its pillars he set up in 1864 the "Heddesdorfer Dahrlehenskassen—Verein"—a union of credit institutions, in which anyone wanting credit must first of all be a full member of the organisation.

With its establishment the Raiffeisen co-operative, as it is now known, came into being. To the credit organisations were linked the two practical operations of the rural co-operatives:

1. Joint purchase by members of seed and agricultural implements, and in more recent years fertilisers and machinery;

2. Joint sales of crops.

By applying these methods, the rural communities were able to benefit from the inevitable result of large-scale marketing and the higher income which accrued from it.

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Raiffeisen by this time was the prophet of the rural co-operative movement. A year or two later he published a book. This explained credit institutes as a means to improve the economic circumstances of the rural population as well as those of shopkeepers and workers in the towns.

In his report on the experiences of his first rural co-operatives he gave detailed advice for the establishment of individual commodity co-operatives, for dairy products, or for wine growers—such as those which have since become one of the features of French agriculture.

Within a few years, Raiffeisen's ideas spread all over Germany. He soon gained powerful supporters such as the Count of Wied, whose estate was at Neuwied, on the east bank of the Rhine where the new international Raiffeisen union was founded.

Bismarck, who ruled first Prussia and then Germany, although known to the world as the "man of blood and iron", had also advanced social ideas. The famous German pension system, still the model for the world, is sometimes called the "Bismarckian socialism". It was scarcely suprising that the Government of Bismarck should have shown increasing interest in the Raiffeisen co-operative movement.

The support of Bismarck and his superb Prussian civil servants was not entirely disinterested. The peasants made more money and so paid more taxes! In addition, the small towns and the parishes flourished and gradually eliminated their existing heavy social burdens.

With the establishment of the Bismarckian Reich after 1870, the local co-operatives spread all over Germany, linked in regional organisations, which enabled the transfer of funds from one member co-operative to another—in effect a national rural co-operative bank.

Finally Raiffeisen organised the movement on a national basis, with a central authoritative headquarters. To this day the three-level organisational pattern—local, regional and national—has remained characteristic of Germany's Raiffeisen co-operatives, and within the pattern the basic principles are still retained:

1. Self-help,
2. Self-administration,
3. Self-responsibility.

International economic developments, the rapid change and expansion of markets, the pressures of international trade and other related factors have contributed to the steady process by which the original concept of Raiffeisen co-operatives has been adapted—and is still being adapted—to the needs of the mid-20th century.

The basic idea of the Raiffeisen co-operatives, however, has remained as vital to advanced modern economies as in the days a century ago of the early phase of German industrialisation.

Under modern social conditions, in the Western world at least, there is less need to free members from misery or exploitation by ruthless middlemen. But the problem of organising the agriculturally weaker brethren in the face of powerful competition from larger organisations remains one of the problems of any level of economic development.

One of the most satisfactory solutions has proved to be co-operative marketing and financing on the Raiffeisen model. Proof of this is the spread of Raiffeisen ideas across the world.

Today over 200,000 people are fully employed in the German Raiffeisen organisation. Of the 37,000 branch banks in the Federal Republic, more than 14,000 are part of the Raiffeisen credit organisation serving a total of 10 million clients.

The other side of the Raiffeisen co-operatives, involving joint purchasing and marketing, has an annual turnover of 30,000 million D-marks ($ 7,500 million)—six times the turnover of Germany's biggest chemical company.

HIGH FLEXIBILITY

These outstanding results also owe much to the high degree of flexibility of the Raiffeisen co-operatives. Almost inevitably in the light of modern developments, some of which were formerly sacrosanct principles of Raiffeisen, have had to be abandoned, *e.g.*, the principle that all work in the co-operative should be carried out by members on an unsalaried basis. Similar modifications have brought the Raiffeisen co-operatives up to date in other respects. But history and tradition have their other aspects and the German Raiffeisen President, Theodor Sonnemann, has recently pointed out that too much tradition is sometimes an obstacle to progress.

> "Our survival in competition with the mighty concentrations of economic power must depend on whether we are ready to cut away dead wood. We must not retreat into a world of myths and tradition."

But increasing concentration of existing co-operatives is essential in order to increase efficiency, lower cost and make better use of existing capacity.

Latest step towards a more efficient system of co-operatives within the Federal Republic is the recent offer of the Raiffeisen co-operatives to unite with the other great branches of the German co-operative movement, the so-called industrial co-operatives founded by Schulze-Delitzsch.

Negotiations about a closer co-operation between the two associations have been carried out at top level for the past year, but apparently both sides pursue a different aim.

While the Raiffeisen co-operatives insist on a merger of the two groups, the industrial co-operatives only want to combine the respective credit institutes and banks. President Sonnemann is convinced that a partial fusion would result in the establishment of a third co-operative association in Germany.

The West German government, as well as German industry, is well aware of the work of Raiffeisen co-operatives as an essential part of German development aid.

German co-operative experts have warned on different occasions that co-operatives are no wonder drug for economic diseases. The success of co-operative organisations depends on a number of factors that are not always found in these countries. Too much state intervention tends to paralyse private initiative, a basic prerequisite for a co-operative. Co-operatives, on the other hand, should remain neutral in politics and religion.

This is proved by the case of Ghana where the co-operatives col-

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lapsed with the regime of Kwame Nkruma, and where the co-operative movement was re-established subsequently with great difficulty. Membership of a co-operative must be voluntary, and there must be no intervention by the state.

In some developing nations, government attempts to force the introduction of co-operatives have caused serious damage to the idea of co-operation. Similar results occur where co-operatives exist only on paper. There "associates" set up a "co-operative" in order to gain personal advantage under co-operative law, while the co-operative as such remains inactive. Such cases, however, are rare.

The Raiffeisen co-operatives are, of course, by no means the only possible form of a co-operative organisation, nor have they been the first co-operatives at all. Before Raiffeisen came Robert Owens and the famous "Equitable Pioneers of Rochdale" dating back to the year of 1844. In many countries of the world, therefore, mixed forms of organisation are found in the co-operative movement.

Even where Raiffeisen's principles are applied, it may happen that the members are not aware of the origin of their ideas. To make people more conscious of Raiffeisen's ideas is, therefore, one of the main goals of the newly-founded International Raiffeisen Union.

Besides this, the Union intends to help on a world-wide basis in the modernisation of existing co-operatives and the founding of new ones. In their century of history Raiffeisen's co-operatives have collected a tremendous amount of experience under nearly all geographical, political and sociological conditions.

The Shipping Corporation of India, a Government-owned company, has earned its highest-ever profit in 1967-68. The profit came to Rs 5.42 crore. In fact, it is the higest profit earned by any commercial undertaking in the public sector.

The gross earnings of Rs 35.59 crore also were the highest-ever, which represented an increase of 23 per cent over her corresponding figure for the previous year.

For the first time the Corporation has paid a dividend for the year under review. It is a direct contribution to the public exchequer.

Letters

Our Advance

Last week I went to the Kurla car-shed of the Central Railway, about 40 kms. from Bombay V.T. station, to see the traction motors made by Heavy Electricals, Bhopal, at work.

I met a couple of workers at the car-shed and asked them how they felt about the India-made electric traction equipment in comparison with foreign-made machines. One of them said, "Bhopal equipment is fine and we don't have any trouble with that." Is it not indicative of our advance in the specialised field of power plant and equipment ?

Bhopal *C.K. Sardana*

Suggestions

You had called for suggestions from readers regarding your esteemed journal. Here are a few of mine. Articles on the various aspects of education; illustrated articles on people's participation and children's activities in schools; illustrated articles on various pilgrim centres, with an eye on tourism; articles on the role of women with special reference to planning and family planning, and cartoons and colour photography of developmental activities may be published. More columns like 'This India' and 'Quotation Box'. For instance, a) Intelligence tests, b) Questions and answers, c) Humorous titbits, d) Hindi for beginners e) Audit reports (Extracts of reports on Samithis and Parishads), and f) Man of the fortnight.

Gara *M. Lakshmana Swamy*
Srikakulam (A.P.)

Half-Baked Ideas

I have read with interest the article entitled, 'Life Begins at 20' written by Ashish Bose in your special issue of September 15, 1968. It is very amusing to find that age at marriage for males and females has been calculated by districts for 1961. Demographers who are aware of the pioneering work done by Dr. S.N. Agarwala at Princeton and in India in this field will realise how hazardous it is to calculate age at marriage by districts ignoring limitations of migration, mortality, differential mortality, mis-reporting and the like and present figures in neat round numbers. But some great rush in where angels fear to tread !

Again, the sentence that "the *fertility span* is reduced at both ends and not at the beginning only" is as unclear as it is naive. It is also not clear as to what young girls in the rural areas are likely to do in the absence of job opportunities, if their age at marriage is increased to 20.

Such half-baked theoretical ideas as raising the female age at marriage and liberalisation of abortion laws are unlikely to reduce birth rate in India. The recent findings of the Demographic Centre, Lucknow, on abortion are worth studying.

Gwalior *F. Sabastian*

Tremendous Success

The Hybrid Jowar Campaign in Yeotmal district of Maharashtra can really be termed as a revolution in the field of agriculture. The State Government has been conducting a Hybrid Jowar production campaign in the last three years. In the last two years the programme was tremendous success.

In 1967-68 Yeotmal district set the target of 85,000 acres to be brought under hybrid jowar. As against the target an area of 1.30 lakh acres was brought under this variety. And Yeotmal stood first in the whole State in this respect. In 1968-69 also, this district has again topped all other districts in the State by bringing an area of 3.22 lakh acres under hybrid jowar and bajra against the given target of 3.11 lakh acres.

Before the Hybridisation Campaign was launched in the district in 1967-68 there was hardly an area of 100 acres under the hybrid jowar. The increase in the area of hybrid food crops from 100 acres to over 3 lakh acres within the span of two years itself shows as to how the hybrid food crop campaign has attained a splendid success in this area.

The promising crops of hybrid jowar and bajra now stand in the fields and with the favourable rains, the cultivators and the authorities expect a very good yield. The harvesting season of the hybrid crops in this district will begin from the second week of October and come to an end by the second week of November.

Yojana has always been on the forefront in highlighting and publishing the success of agricultural campaigns in the country. May I request Yojana to survey this campaign of national importance and reach the message of its success to all corners of the country ?

Yeotmal *P.D. Shandilya*

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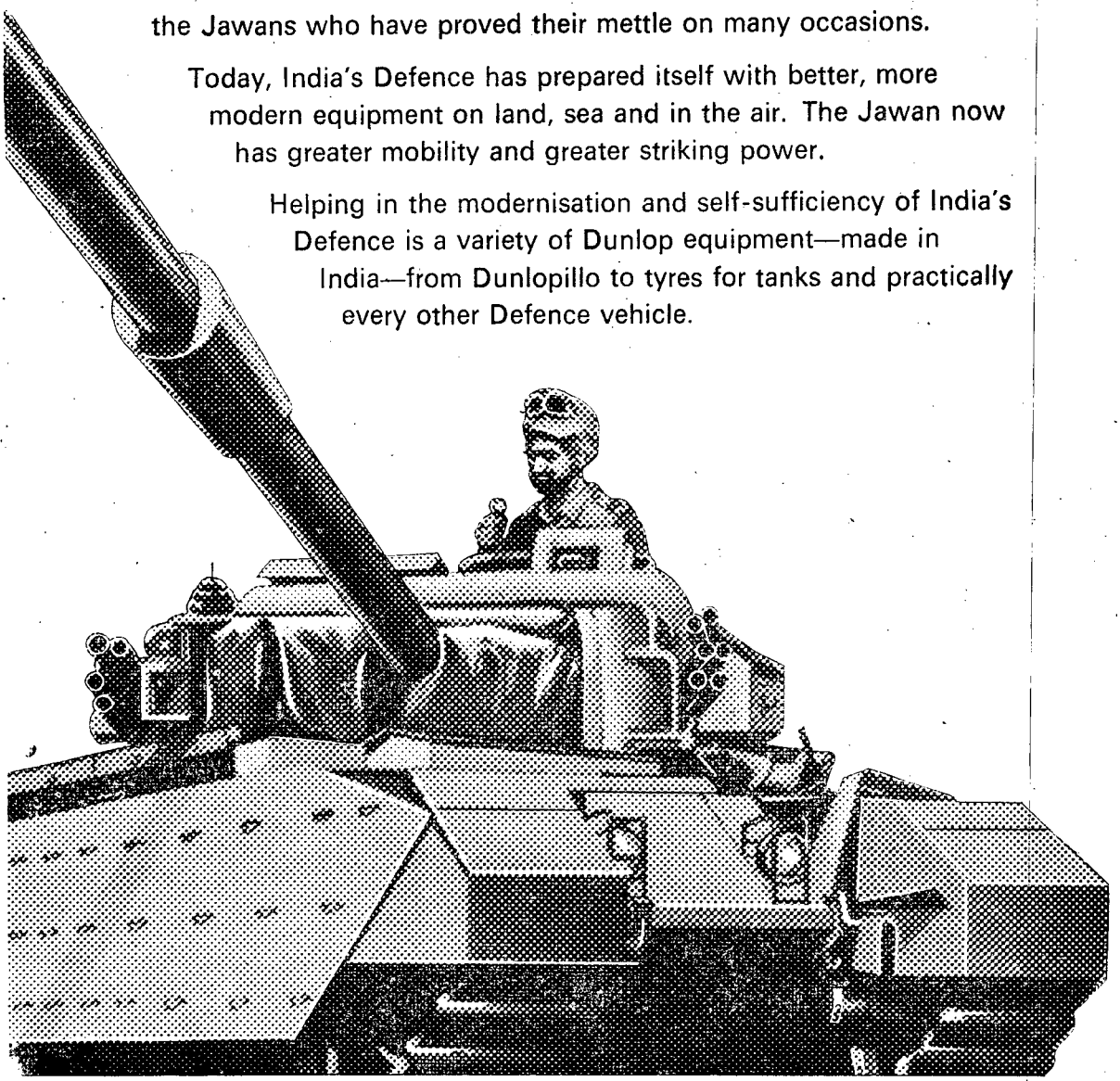

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BOOKS

A Colourful Life

Sayyid Ahmad Khan by K.A. Nizami. Published by the Publications Division, Government of India, Patiala House, New Delhi. 184 Pages. Price Rs 2.

Babu

CHANGE like knowledge is extremely painful. May be it is the necessitated acquisition of knowledge and the more than normal stretching and straining of brain and intelligence that makes it so. The agonies of adjustments could make Marquis De Sade cry out in his grave. Sayyid Ahmed Khan was one who lived through such a change and suffered intensely. His biography by K.A. Nizami is the latest in the series entitled 'Builders of Modern India' which the Publications Division of the Government of India is bringing out.

The Mogul crescent was on the wane when Sayyid Ahmad was born and John Bull's star was in the ascendant over the Indian horizon. Yet the Mogul Court had not ceased to exist—it was very much there. Under the decadent glow of bygone spledours, Sayyid Ahmad grew up to watch the rapid growth of the British might all over India. Its new order did not rise from the old ; nor was it so inspired. New ways of the new power were strange even to the elite, more so to the millions resigned to things traditional. All the same it was essential that India gained the new knowledge, not only because of the British might, but also because of the progress from which it arose, marked by the Industrial Revolution and like things. To hold her own in the comity of nations at least at some future date, India had to make up the leeway of centuries, and to do it fast. To aid a country stricken with poverty and ignorance, torn by strifes and bound by superstitions and traditions was the task Fate had assigned him—a task in which he did his bit admirably.

All this I point out just to ring home the fact that the life of Sayyid Ahmad was extremely colourful, varied and yet with unvarying purpose. He was writer, administrator, educationist, religious reformer, all in one. The biography of such a man should reflect the colour and vivacity of the subject and the times at least partially. Mr. Nizami's most serious failure seems to be in this field. This biography lacks in essentials, colour and vigour, and hence it is a lacklustre achievement. The absence of projected personality makes it drab. Even though the author's approach is so reverent that one is reminded of Boswell, the latter's inimitable strength and flair are also conspicuous by their absence.

But this drawback, serious though it is, is sufficiently made up by the minute attention given to facts. To say that documentary proof has been submitted for every statement in the book is no exaggeration. The elaborate Chronology and Bibliography adds to the scholarly character of the book.

The style and language are likable. Narration is simple and straightforward and the reader is never confused for want of clarity.

A corrigendum and a correction slip are there ; however, the book is well produced for a government publication. The cover is, as usual, drab. It is reasonably priced.

The intention of the series, i.e. 'to bring out handy volumes containing simple and short biographies of our eminent leaders', has been more than fulfilled in this volume.

A Project of Hope

Tungabhadra—A Citadel of Hope. Edited by Narasing Rao Madarkal. Published by Deptt. of Information and Tourism, Government of Mysore Bangalore. 124 pages.

THIS is a collection of fourteen articles on the Tungabhadra Project, its various aspects and the problems and perspectives of the area covered by it.

A multi-purpose river project calls for structural changes in the existing economic system and also a radical change in the outlook and attitudes of the people. New cropping patterns are evolved and new crops introduced. The inherent resistance of the people sometimes stands in the way of full exploitation of the project. These advantages and difficulties have been brought out by the articles very lucidly.

All the articles are written by government officials and hence reflect only one side of the picture. It is good publicity document and contains a lot of statistical data about the project.

Assessing Flood Damage

Scientific Assessment of Flood Damages. Published by the National Council of Applied Economic Research, New Delhi. 116 Pages.

K. D. Sharma

FLOODS are a perennial problem for our country. In addition to tangible losses caused by them, there are numerous intangible damages. In each of the last three Plans, millions of rupees were invested in flood control measures. However, there has been no scheme for uniform data collection on floods and damage caused by them nor has it been done in a co-ordinated manner. The publication of a study by NCAER about scientific methods of assessing flood damage is therefore very much welcome.

The study was undertaken at the instance of the Ministry of Irrigation and Power. The aspects studied in detail relate to the existing system of damage estimation and the machinery for it ; and new procedures for assessing the damage to recommend organisational structure for collecting data.

The first four chapters of the study bring out the deficiencies in the present system and organisation for assessing the flood damage and also try to identify the regions or areas where the frequency of the floods is very high. It also details the results of a pilot survey of Darbhanga district, which formed the basis of the study under review.

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The book suggests a number of methods for assessing agricultural and non-agricultural damages. It says that the application of these methods should not be entrusted to local village *patwaris* or other village revenue officials. Trained persons have to be put on the job and their findings should be properly co-ordinated before they are published. The book also describes the method of sample selection for assessment. It can hardly be over-emphasised that such a data would be useful in planning future flood control measures and also in working out schemes for crop insurance. It suggests the need for a time-series data before it can be applied for planning purposes.

A Useful Review

FAO Commodity Review 1968. Published by FAO, Rome. Pages 229. Price $2.50 or 20sh.

A. B. Bhattacharya

THIS publication is the eighth of an annual series of reviews prepared in the Commodities Division, Department of Economic and Social Affairs (Food and Agriculture Organisation of the United Nations). The 'review' is based on information available to FAO up to May 15 this year.

The contents of the book may be sub-classified into four groups. The first group deals with the *"General Situation and Outlook"*, which broadly covers commodity trade and prices, food imports of industrialised countries and the short-term outlook. The second group deals with *"Review by Commodity"*, covering cereals, livestock products and oils, tropical export crops, other field and tree crops, agricultural raw materials, fishery products and forest products. In this section the coverage includes patterns of production and trade, special economic problems and trends and outlook. Finally, in part four, an assessment has been made under the heading *"Recent Action on Commodity Problems"*. It deals with international agreements and consultations, UNCTAD, GATT, Kennedy Round, and Regional Integration Arrangements.

The overall conclusion that the review has drawn is that the value of agricultural trade fell last year because both the quantity and average price of exports were lower. 'Developing countries were hardest hit and their foreign exchange earnings from agriculture fell for the second successive year. Trade receipts for some commodities—notably cotton, cocoa and rice, recorded substantial gains' but not all developing countries benefited because their export supplies were short. "The terms of trade continued to move against developing countries dependent on exports of agricultural raw materials and tropical products, and on imports of basic foods and manufactured goods."

Under the head *"General Situation and Outlook"*, the review has pointed out that "after rising slowly in the preceding three years the value of exports of the principal agricultural commodities fell in 1967. According to preliminary estimates, the export earnings of major commodities fell by about 5 per cent from $22.4 billion to $21.3 billion... As a result of the fall in agricultural exports, the total foreign exchange earnings of developing countries recorded their smallest gain since 1958... By no means all commodities suffered from the general decline—cocoa and rice were outstanding exceptions and there were more modest gains in tea, sugar, cotton, beef and dairy products."

Under *'The Short-term Outlook'* the review has pointed out that "at present it seems likely that the volume of trade in foodstuffs in 1968 will stay approximately at the previous year's level." The trend of the prices and volume of trade persisting at present indicate that the above assessment was correct and justified.

The *'Commodity-by-Commodity Review'* in which all the principal commodities, their production and volume of trade have been dealt with up-to-date details is extremely useful. Another section deals with some non-agricultural commodities.

The Review is comprehensive and will prove to be of immense value.

N.I.E. Journal

NIE Journal (July 1968), National Council of Educational Research and Training, New Delhi. Pages 75. Price Re 1.50.

S.C. Seth

THIS is a bi-monthly published by the National Council of Educational Research and Training, New Delhi. It amalgamates six of the Council's former journals: Teachers Education, Guidance Review, Young Child, Buniyadi Talim, Audio-Visual Education and Education for Teaching.

The issue under review is devoted exclusively to the theme of educational planning.

The crux of educational planning is posed by Mr. Samuel Mathai, who says that "in the circumstances of our country today it seems to me that educational planning has to be separated from economic planning and a new emphasis has to be laid on character and manners and morals as much as on knowledge and technical and professional skills". The economic development of a country cannot be conceived apart from the educational growth in a country. It is in itself a challenge to the available educational resources. Both kinds of developments, therefore, have to be matched fully and squarely. Economic projects cannot work without the help of sufficiently trained personnel. If a country has 60,000 engineers unemployed, then it is a symptom of inaccurate balancing between the efforts of educational planning and those of planning for economic development.

Building a society through the instrument of education is a vital issue. There cannot be any disagreement over the observation in the journal that the answer lies in a concrete programme of 'general education'. But can we succeed in spreading 'general education' without the use of the modern techniques of communication and other sophisticated media of dissemination of knowledge ? Have we planned imaginatively in this direction? Are we making full and free use of audio-visual aids, and, have we been able to give to ourselves a nation-wide net-work of television? If we

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have failed to do this during the last twenty years, then, it is apparent that we have failed to grapple with the problem.

The success of planned education will depend on the means we are going to adopt. But on such important issues which the topic of educational planning raises, the articles in the journal fail to throw any light.

The question of finances and the strategy of educational development has been well discussed here. Education, training and motivation of teachers is undoubtedly central to all educational planning. The article entitled 'Strategy of Educational Development', which in fact is a note prepared by the Education Division of the Planning Commission ably states the pros and cons of some of the various "governing principles". The articles on 'Bureaucracy and Educational Change' and that on 'Decentralised Planning of Educational Development : A Rationale' are sketchy.

The journal is well-produced. But considering that it incorporates six journals on specific areas, it should have shown greater attention to those areas.

A Life of Ideas

Dewan Rangacharlu by N. S. Chandrasekhara. Published by Publications Division, Patiala House, New Delhi-1. 207 Pages. Price Rs. 2.50

A.N. Subrahmanyam

WHETHER Dewan Rangacharlu can be counted among the builders of modern India along with Dadabhai Naoroji and Lokamanya Tilak is a matter of opinion. Apart from the question of his belonging to the *elite*, there is paucity of material on the life of Dewan Rangacharlu. Understandably, the author writes more on Rangacharlu's ideas than on the events in his life of fifty odd years. To the intelligent reader, this is welcome relief: for while an author's ideas of a life make good reading, a life of ideas *is* better reading. Details of the life of a successful civil servant of the last century would certainly be less enduring than the ideas of a builder of modern India.

Rangacharlu's ideas have been stated in the historical setting. The presentation is clear, able and well-documented. Sometimes it takes the form of long extracts from speeches and pamphlets.

Some of the ideas are more relevant today than when they were expressed. A sample: Success of representative institutions depends not so much on the spread of English as on "the strength with which village communal ideas still subsist amongst the people." Rangacharlu advocated the use of the vernacular in revenue work. Revenue settlement could be confirmed by vernacular title deeds which would be appreciated just as well as the more pompous but less intelligible English deeds. In several contexts, such as proliferation of departments and influx of Europeans, Rangacharlu anticipated Parkinson's law. Another idea of his was that Government should popularise insurance and, in fact, take it up themselves. For controlling the spread of the evil of drink, Rangacharlu's remedy was that the Government limit the number of shops, regulate the time during which they would open and the quality and quantity of liquor sold. This sample is sufficient to confirm that Rangacharlu was no empty moralist, but a humanist and a practical thinker. The twentieth century reader to whom all these ideas are too familiar should not forget that Rangacharlu thought them out nearly a century ago. The range and reach of his ideas make him our contemporary, if not a revolutionary, on occasions.

The available material does not permit a traditional biography with its creation of a portrait and emergence of a character. The reader should thank the author for making the best use of the limited material and saving the book from becoming either a mere catalogue of events or a collection of documents. He has given an intelligent introduction to the ideas of a man of vision and the founder of the first representative institution in India. Perhaps this is the best tribute to the memory of Rangacharlu.

OTHER BOOKS RECEIVED

General Science for Primary Schools Vol. I and II—Published by the National Council of Educational Research and Training, New Delhi-14. Vol. I—321 pages. Rs. 4; Vol. II—274 pages. Rs. 3.35.

Britain and the EEC—The Economic Background. Published by Her Majesty's Stationery Office, England. 49 pages. 3 Sh. Net.

Health Innovation and Family Planning—A study in eight Indian villages by Prodipto Roy and Joseph Rivlin. Published by the National Institute of Community Development, Hyderabad-30. 53 pages. Rs. 4.

Agricultural Innovation Among Indian Farmers—112 pages. Rs. 10. *Agricultural Innovations in Indian Villages*—119 pages. Rs. 12.

Communication in India—experiments in introducing change. 56 pages. Rs. 4. Authors : Joseph E. Kivlin, Prodipto Roy, Frederick C. Fliegel & Lalit K. Sen. All published by the National Institute of Community Development, Hyderabad-30.

RECORD EXPORTS

Indian exports last August, valued at Rs 133 crore, were the highest during any month at any time. Exports during the first five months of the current financial year totalled about Rs 550 crore, nearly Rs 100 crore more than in the same period last year.

KANGSABATI PROJECT

The Union Ministry of Irrigation and Power has sanctioned a loan of Rs 50 lakh to the Government of West Bengal for financial expenditure on Kangsabati Project during the year 1968-69. This brings the total amount of loans sanctioned since 1967-68 to the State Government for this project to Rs 2.72 crore.

MINERAL DEVELOPMENT

A production target of 92 million tonnes of coal to be reached by 1973-74 is likely to be fixed under the Fourth Plan. The target for iron ore might be 55 million, tonnes, of which 25 million tonnes would be for India's iron and steel industry and the remaining 30 million tonnes would be available for export. He added that the country might attain self-sufficiency in aluminium within four years.

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Development Diary

● The Raipur-Luni dam on the eastern borders of Pali district was inaugurated.

● The Government of India has approved the Kukadi Irrigation Project in Maharashtra for inclusion in the Fourth Five Year Plan It is estimated that the Kukadi project will irrigate 1,46,728 acres of land in the scarcity-affected areas of Western Maharashtra. The estimated cost of the project is Rs 17.90 crore.

The first stage of the project comprises a dam across the river Kukadi at Manikdoh and another across the river Ar at Pimpalgaon-Joge. There will also be a dam across the river Kukadi at Yedgaon.

● The Ministry of Irrigation and Power has sanctioned loans of Rs 21 lakh and Rs 18 lakh to the Governments of Haryana and Rajasthan respectively, for financing the Gurgaon Canal Project.

● About Rs 9 crore have so far been collected this year in Uttar Pradesh under the Small Savings Scheme. This is an all-time record.

● The Oil and Natural Gas Commission has located oil-bearing sand in the South East lakwa area of Assam. This is the second successive find in the area which enhances oil prospects there.

● A collaboration agreement between Messrs Skodaexport of Czechoslovakia and the Machine Tool Corporation of India—a Government of India enterprise—for the establishment of a Grinding Machine Tool Plant at Ajmer was signed.

It provides for, among other things, the supply of design and technical documentation, the Czechoslovak technical standards and for the training of selected personnel of the Machine Tools Corporation. It also provides for technical co-operation in production in order to help the Corporation to achieve the rated output of the manufacture of the three types of grinding machine tools which are proposed to be produced at the Ajmer Plant. The agreement will be operative for six years.

● The Central Salt and Marine Chemicals Research Institute, Bhavnagar, has developed a process for the manufacture of calcium silicate-moulded insulation. Self-setting product in the form of blocks finds use in insulation of industrial equipment and furnaces which are in direct contact with heat sources up to 650°C. Moulded articles are chemically stable and there occurs no deterioration.

The new process in brief is to carry out reaction between lime and silicic acid in the presence of aluminium ions. Asbestos fibre is then added and the paste is cast into moulds.

The advantage of this process is that it dispenses with the use of autoclave and other high pressure equipment as is required in the conventional processes. Moreover, it results in easy manufacturing technique and low capital outlay.

Raw materials required are lime sodium silicate, hydrochloric acid, aluminium trichloride and asbestos fibre which are available indigenously in adequate quantities. The plant and machinery needed include reaction vessel, filter press, moulding equipment, mixer, drier and boiler which can also be fabricated locally.

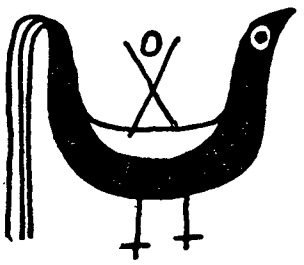
The capital outlay for a plant capable of producing 1 ton of product per day has been estimated at Rs. 4 lakh. The cost of production works out to Rs 2,250 per ton of material.

● The public sector plant at Kotah in Rajasthan for the manufacture of process control instruments has received orders and letters of intent valued at about Rs 10 crore. Commercial production at the plant began about two weeks ago. The project costing Rs. 8 crore has been set up with Soviet collaboration.

● Oil India, a joint venture of the Government and the private sector, has achieved its target of developing the oil fields in Assam (east India) to build up a production potential of three million tonnes of crude per annum. The organisation will soon be completing its tenth anniversary.

STATE FARMS MAKE HEADWAY

The programme drawn up by the Union Department of Agriculture to set up Central State Farms in various States has made considerable headway. The sites for all the five Farms to be set up with equipment gifted by the Government of U.S.S.R. have been located. Three of these Farms—one at Jharsuguda in Sambalpur District of Orissa, the second at Hissar in Haryana and the third in Punjab—have already started functioning. The othar two—one in the Raichur district of Mysore and the other in the Cannanore district of Kerala—are in different stages of establishment.



QUOTATION BOX

i was much cheered, on my arrival, by the warder at the (jail) gate, who had to take particulars about me. He asked my religion and I replied 'agnostic'. He asked how to spell it, and remarked with a sigh: "Well, there are many religions, but I suppose they all worship the same God."

—*"The Autobiography of Bertrand Russel"*

Morbid though it may sound, in an economic sense the 1965 war was a cheap one for India.

—*K. Subrahmanyam in "Seminar"*

Gentility was never a part of the makeup of what are now euphimistically termed "gentlemen farmers" in Andhra. Vulgarity was always their hallmark.

—*"Economic and Political Weekly"*

The major beneficiary of a halt (in bombing) resulting in moving the Paris talks with Hanoi would be President Johnson and he is running for nothing more than a rocking chair.

—*H.R. Vohra, "The Times of India" News Service*

In Sweden a man slapping his wife may altogether lose his driving licence.

"The Statesman"

I shan't be terribly sorry when men refer to me as old. But I will be when women do.

—*John Kenneth Galbraith in "Times of India"*

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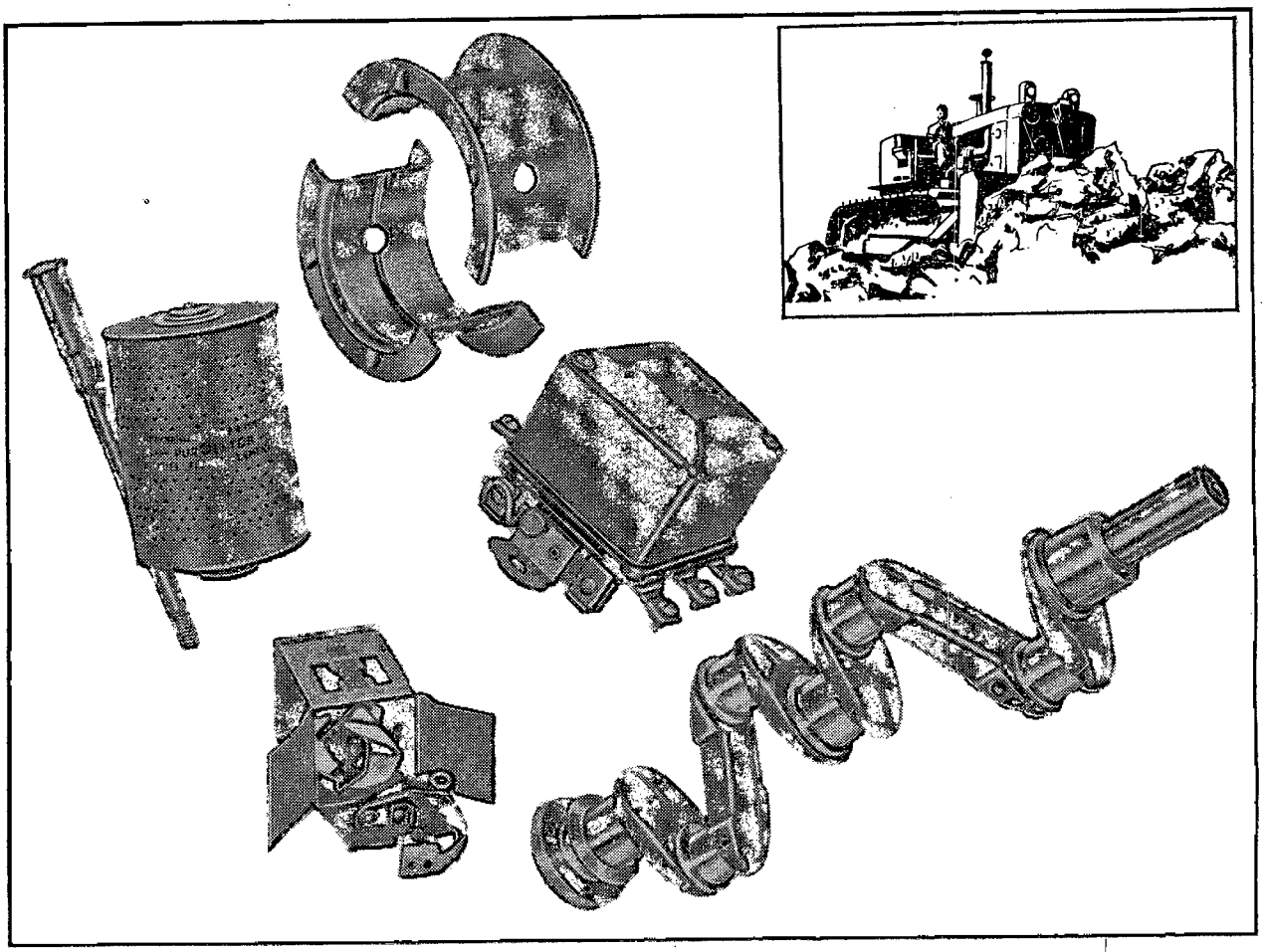

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BIG DEEDS HUMBLE MEN

In this feature Yojana seeks to present the outstanding achievements of some of the many millions of obscure farmers who are fighting the nation's battle for food.

A FARM HOUSE BY GRAIN SALES

A farmer of Salem, Shivagnanam (36) Padupatti, has a craze for CO-25, the high-yielding paddy. In fact he was the first to adopt it in his district. No wonder he got the State award for CO-25 cultivation when he harvested 3,032 kgs per acre. The farmer is now building a farm house costing Rs. 50,000 from his sale proceeds of CO-25.

The truth of the saying "success comes to those who dare and act" has been more than amply proved by a progressive farmer of Gujarat. Ukhabhai Barad of Dethli village in Amreli is a sugarcane grower who has tried hybrid bajra cultivation as a second crop on his fields and has won the first prize in the State Bajra Crop Competition. His yield was a little more than 2,135 kg per acre which was four times the State average. He owes his success to his sustained efforts to follow all instructions in the package programme.

Nabapura is another village of the district, which bustles with agricultural activity all through the year. Of the 109 families in the village, 105 are agriculturists. There are 30 oil engine pumps and 23 power pumps. Nabapura's prosperity is mainly due to its enterprising farmers among whom is Banabhai Patel who cultivated the local variety of Bajra and won the second place in the State Competition with a yield of about 1,990 kgs.

Yet another prize-winning farmer is Mohd. Ismail Naikoo of Danter in Jammu-Kashmir who availed himself of all the facilities provided under the I.A.D. Programme in Anantnag district. He won the first prize of Rs. 3,500 with 46.65 quintals per acre. With the enthusiastic response shown by such farmers, the average production in Anantnag rose from 17.26 to 22 quintals per acre. And for the first time Anantnag is going to harvest a cereal crop in Rabi, the high-yielding Sonora-64 wheat, from 5,000 acres.

AN I.R.-8 GARDEN

K. A. Moideen of Trikkakara in Kerala, engaged in business for the past 23 years, has been enamoured of IR-8 cultivation. In front of his newly-built house, instead of growing a lawn and flower-plants, he has grown an IR-8 garden of six cents with a lotus-shaped fountain in the middle. To his delight, his labour was greatly rewarded. He got 150 kgs. of paddy from the six cents of land. He is now planning to convert his whole compound into an IR-8 garden.

Not a day passes without one or more visitors coming to have a look at this "paddy garden".

Once a teacher and now a hotelier, Y. Narayana Bhat of Mangalore is affectionately called "Krishi Doctor" by the people in Kakkanad near Ernakulam, where he has recently settled down. Bhat did a great service to the place by exploding the belief of the people there that the soil in Kakkanad was unfit for paddy cultivation. This he did by not only converting the fallow soil of the place into lush green paddy fields but also by winning the prize for his record output of IR-8. He has distributed seeds to farmers in the area.

Bhat was a teacher first for eight years. Finding the profession unrewarding he took to hotel business in Ernakulam. Two years back he moved to Kakkanad, six miles away. When he found it difficult to get enough rice for his hotel, he set apart a portion of his two-acre farm for growing IR-8 paddy. He got a per-acre yield of 8,650 lbs. Now he has cultivated one and half acres with IR-8 paddy. He expects to reap a harvest of 6,400 lbs.

Bhat feels sure that he would be able to meet the needs of not only his family fully but also of his hotel for six months in a year.

A CROP KING

V.C. Veera Reddy of Agraharam village in Andhra Pradesh is a progressive cultivator who persuaded his fellow cultivators to reorient their farming techniques. Reddy is known as the Crop King of Kurnool. He reaped a harvest of 4,964 kgs of groundnut from his 3 acre farm.

Veera Reddy achieved all this by the application of modern scientific farm techniques, such as dressing the plot with chemical fertilisers. He rigidly adhered to the manurial schedule and took adequate precautions against rest.

Just three weeks before harvesting Reddy again applied insecticides. The result of all these measures that Reddy took was that he could establish an all-India record in groundnut crop.

T. Mohan Kumar

Marulappa of Mysore, an agricultural graduate-turned farmer, got a record yield of 89 *Pallas* of IR-8 Paddy from an acre and a half of his land in Yedehalli village in Bhadravati taluk last summer.

He has been experimenting with many improved and high-yielding seeds. He used to consult the Agricultural Officers in the village and in the Block and follow their suggestions in his cultivation. Before sowing the seeds, they were sprayed with pesticides.

A month after transplantation, the first weeding was done and a quintal of urea was applied. The second weeding of crop was done after two months and a quantity of 75 kgs. of Urea was applied.

A sum of Rs 1300 was spent in all by Mr. Marulappa. He earned a total income of Rs 5340.

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WORDS THAT INSPIRE

In the true democracy of India the unit is the village ... True democracy cannot be worked by twenty men sitting at the centre. It has to be worked from below by the people of every village.

Democracy must in essence mean the art and science of mobilizing the entire physical, economic and spiritual resources of all the various sections of the people in the service of the common good of all.

In true democracy every man and woman is taught to think for himself. How this real revolution can be brought about I do not know except that every reform, like charity, must begin at home.

A born democrat is a born disciplinarian. Democracy comes naturally to him who is habituated normally to yield willing obedience to all laws, human or divine...Let those who are ambitious to serve democracy qualify themselves by satisfying first this acid test of democracy. Moreover, a democrat must be utterly selfless. He must think and dream not in terms of self or party but only of democracy.

Evolution of democracy is not possible if we are not prepared to hear the other side. We shut the doors of reason when we refuse to listen to our opponents or, having listened, make fun of them. If intolerance becomes a habit, we run the risk of missing the truth.

Democracy can only represent the average, if not less than the average. Therefore, a democratic institution to be pure has to attend to the all-round education of the humblest and the lowest. It must take in its sweep all superstition and social abuse. In such a society there will be no Christian and non-Christian; there will be no distinction of sex.

Possession of power makes men blind and deaf; they cannot see things which are under their very nose and cannot hear things which invade their ears. There is thus no knowing what power-intoxicated governments may not do.

To me political power is not an end but one of the means of enabling people to better their condition in every department of life. Political power means capacity to regulate national life through national representatives. If national life becomes so perfect as to become self-regulated, then no representation becomes necessary. There is then a state of enlightened anarchy. To such astate everyone is his own ruler. He rules himself in such a manner that he is never a hindrance to his neighbour. In the ideal State, therefore, there is no political power because there is no State. But the ideal is never fully realized in life. Hence the classical statement of Thoreau that that government is best which governs the least.

Democracy is an impossible thing until the power is shared by all, but let not democracy degenerate into mobocracy, Even a parish, a labourer, who makes it possible for you to earn your living, will have his share in self-government. But you will have to touch their lives, go to them, see their hovels where they live packed like sardines.

Western democracy is on its trial, if it has not already proved a failure. May it not be reserved to India to evolve the true science of democracy by giving a visible demonstration of its fitness. Corruption and hypocrisy ought not to be inevitable products of democracy as they undoubtedly are today; nor bulk a true test of democracy.

I would make the spinning wheel the foundation on which to build a sound village life; I would make the wheel the centre round which all other activities will revolve.

The idea behind the village industries scheme is that we should look to the villages for the supply of our daily needs and that, when we find that some needs are not so supplied, we should see whether with a little trouble and organisation they cannot be profitably supplied by the villagers.

If we want to cultivate a true spirit of democracy, we cannot afford to be intolerant. Intolerance betrays want of faith in one's cause.

Intolerance is itself a form of violence and an obstacle to the growth of a true democratic spirit.

In the India or whose fashioning I have worked all my life, every man enjoys equality of status, whatever his religion is. The State is bound to be wholly secular.

The State of our conception must be a secular, democratic State, having perfect harmony between the different units composing the State.

Some Hindus are now beginning to feel that they have the upper hand; and some Mussalmans are afraid that they will have to play the underdog in the Union. This will be shameful indeed. If a minority in India—minority on the score of its religious profession—is made to feel small on this account, I can only say that this India is not the India of my dreams.

Economic equality is the master key to non-violent independence. Working for economic equality means abolishing the eternal conflict between capital and labour. It means the levelling down of the few rich in whose hands is concentrated the bulk of the nation's wealth, on the one hand, and a levelling up of the semi-starved naked millions, on the other.

We have unfortunately come under...the hypnotic influence of capital, so that we have come to believe that capital is all in all on this earth. But a moment's thought would show that labour has, at its disposal, capital which the capitalist will never possess.

In my humble opinion, labour can always vindicate itself if labour is sufficiently united and self-sacrificing. No matter how oppressive the capitalists may be, I am convinced that those who are connected with labour and guide the labour movement have themselves no idea of the resources that labour can command and which capital can never command. If labour would only understand and recognize that capital is perfectly helpless without labour, labour will immediately come to its own.

I want to realize brotherhood or identity not merely with the beings called human, but I want to realize identity with all life, even with such things as crawl upon earth ..... because we claim descent from the same God, and, that being so, all life in whatever from it appears must be essentially one.

It may not be completed in my day, I should love to die in the faith that it must come in the fullness of time. I should be happy to think that I had done nothing to hamper the process; subject to this condition, I would do anything to bring about harmony.

—Gandhiji

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