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PRESIDENTIAL ADDRESS

BY

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I

I am very grateful to you for kindly inviting me to preside over your annual Conference this year. It is a great professional honour and I cannot help feeling that I have done very little to deserve it. I take it just as a token of the affection which the members have for me personally and their appreciation of the work done for promoting agro-economic studies in this country by the institution of which I had the privilege to be in charge until recently.

We are celebrating this year the 20th anniversary of the founding of the Indian Society of Agricultural Economics. The Society can be rightly proud of its record of work during these years and many members have, no doubt, contributed to it. But one person to whom the main credit must go is the President of the Society—Shri Manilal B. Nanavati. One of the youngest academic associations in the country when he took charge of the Society 18 years back, it has not only secured today an honoured place in the academic world of the country but also won international renown and respect. Having had the satisfaction of seeing his young ward reach the age of maturity, Shri Nanavati has expressed the desire this year—mainly for reasons of health—that he should be relieved of the post of President. While we should be the last to deny him the rest that he so richly deserves, I would like to take this opportunity to request him kindly to agree to continue his close association with the Society to the extent that his health may permit and also wish him many years more of healthy and active life.

Last year we had the privilege of having the Tenth Session of the International Conference of Agricultural Economists being held in India. About 300 of the world's top experts in the field from over 60 countries assembled in the garden city of Mysore and carried on most instructive deliberations on diverse aspects of the theme "Agriculture and its Terms of Trade", that has a special interest for our country which has chosen the path of accelerated economic development through socialist planning. Next year we shall be launching our Third Five-Year Plan that is expected to put our economy along the path of self-sustained growth. It will be appropriate at this session to discuss in the background of all that we learnt last year about the experience of other countries, what should be the role of agriculture in our programme of economic development and how best our agriculture can be given the initial push which will enable it as also the rest of the economy to make a sustained and accelerated progress.

II

It is obvious that the development of agriculture can help the development of our economy from the stagnant to the progressive stage in three ways: (a) by increasing the gross national product, (b) by supplying the physical surplus required by other sectors of the economy in the shape of food and raw materials,

and (c) by providing the economic surplus which constitutes the material basis for economic development. From the point of view of economic development, increase in production is, no doubt, essential but it is not enough. It must be accompanied by an increase of surplus and thereby of investment at a *compound rate* which should be well above the rate of increase in population. It is true that in more advanced stages of economic development, the bulk of the surplus required may come from the industrial sector. But in an economy like ours, where nearly half of the national income still comes from agriculture, a large part of the surplus required for economic development will have to come from agriculture until the stage is reached when industry is able to contribute a major portion of the national income. A programme for industrialization makes a large demand for investment and there is also usually a fairly long time-lag between investment and output in the industrial sector with the result that invariably there are considerable stresses and strains in the economy during this period of lag. In most of the stagnant societies, where agricultural techniques are still somewhat primitive, the application of known improved techniques like the use of fertilizers, pesticides, etc. often leads to a substantial and quick increase in agricultural production. Until the entire field of agriculture in such a society is saturated with the application of such known techniques, the development of agriculture can provide, as it were, *a bargain sector*—a sector with a large unexploited potential which can produce the requisite surplus with relatively low investment and in a comparatively short time. It is true that this bargain sector provided by an under-developed agriculture cannot last for long but so long as it lasts it provides a very useful breathing space for such a society seeking rapid industrial development.

In practice, however, it is often found that there are a number of serious inhibiting factors which tend to hold up agricultural development at this very stage. In fact, it is one of the characteristic features of an under-developed economy that its agriculture has reached some sort of a *quasi-equilibrium* at a low level of productivity from which it is extremely difficult to raise it. Not only do the patterns of investment, enterprise and techniques tend to become closely integrated with this low level of productivity but the species of crops and animals are also found to evolve in such a manner as to suit only that low level of productivity. If any attempt is made to lift any part of this *mesh of interlocking vicious circles*, there is usually such a pull downwards from the other chains in the mesh that any sustained progress becomes almost impossible.

The real difficulty about stimulating a self-sustained development of agriculture in an under-developed economy, therefore, consists not so much in making one part of it or the other a little more efficient or in tightening a screw here or a bolt there but in extricating the entire agricultural economy from these vicious circles so that the state of quasi-equilibrium at the existing low level is disturbed and conditions are created for lifting the economy to higher and higher levels of productivity.

In the ultimate analysis, an increase in agricultural productivity can come mainly in three ways: (a) larger investment for building up the infra-structure of the agricultural economy, (b) more intensive use of traditional techniques and (c) introduction of improved techniques. The first is a rather costly and also slow process. A concentration on traditional techniques may show some improvement n the short period but it has a limited value. The adaptation of improved techni-

ques practised elsewhere and the discovery of new techniques, on the other hand, requires considerable ingenuity on the part of the people concerned. Once, however, the ground is prepared for the introduction of such techniques, an ever-expanding horizon is opened up. In fact, a substantial and sustained increase in agricultural productivity becomes really possible when the economy is so geared that the search for and adoption of new techniques become a built-in process, as it were.

The various measures that can be tried to increase the volume of surplus available from agriculture can be broadly classified into four categories, *e.g.*, compulsion, inducement, collectivist organisation and strategic stimulus.

As a system, compulsion is the simplest and has indeed the longest history from the Lycurgean polity of ancient times and the feudal economy of the middle ages down to the plantations of the 19th century and its economic *raison d'etre* was accepted by the philosophers of ancient Greece, medieval church fathers as also the economic writers of the confederate regime in the U.S.A. The underlying principle was that normally the primitive man would not work unless forced to produce anything beyond his barest necessities. For he preferred leisure to work so that when a surplus had to be produced, some people had to compel others to do so. This was the origin of slavery or serfdom. Rackrenting by landlords and usury by money-lenders were only alternative forms of compulsion for making the farmers work hard and for squeezing out the surplus from them for the consumption of the non-farming sectors of the economy.

It was the pre-classical English economists of the 18th century who in dealing with problems of agricultural production and marketed surplus under conditions not very unlike those which obtain today in many under-developed countries, led the attack against the system of compulsion. They emphasised that there was an alternative system, namely, the method of multiplying the wants of the farmers by popularising "superfluities" (or "luxuries" or "equivalents") and encouraging exchange which was a much more efficient system than any form of compulsion. For, once the taste of the farmer for superfluities is developed, he becomes willing to work hard to produce an agricultural surplus with which to procure these commodities. Compulsion is no longer necessary. For a violent method of making the humankind laborious in raising food, there is substituted peaceful exchange. Formerly they worked because they were slaves to their masters, now they work because they are slaves to their wants. These pioneer economists explained that a system based on compulsion tends to stagnate in the long run, although it may show spectacular results in the short period, while that based on inducement gives more sustained results and leads ultimately to progress and prosperity. "In the first supposition", as James Steuart emphasised, "It is the head of the master which conducts the labour of the slave and turns it towards ingenuity; in the second, every head is at work and every hand is improved in dexterity." The pre-classical economists, therefore, definitely set their face against the idea of self-sufficient subsistence farming as also against the use of compulsion for increasing production and marketed surplus. They pleaded for the adoption of a system based on inducement and exchange but they felt at the same time that it may frequently lead to serious imbalances and, therefore, assigned to the state the role of an overall regulator of the system.

Later the classical economists carried the case for free enterprise to the extreme when they minimised the role of the state and gave whole-hearted support to Adam Smith's dictum that "little else is requisite to carry a state to the highest degree of opulence from the lowest barbarism, but peace, easy taxes and a tolerable administration of justice; all the rest being brought about by the natural course of things." And this set the pattern for the development of agriculture in western countries during the 19th century.

The systems of "collectivist organisation" and "strategic stimulus" were evolved as a result of dissatisfaction with the various shortcomings of the system of *laissez-faire* and also as a result of the desire in less developed countries to accelerate the process of economic development faster than could be normally expected from such a policy. In both, the state was required to play a much more active role than in the system advocated by the classical economists.

In collectivist organisation, as in Soviet Russia or China, the state takes the lead in cutting the Gordian knot by eliminating private enterprise altogether and organising agriculture on a collectivist basis and there is a strong element of compulsion in this system, somewhat reminiscent of that of Lycurgus.

In the system of strategic stimulus recommended by a number of modern economists for achieving some of the quick and spectacular results of the system of collectivist organisation without giving up private enterprise in agriculture, the state is expected to give special stimulus to agricultural development by using different types of investments as levers, as it were, for pulling apart the vicious circles which inhibit agricultural production.

In some respects the position taken by the advocates of the system of "strategic stimulus" is not unlike that taken by the pre-classical economists. Like the latter, they agree that the state should protect the farmers against unfair competition and also against the vicissitudes of the market economy. They also emphasise that it should create the infrastructure which is essential for agricultural development. But they feel that these measures by themselves will not be enough to bring about such an accelerated development of agriculture as may lead to what is described by some of them as "a take-off into self-sustained growth." There is a view that the simultaneous and balanced development of a number of sectors is essential to provide the element of material support that alone will create the necessary demand for the newly produced goods and also to ensure the necessary structural balances on the supply side. If any under-developed country finds that its own resources are inadequate for this task, which is obviously a very difficult one, foreign assistance can be of great help in giving an initial "big push" and enabling it to effect a "successful take-off." There is, however, another view that the most effective strategy in such a case is not "balanced growth", namely, a transition from under-development to development through a chain of equilibria but "unbalanced growth", namely, a movement from under-development to development through a chain of disequilibria. It is argued that since it is difficult to lift all at once the trap of vicious circles which is today holding down the agriculture of under-developed countries at a low level, the right policy should be to develop only such industries which are linked with the more vital sectors of the agricultural economy so that as these industries develop they pull up the linked sectors of the

agricultural economy as well and thereby disrupt the chains of the trap which has been holding agriculture down. Such a policy of unbalanced growth may, no doubt, lead to stresses, strains and tensions in the economy, but it is held that these stresses and strains are the very forces which are needed for promoting rapid development.

It is obvious that like all generalisations, there is an element of truth in each of these theories, but there are also elements which are true only of particular cases and do not have universal validity. Moreover, it is important to recognise that any "take-off" may not turn out to be a "sustained take-off". In fact take-off may be of various types. There may be an "abortive take-off" reminiscent of Baudelaire's albatross. There may be a "hauled take-off" comparable to that of a glider which just helps to raise the economy to a higher level but where further progress is limited. There is again the "assisted take-off" as in the case of an aeroplane catapulted from an aircraft carrier where the initial push is only a precursor of far-reaching progress in future. Lastly, there is the "self-propelled take-off" of the space rocket which once it crosses the gravitational pull will not come back to earth again. It is obvious that the strategy for agricultural development has to be so devised that the take-off is not of the first two types and is at least of the third type, if not the fourth.

III

With this preamble about principles, we may now turn to the facts of the Indian situation. Prior to the last quarter of the 19th century, Indian agriculture was almost entirely of a subsistence type with more or less self-sufficient villages concentrating on the production of foodgrains ; there was very little transport and trade in agricultural products. The surplus produced by agriculture was, therefore, very meagre. With the introduction of railways, opening of the Suez Canal, annexation of Burma and the policy of *laissez-faire* which the British rulers scrupulously followed, Indian agriculture came within the orbit of international trade. There was also considerable extension of geographical division of labour within the country. Burma concentrated on rice, Punjab and Sind on wheat and cotton and Bengal on jute, while in the rest of the country comprising what now constitutes the Indian Union, there were large transfers of land from foodgrains to the production of oilseeds, tobacco and sugarcane. New crops and new varieties were introduced in Indian agriculture to cater to the new demand. There was, however, no appreciable change in the technique of production or in the efficiency of operations.

The Second World War and the Partition cut off supplies of rice from Burma and wheat, cotton and jute from Pakistan and the geographical division of labour which had taken place during the previous seventy or eighty years, had to be suddenly reversed at the cost of considerable stress and strain for our economy. The country was now obliged to put a much greater emphasis on the production of rice, wheat, jute and cotton than hitherto and to sacrifice some of the advantages of geographical division of labour. Largely as a result of this, the index of agricultural production (base 1949-50) which stood at 103 in the quinquennium ending 1938-39 that preceded the Second World War declined to 97 in the quinquennium ending 1950-51 that preceded the First Five-Year Plan.

With the initiation, however, of the Five-Year Plans which prescribed a number of measures for eliminating or reducing the exploitation of farmers by landlords, moneylenders, etc., provided for much larger investment in agriculture than hitherto and set up a machinery for extension work, there has been a definite upward trend. The index of agricultural production averaged 123 during the first three years of the Second Plan period (1956-57 to 1958-59). A part of this increase in production was no doubt due to the extension of cultivation to new areas and of multiple cropping but it also reflected a substantial increase in agricultural productivity.

These facts undoubtedly suggest that Indian agriculture is no longer stagnant. But in spite of a significant increase both in production and in productivity in recent years, the progress made so far cannot be said to have marked a definite transformation from a stage of chronic stagnancy to that of sustained growth. Even in the past, there have been periods of three or four years when there was a significant increase in production as well as in productivity but those trends were not sustained for long and sooner or later there was a decline to the previous level of low productivity.

One important characteristic of the agricultural development during this period has been that it has not been gradual but has come in spurts as it were. It has also been very uneven so far as different parts of the country and different classes of farmers are concerned. Elements of growth and stagnancy are now continuing side by side in our agricultural economy. Sometimes and in some areas, the former get the upperhand while on other occasions and in other areas, the latter predominate. In this context it may be interesting to make a note of the experience of certain regions in the country which seem to have some bearing on the theoretical considerations referred to earlier. There are, no doubt, several factors which require to be considered in this context but I propose to draw here special attention to only two or three of these factors just to highlight certain significant points which are usually given insufficient consideration.

Let me first take Assam where large-scale plantations have been developed right in the middle of a peasant farming area. These plantations, which use modern and scientific techniques do not seem to have any significant "demonstration effect" on the neighbouring agriculturists. For instance, the use of chemical fertilisers and pesticides, is very intensive in the plantations but the use made by the farmers of Assam is amongst the lowest in India. The average production of foodgrains in Assam during the Second Plan period has shown an increase of only 4 per cent over that for the quinquennium preceding the First Plan. There seems to be a chasm between the planters and their neighbouring farmers in Assam which has not yet been bridged because the latter have rightly or wrongly the feeling that the modern techniques followed by the former are either beyond their means or unsuitable for their purpose.

I may turn next to Chhota Nagpur where there has been a very substantial development of heavy industries and yet the farming practices and the yield per acre are among the poorest in the country. The average production of foodgrains in Chhota Nagpur during the Second Plan period has shown an increase of only 5 per cent over that for the quinquennium preceding the First Plan. There is very little use of modern implements and machinery or fertilisers and pesticides

by the local farmers. No industrial "ladder" seems to have been developed over the last few decades which could bring step by step the steel, fertilisers and pesticides produced in the area to the small farmer even 20 miles away in such forms and for such uses as could induce and enable him to modernize his farming techniques. The industrial development is, as it were, an island—nowhere integrated as part of area development with the agricultural sector. The experience of Chhota Nagpur would seem to indicate that there is no automatic relationship between heavy industries and modernization of agriculture at least until certain complementary developments have taken place.

A most interesting contrast is provided by recent developments in eastern U.P. and eastern Punjab. Before Partition, the eastern parts of both the former provinces of U.P. and Punjab were much more backward than the western parts—although eastern U.P. was in a relatively worse position than eastern Punjab. Since Partition, there has been a rapid improvement in agricultural production in eastern Punjab while eastern U.P. continues to be almost as stagnant as before. For instance, compared to the quinquennium preceding the First Plan, the average production during the Second Plan period of foodgrains was 58 per cent higher in eastern Punjab as against only 0.1 per cent in eastern U.P. Corresponding increase in the production of all agricultural commodities was 65 per cent in eastern Punjab and only 4 per cent in eastern U.P. Neither the development of trade nor that of large-scale industries shows a very different character in these two areas. While eastern U.P. has a larger number of sugar factories than eastern Punjab, the latter has a larger number of textile mills. There is no heavy industry in either of these two areas. The effort made by Government for agricultural development has not also been so different in these two areas as to explain such marked difference in agricultural production.

There are, however, two important factors which seem to have a bearing on this difference. First, there are many more medium and small industries in eastern Punjab than in eastern U.P. Many of the small industries in eastern Punjab are power driven and they also represent a fairly large variety, *e.g.*, manufacture of pumps, agricultural implements, jigs and drills, light electrical goods, bicycle, footwear, hosiery, etc. In U.P., they are largely of a cottage industry type which do not use very much of electric power, like weaving, leather and tanning, sericulture, gur and khandsari. It seems eastern Punjab has been able to develop, as it were, a connecting "ladder" between large industries (some of which are situated even outside the State like steel and chemical factories in Chhota Nagpur) and agriculture through a chain of small and medium industries which eastern U.P. (and as we have seen earlier also Chhota Nagpur) has not been able to do yet. In eastern Punjab, the fairly dispersed growth of power operated small industries has helped the people to acquire an ingrained habit of technological improvement which is proving a strong force for progress while in eastern U.P., the people have yet to develop such a habit. Secondly there is a strong urge for a higher standard of living amongst the farmers of eastern Punjab which is not there to the same extent amongst the farmers of eastern U.P. Many of the farmers in eastern Punjab are migrants from western Punjab where they had got used to a higher standard of living. The displacement caused by Partition faced them with a new challenge which was difficult but at the same time not quite overwhelming, partly due to the assistance that they received from the rehabilitation authori-

ties. The result was that they responded in a manner which was a practical demonstration of Toynbee's well-known thesis of challenge and response. Although they had now a smaller area to cultivate compared to what they used to have in western Punjab, they wanted to go back to the old standard of living that they enjoyed before Partition and, therefore, not only did they put in more effort but were also anxious to try new techniques in order to produce from a smaller holding the income which would enable them to maintain the same standard of living that they enjoyed from a larger holding before Partition.

It may be said that what has happened in eastern Punjab is a very special case and has no other parallel. But there are several other areas in the country where also there has been similar progress, although the motivation and the challenge may have been somewhat different. In fact, the Kaira district of Gujerat, which some of you may be visiting during this Conference itself is another good illustration. A healthy farming community whose outlook has been broadened by a close contact with the outside world and whose opportunities have been enlarged by the establishment of a modern dairy industry, the introduction of mixed farming and diesel pumping sets and the setting up of a number of small ancillary industries has recorded a rate of agricultural development in recent years which compares favourably with that of eastern Punjab. The level of foodgrains production in Kaira district in the first three years of the Second Plan period was 30 per cent higher and that of agricultural production 130 per cent higher than the average for the quinquennium preceding the First Plan.

Such differences are noticeable not merely as between different areas but also between different groups of farmers. In the same area, the best farmers are known to have produced yields per acre several times higher than those produced by average farmers. For instance, the average yields of rice per acre in different States vary between 400 and 1200 lbs. while the highest yields obtained in crop competitions vary between 3000 and 9000 lbs. Corresponding ranges for wheat are 300 to 1000 lbs. and 2500 to 6000 lbs. respectively. In fact, while the best in Indian agriculture does not compare unfavourably with the best elsewhere, the difference between the best and the average is much wider in India than in the technically advanced countries. This is both an index of the backward character of Indian agriculture and a measure of its potentiality for development.

IV

What, then, should be the strategy for the development of our agriculture and an early exploitation of this bargain sector? It is obvious that in our special political and economic situation neither *laissez-faire* nor collectivisation can be accepted. *Laissez-faire* has been given a long trial and has failed. Any attempt at collectivisation is likely to create serious social difficulties, at least in the transition period, which may outweigh whatever economic advantage it may have. Moreover, in a country where the population pressure is so great and the land-man ratio is so low as in India, collectivisation is likely to accentuate the problem of rural unemployment at least in the initial period. The element of compulsion associated with collectivisation is also not in accord with our political ideals. It would appear, therefore, that our basic approach has necessarily to be a suitable form of strategic stimulation, namely, a "big push" given by the State supplemented by certain

strategic "pulls" through the deliberate planning for a limited amount of "unbalanced development" of both agriculture and industry. Care, however, will have to be taken that the "push" is of the right magnitude and at the right points and the "pull" is not of such proportion that the resultant stresses and strains are so severe that what is gained in the swing is lost in the rounds.

An essential condition for the "big push" is that the "decks" should be first cleared for subsequent operations. Adoption of an appropriate land policy, credit policy and marketing and price policy is an essential part of such clearing of the "decks", the main objective being the removal of the various inhibiting factors which tend to hold up development. On the whole, it would seem that the broad policies in regard to these three items recommended in the First and Second Plans are in the right direction. Unfortunately, however, some of the basic recommendations made in the two Plans, *e.g.*, security of tenure, agrarian reorganisation, supply of timely and adequate credit and stabilisation of the price level, have not yet been implemented effectively. In spite of general agreement on these broad policies, there has been a certain hesitancy in regard to some of the details and also considerable laxity in implementation, with the result that it is taking an unduly long time for the full benefits of these policies to be realised. The first thing that requires to be done is to make sure that these reservations, most of which are really of minor importance compared to the major issues involved are settled quickly by permitting a certain amount of local variation and flexibility in regard to details and the basic policies which have been accepted by the nation are effectively implemented as early as possible by simplifying the procedure and streamlining the administrative machinery. Unless our farmers are fully protected against exploitation by landlords, provided with an agrarian structure which is conducive to efficiency, supplied with credit which is adequate enough for adopting all the new techniques and for making all the investment that are needed for achieving a higher level of production and also assured that if they take the risk of stepping up their investment, prices will not be allowed to fall to unremunerative levels, even the best of technical and administrative programmes for agricultural development will not produce the desired result.

The "big push" that our agriculture requires can be given only if we have a strong and efficient enough organisation for providing an intensive agricultural research and extension service and ensuring adequate supply of fertilisers, pesticides, improved seeds, livestock, modern agricultural implements and irrigation. Here too, there is no new principle involved. We have already taken steps to establish a national extension service. But compared to the depressed character for our agriculture, the various restraints that it is subject to and the large volume of work that requires to be done for accelerating its development, the extension staff that we have today is too thin in coverage and too superficial in quality, especially in the context of the present poor level of development of people's organisations in our rural areas. A young village level worker, who is only a matriculate and has been given some elementary training in agriculture, is asked to look after as many as 1200 farmers and give them day-to-day guidance not merely in agricultural and animal husbandry techniques but also in farm planning, co-operative organisation, panchayat social service, etc., and we call it agricultural extension service. Now, this is certainly very inadequate compared to the work that has to be done in most areas. In all countries which have a progressive agriculture, the agricultural extension service is much more intensive. For instance, in Scotland

only 200 farmers are served by one extension agent, in Holland about 400 and in Japan where holdings are small, usually less than $2\frac{1}{2}$ acres, between 500 and 600. In addition to these agents maintained by government, private manufacturers of fertilisers, pesticides, agricultural implements, etc., also employ a large staff of salesmen and extension workers in these countries. In China there is a well-staffed technique popularisation centre within walking distance of every farm and the arable area per agricultural extension worker is about one-fourth of that in India. Moreover, there are a large number of members of the Communist Party who are whole-time paid workers of the co-operative farms and are available for assisting the agricultural extension worker in his day-to-day work. It is not commonly realised that much of the progress made by Chinese agriculture in recent years is due to the intensive extension work which is done by agricultural technicians. An eminent Chinese agricultural expert mentioned to me, when I was in China some time back, that 85 to 90 per cent of the recent increase in production in China is due to technical services and supplies and only 10 to 15 per cent due to the particular form of farm organisation which they have introduced. A time has come when we should recognise that it is not possible to give a "big push" to our agriculture unless we have a large enough extension staff which is fully qualified for the job and is required to attend to agricultural work with single-minded devotion. The utilisation of millions of the rural unemployed and under-employed for development work, which should be a key feature of the economic plan of an underdeveloped country, cannot be also effectively done unless there is a proper organisation for mobilising and guiding them on a works project basis. If on account of paucity of funds or shortage of personnel it is not found immediately possible to cover the entire country any more intensively than is being done in the present community project areas, the least we should do is to supplement it in selected areas or on a peripatetic basis with a special "task force" of agricultural extension workers which has been recently recommended by a number of eminent experts. After all, it is an elementary principle that if a certain mass has to be moved against a certain friction, a strong enough force has to be applied to start with although once the mass has been set in motion, relatively less force may be required to keep it moving. If, therefore, any backward agricultural area has to be developed, the first impact of the agricultural extension service must be very intensive, although once the process of development has started, the size of the staff can be reduced.

Even after the "decks" have been cleared and a strong enough agricultural extension service has been provided for giving the "big push", an accelerated development of agriculture requires that there should be sufficient provision for supplies of fertilisers, pesticides, improved seeds, implements, livestock, etc. As even the best of armies cannot win a battle without adequate ammunition, similarly even the best of extension services cannot enable the farmers to increase agricultural production if the requisite supplies are not available and the farmers do not have adequate savings or credit for securing these supplies. If the farmers in a particular area appear to be not working intensively enough, there are often very important economic, social and physical reasons of which a basic one is that at the low level of productivity which is the inevitable consequence of traditional techniques followed by them and the lack of supplies, the additional yield that they can get from additional work of a most back-breaking kind is so meagre that for them it is not really worthwhile to put in any additional effort. It is a common experience that when a new technique is introduced which is more productive and less onerous, a farmer gets interested not only in working more intensively but also in an all-round

improvement in his operations. Once the conservatism and apathy of a traditional farmer are overcome through the introduction of one impressive new technique, he becomes ready to accept other new techniques too even if these may be less spectacular. Moreover, introduction of modern techniques, *e.g.*, use of chemical fertilisers or Japanese type farm machinery to a subsistence farmer not only improves his productivity and makes his work less onerous but also brings him closer to the nexus of exchange and increases the marketed surplus. If we really want to rescue the Indian farmer from the mesh of vicious circles to which he has fallen a victim, it is essential that we should provide him with an agency which will promptly pass on to him the results of modern scientific research and set up an organisation through which better implements and machines, fertilisers, pesticides and other supplies will become available to him without difficulty and delay and improved seeds will be introduced promptly in every area and in such a manner that it may quickly replace the older and less efficient varieties.

Irrigation is no doubt equally important. But in our country we have tended to give in the recent past much more attention to the provision of new major irrigation sources rather than to the optimum use of the available supply of water. There are large areas in the country where the adoption of modern dry farming techniques and introduction of drought resisting crops could increase output substantially even on the basis of the existing moisture. In other areas a more economic method of using water should enable us to irrigate a much larger acreage than we are doing today. All the possibilities of small irrigation works have yet to be fully exploited in most areas. Yet there is a mounting demand for new costly and time-consuming major irrigation projects which have become symbols of prestige, as it were, with some of the local pressure groups although in the very same areas projects for agricultural extension and for stepping up of essential supplies are suffering for want of funds. I do not suggest that the major irrigation projects which have been taken up are not worth having or that we should not have any more of these projects at any time in future. The point that I wish to make here is that we should go slow with major projects for at least the next Plan period and reserve these projects only for such areas where there is no alternative way of improving agricultural production.

All this is about the "push" that requires to be given to our agriculture. But as I have mentioned earlier, the push will become more effective if we can also provide for certain strategic "pulls". This can be done by adopting a bold policy of geographical as well as functional specialisation both in our agriculture and in our industry. It is obvious that in view of the scarcity of our resources we cannot make a uniform progress on all fronts. We have necessarily to plan for a more rapid progress in a few fronts and to remain content with slower progress in other fronts. But we should be careful to select the fronts where we concentrate in the near future in such a manner that they help maximise the rate of economic development in the country.

From this point of view it is only rational that we should pay no need to the rather obscurantist demand for regional self-sufficiency in foodgrains. On the contrary, it should be our endeavour to take full advantage of geographical specialisation in crops and follow a policy of land utilisation which will seek to optimise agricultural production of the country as a whole and for all crops taken together. **Our programme for agricultural development has to be built not around self-**

sufficiency in foodgrains in different regions but around the best crop rotation for each of these regions from the technical as also the economic point of view. Moreover, crop production should be taken up everywhere on a commercial basis. Even where foodgrains are grown, they should be grown as far as practicable as cash crop rather than as mere subsistence crop. Until we are able to bring our crop production fully into the nexus of exchange, we shall never be able to put our agriculture on a modern and scientific basis nor to increase the much-needed marketed surplus.

We should also adopt a deliberate policy of developing a complex of industries and diversifying our rural economy in such a manner as would help accelerate agricultural development. It is not true that development of any industry would automatically induce the development of agriculture. It is only the development of such industries as have a link with agriculture either because they draw raw materials from the latter or because they provide the supplies required by the latter which can help agricultural development. The impact of these two types of industries on agriculture is, however, somewhat different. The former help to extend the market for agricultural produce and also introduce new varieties. But it is really the latter which help improve the efficiency of agriculture itself. But as we have learnt from the examples cited earlier, this impact is not automatic but is subject to a very important condition. This condition is that between industry and agriculture there should be some sort of a ladder of which the different steps are within easy reach of one another. For instance, if we decide to develop a steel industry, we should also arrange to set up subsidiary industries which will produce agricultural implements and machinery from that steel and use all the techniques of salesmanship not only to make these implements available to the agriculturist but also to make him interested in using them. It is only through the ladder of a series of efficient medium or small industries between large-scale industry and agriculture supplemented by adequate transport and marketing facilities, that the stimulating influence of industrialisation can become really effective. It is in the absence of such a ladder that the farmers of Chhota Nagpur continue to be backward while the presence of such a ladder enables the farmers of Punjab to benefit from heavy industries set up in Chhota Nagpur itself. If the different steps of the ladder are not within easy reach of each other, the so-called link between industry and agriculture will remain there only in theory. It is true that given sufficient time such defects may get corrected but the object of planning should be not to leave such developments to chance or "natural course of things" but to ensure that there is no undue delay or obstacle at any point.

The introduction of power—both electrical and diesel—in rural areas is a very powerful force for providing this linkage between industry and agriculture. As I have mentioned earlier, the supply of electricity in the rural areas of Punjab and the introduction of diesel engines in the villages of the Kaira district have helped agriculture not only directly by operating irrigation pumps but also indirectly by enabling a number of small industries to be set up in a well dispersed manner. These pumps and industries have not only provided the "ladder effect" but have also made the local farmers more technically minded and, therefore, more progressive.

We should also take another lesson from what has happened in Punjab and in the Kaira district. We should recognise that unless we take appropriate steps

to create the necessary social conditions and in particular foster amongst our farmers a desire for a standard of living which is appreciably higher than their present level of living, they will not have the necessary incentive and urge for working harder, for taking greater risks and for trying out new techniques with a view to producing more and earning more so as to get the wherewithal for purchasing the goods and services for which they have a new demand. It is not, however, suggested that we should make them crave for a standard of living which is completely unrelated to their present level of living. In fact if it is too unrelated and appears unattainable to them, it will not produce the stimulating effect that is expected. All that is needed is that like the "Holy Grail", the standard of living should be always a little ahead of the level of living and yet not so far ahead that it appears to be beyond their reach. It is only then that they will not merely have a desire to improve their present position but will also have the feeling that with a little enterprise and a little more effort it will be possible for them to reach that higher level.

In this context the organisation of an efficient hire-purchase (or instalment credit) system, preferably through co-operative societies, not only for producer goods but also for durable consumer goods may prove to be of considerable help, especially in those areas which are still in the stage of backward subsistence farming, both for stimulating production and for expanding the marketed surplus. Many of our farmers are not used to saving but they are used to repaying debts. The hire-purchase system will take advantage of this fact for inducing these farmers to economise the consumption of their own produce and step up their sales. In fact provision of all the credit that is justified by the production programme and the repaying capacity of the farmer and collecting it promptly in suitable instalments through a co-operative organisation is a very useful way of increasing the flow of marketed surplus. We should recognise that if our farmers are to take sustained interest in producing more and selling more, we must provide them with necessary inducements and take special steps to create an interest in them for such inducements where they may be lacking on account of their backward conditions. Even in Soviet Russia where collectivist organisation is such a powerful instrument for making the farmer work harder, a great stress is laid on the need for providing "material interestedness" for the farmers.

The task of pulling our agriculture out of the rut into which it has fallen and setting it on the path of accelerated development is a very difficult and complicated job and involves very hard decisions regarding priorities, especially when we choose to do it in a short time and without using collectivist methods. No dispersal of efforts and no symbolic gesture should have any place here. When faced with a difficult job, some of us have an unfortunate tendency to take a symbolic action because a really effective action will strain our resources too much and then consciously or unconsciously create an impression that necessary action is being taken. Such confusion of the symbol with reality and the complacence that it engenders can have only one consequence, namely, failure. We should appreciate that when any action is based on grossly insufficient preparation or effort or resources, it tantamounts to symbolic action.

There are again others among us who are today pleading for a holiday from planning or for a small plan which will not require much effort on the part of the community. They seem to forget that there is hardly any choice left to us. There

are three broad facts that face us today. An accelerated increase in population, a growing disparity between our rate of growth and that not only of western countries but also of some of our neighbours and further the urgent need to complete our "take-off" within the next decade if we are to pass over the "period of trouble" that is likely to overcome us otherwise. History tells us that no nation has made a real progress unless it has decided to take up a big enough challenge and respond to it manfully. In our present situation, it is only a bold effort that has a reasonable chance of success. Any timid effort will only mean a fruitless dissipation of resources. In a dynamic world where one cannot stand still and the only alternative to forging ahead is to fall behind, we shall be inviting disaster if we listen to these "lotos eaters" and prefer a temporary respite because we may face some difficulties in our journey ahead. I do not by any means under-estimate these difficulties. But I feel that the very backwardness of our agriculture—our poor yields—also provide our silver lining. If our yield per acre were already as high as that of, say, Japan or Egypt, we would not have the same bargain sector (*i.e.*, the same advantage in terms of unexploited potential, low investment-output ratio and short gestation period) in our agriculture that we have today. If we are able to exploit this sector effectively, it should not only relieve us of many of the stresses and strains which inevitably accompany rapid economic development, but also pave the way for a prosperous and happy future for our people.