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EDITORIAL.

VIVE LE REPUBLIQUE!

ON the twenty-sixth of this month, India becomes a republic. Although she does not thereby cease to be a member of that loose association of Nationalities known as the British Commonwealth, her position and status among the countries of the world have risen to the level of any other Independent Sovereign State. In some respects her position is even superior to that of Burma which became a republic two years ago, inasmuch as the latter country has elected to remain outside the pale of the British Commonwealth. The Republic of Indonesia which came into being on the last week of 1949, has still some obligations towards the Netherlands Government in the matter of trade and foreign relations. India while remaining nominally attached to the Commonwealth has Complete Independence in these spheres as well.

It is now over seven hundred years since our country became subject to alien domination. From the successors

of Muhammad Ghorī to the last representative of Imperial Britain, had been a long line of rulers whose ideals and outlook on life were vastly different from those of the people of this ancient land. Whatever their pretensions, the predilections of these rulers were invariably based on exploitation, and the suppression of the legitimate aspirations of the teeming millions of India. The normal economic level of the people had been going from bad to worse and the rulers never bestowed any care or foresight to develop the natural resources of the country so as to cope with the ever widening needs of the increasing population. 'Sufficient unto the day'...was their policy and motto.

This had to change for the purpose of our survival as a distinct and individual nation. In the early days of this century, Patriots of India began to recognise the vital need for the cessation of foreign domination, and to get the political power back to the people themselves, if they should live in the land of their forefathers as anything better than hewers of wood and drawers of water. At first the efforts of our Patriots were strictly consonant with the circumscribed ambit of the civil liberties as graciously permitted by the ruling powers. But with the advent of Mahatma Gandhi and the frustration of expectations after the first World War, a new impetus was given to our National movement for Independence. During the last three decades the struggle had been keen and bitter, often poignant, always pathetic, and invariably purposeful. In the end the Popular Will won the day and our foreign masters consented to quit the shores of India in August 1947.

On August fifteenth, Nineteen hundred and fortyseven India became a virtually independent country governed by her own people. But the last tails and trappings of the two hundred year-old British Rule persisted, and although not dictated to by Britain any longer, India had still the feeling that her fulfilment was by no means complete. In the meantime, the creation of Pakistan and the serious bickerings, rubs, and clashes brought about thereby between brother Indians, cast a dark shadow on the body-politic and threatened the very foundations of peace in the country. The food problem, critical the world over, continued to affect the *sang froid* of even the ablest and wisest among us. In

these circumstances a complete cessation from the British connection would not have added anything to our advantage but would have effectively checked the help and goodwill-though ever so problematical-of the sister members of the Commonwealth.

So, our leaders calculated carefully and sat down to frame a constitution for India and to put the house in order. Thanks to the selfless efforts and driving energy of Pandit Jawharlal Nehru, Sardar Patel, Rajendra Prasad, H. E. Rajagopalachari and others, within the short period of about two years from the fifteenth of August 1949, the bristling difficulties and differences between India and Pakistan are on the way of being adjusted; the minorities in India have become reassured of fair treatment at the hands of the majority; the food problem is being tackled vigorously and determinedly; the good name and prestige of India have become enhanced in other parts of the world; more than six hundred "Native" States in varying stages of misgovernment were brought together and assimilated into the union under a new pattern and fresh Orientation; and a magnificent constitution for the country which is very nearly fool-proof, has been successfully framed.

This is no mean achievement in the limited span of two years, and in the midst of troubles, unrest, food scarcity, and cyclonic havocs. Every Indian could and should be proud of these outstanding achievements, by the chosen leaders of the people who have shown clearly that they are equal to delivering the goods. The time has at last arrived for us to declare ourselves a fully Independent Sovereign Republic. From their past performances we have every reason to hope that our destinies are safe in the hands of our chosen leaders. So let us welcome the Republic of India with open hearts, and with overbrimming patriotism and brotherly feeling cry with one voice: "*Vive Le Republique.*"

Editorial Board.

Productivity Problems.

IN Britain today there is widespread discussion about the problems of productivity. Means of increasing productivity are being studied closely by management, labour and the Government. The purpose of this article is to examine the role of management in the U. K.

It is as well to explain the difference between production and productivity. Production is the total of all goods and services produced in a given period, usually taken as a year. Productivity is a measure of output per head and of efficiency in production over the whole community. Even if all the resources of a nation are fully occupied, it is still possible to bring about an increase in total production by the more efficient use of the national resources, in other words by raising the level of output per head over the whole community.

Retention of Markets.

After the War there was a tremendous accumulation of world demand for all types of goods-capital goods to repair the War devastated economies of many countries and to catch up on arrears of industrial development and consumer goods to satisfy the postponed wants of millions of people. The aim of most business-men was to produce goods as rapidly as possible and in the post-war sellers' market there was little difficulty in disposing of all goods produced.

During the past year or so the picture has changed. The sellers' market, at home and overseas, is becoming a buyers' market. Management is facing the problem that it is not so easy to sell all that can be produced. In the home market in Britain, the consumer is tending to become more discriminating in his purchases. As the Government policy of disinflation becomes more effective, in the interests of keeping down prices and costs and greater saving for essential investment, the consumer is likely to become even more discriminating. Thus means of increasing productivity, both for the nation as a whole and in the individual firm, are assuming greater importance.

Quite as important as the problem of maintaining home and export markets is the fact that a larger volume of goods at lower prices is the means, not only of satisfying the home consumer, but of bringing in the imported raw materials and food in quantities which will allow greater production and a higher standard of living.

Over-Production?

An argument sometimes advanced against efforts to bring about higher productivity is that it might eventually result in flooding the home and overseas markets with goods which the consumer does not want and so tend to stimulate an economic depression or slump. This is the familiar "over-production" argument.

To it there are two answers: First that it will take many years to catch up on the enormous accumulation of world demand for all types of goods and that there is plenty of room for a higher standard of living. Secondly that, in the U. K., any failure to import sufficient raw materials for industry will certainly lead to short-time working, lower total production and probably to large-scale unemployment.

Another productivity problem under discussion in the attitude of workers. Some managements feel that workers may be opposed both to the idea of raising productivity and to the detailed methods which are to be used. On the other hand the experience of other managements has been that such opposition from workers is primarily a matter of works relations and information policy, although the manner of carrying out these aims varies a good deal from firm to firm.

Shortage of Materials.

A difficulty facing managements who wish to increase productivity is the shortage of certain raw materials and components. Solution of the balance of payments problem, especially the elimination of the dollar deficit, is the ultimate means of ensuring adequate raw materials supplies for industry. But many firms have brought about higher productivity by making greater economy in the use of materials; by paying greater attention to design and to processing; by more effective quality control; and by better recovery of scrap. More consideration

is also being given to the use of alternative materials and even to revised material specification, although particular care to be exercised with the latter if the reputation for high quality British goods is not to suffer.

Government controls have also provided management with problems. Such controls in the U. K. are being applied with a view to make particular shortages last, and some system of allocation is necessary to ensure that the limited supplies go where they can be most useful. Another argument in favour of the retention of certain regulations is that priority must be given to the most necessary tasks.

Mechanisation.

Various questions involving the relationship between productivity on the one hand and mechanisation and re-development on the other have been exercising the minds of management. In many British industries craftsmanship plays a very important part, for example in footwear, pottery and glassware. But some managements have found that mechanisation has saved the craftsman unnecessary labour and has put into his hands the tools to greater precision. Another problem is the danger of labour unrest from the introduction of new methods and machines. With this question this article is not concerned, except to note again the experience of some managements in the U. K. that works relations and information policy go a long way to overcoming workers' opposition.

Women's part in FOOD PRODUCTION

By

F. L. BRAYNE.

LORD Boyd Orr has told us that the World must double its production of food in the next twenty-five years, or starve. This is a very terrible threat but we know it is true. Many millions of people in many countries are already underfed for part of the year and some of them are underfed all the year round.

Augmenting food supply by simple means.

What is the prospect in India and Pakistan? Besides barrages, canals and hydro-electrics and the big things which Government alone can tackle, there are innumerable small things which the experts and scientists have worked out for us. They require very little capital but a great deal of hard work, enterprise, knowledge, co-operative effort and a lot of thrift and saving. What effect would the doing of all these small things have on the food supply? The late Sir Albert Howard of Indore compost fame, used to say that if people would only do the simple things recommended for the improvement of soil, water supply, cattle and crops, the produce of the soil could be multiplied by three.

May I give a list of some of them?

1. The stopping of erosion by (a) stall-feeding livestock with food crops, ensilage and grass cut and

carried from the pastures; (b) levelling and embanking all *barani* arable land.

2. Repairing, and if necessary putting bores into, and using for both harvests, all wells; better use of canal water, smaller *kharis* (compartments), clean straight channels, etc., and using all *jheels* and other monsoon water for irrigation.

3. Using the waste water from wells, houses and places of worship for growing vegetables.

4. Manure pits round the village; hay-boxes instead of burning cow-dung; composting all vegetable waste; green manuring.

5. Good seed, good ploughs, harrows and other tools.

6. Sowing seed in lines, ridgeing, roguing, weeding, etc.

7. Simple pest control-light-traps; washing seed; destruction of rats and parrots, etc.

8. Selective breeding of livestock.

9. Quarantining for ten days all new animals before allowing them to join the others.

10. Using the co-operative organization wherever possible.

The list could be greatly extended but is long enough to show

what I mean. They are all terribly simple things but if they were all put into use everywhere they would change the face of the country. Not all of the crops would be crops but there would be enough to satisfy Lord Boyd Orr's demand for doubling the food supply.

No easy task.

If it is so simple what is the fuss about? Surely the people have only to be told about these things, to rush out and do them?

Not a bit.

Whereever one goes the story is the same. The people won't take to these new things. They are quite happy as they are and will not do the extra work required, nor will they give up their pet extravagances—weddings, feasts, silver ornaments, litigation and so on—in order to save money to buy good seed, good ploughs, stud bulls, new tools, or whatever it is that is needed to improve their outturn. In fact their idea of a high standard is less work and occasional bursts of extravagance at weddings and so on, and when we suggest that they should work harder and save and scrape in order to grow more food and be better off they think we are attacking their standard of living instead of trying to raise it.

The Problem.

What is the answer to this conundrum? How are people to be persuaded to do these things? What incentive, what stimulus can be found to move them to action?

It has hitherto been rather assumed that all that is necessary is to tell people of the new and better ways of working and living and they will automatically adopt them. That may be so in countries with a generally high standard of living which everyone is ambitious to achieve or to maintain, but it is far from being so among people whose standard is low and where malnutrition is common. In fact the very opposite is the case. To produce more food, to improve health and to raise the standard of living requires very hard work, much saving and scraping, much self-denial and a complete break with old custom and traditions. To do all this requires high morale and an extremely powerful incentive. Where is the incentive among people who are poor and undernourished, sunk in debt, and riddled with malaria, hookworm and other diseases that come from dirt squalor and malnutrition?

Debt is no incentive. Debt bothers no one; it is normal and natural. Besides, the debtor fears that the only person who will benefit by his extra work will be the creditor. Hunger and ill-health are no stimulants to harder work. They produce the very apathy we are fighting.

Solving the Problem.

What then is the answer? Treated as an economic problem there is no answer. If we wish to escape starvation we must tackle the conservatism and apathy of the people not as an economic but as a social problem. The only hope of

producing an incentive that will beat the desire for less work and occasional extravagance and will overcome the placidity of malnutrition and ill-health is to design a new way of life that is better than the debt and poverty, with their occasional feasts, and the ever-recurring hunger, dirt, discomfort, ill-health and squalor which his present way of life involves.

Having painted a picture of the new life—all can join in the task—we must not only convince ourselves but we must convince the peasant, that it is better than his present way of living. Such a picture was painted for the sepoy's of the Army during the last war. It was based on the work of Government Departments and of many pioneers, official and non-official, and was used for the pre-release training of the sepoy's. It is described in many Army pamphlets.

The role of Women.

I said that we must convince the peasant that a better life is possible. That is not quite accurate. The standard of living is the standard of the home and the standard of the home is the standard of the housewife, the 'gharwali' who keeps it. It is she who must be enlisted in the campaign for better food and better living. All through nature, the strongest instinct of the female is the well-being of her family and that instinct must be developed and exploited. Once a mother is convinced that vaccination will save her child from small-pox, can you imagine her hiding her child from the vaccinator or going to the

temple of the goddess of small-pox for charms? Once she knows what is good for her children she will insist on getting it.

Years ago at the National Institute of Agriculture in Rome, a Minister of the Belgium Government read a paper in which he proved that in a country of small farmers like Belgium, the women are responsible for more than two-thirds of village life. They run the home and bring up the children, they make and mend the clothes, they cook the food, they keep the family in good health and they make the home comfortable and happy. Everything that makes home worth living in is in the hands of the housewife, and it is she who must provide the incentive we are looking for.

To become prime-movers, however, in raising the standard of living the women must have far more knowledge than they have now. Not only must they have suitable education but they must have proper domestic training. Both in the schools and colleges and in the women's Institutes or the co-operative society (why not have Co-operative Women's Institutes?) they must be taught everything there is to know about running a house and making it nice, cooking a balanced diet, keeping a family in good health and good heart, making and mending, clothes, and the hundred and one other things which every village housewife should know.

The men have big departments to teach them how to run farms and keep cattle. The women must also

have big departments to teach them how to run homes and keep families.

Once the village women have this knowledge they will be forever striving to make their homes lovely, and they will compete with each other, not in the weight of their ear-rings but in the brightness of their homes and the happiness of their families.

The women will then encourage their good men to grow the best crops or to carry on their craft in the best way possible. Why? Because they want just one more thing, a sewing machine perhaps or mosquito nets, or whatever it is, to make home better. And each new thing will lead to another new thing. Our battle is won; the ambition for a higher standard of living has come upon the peasant and he will work hard and willingly to achieve his ambition.

The good wife will ask for the right vegetables, fruit and crops for the needs of the family, she will keep her good man in health. She will store the grain he brings where damp, rats, mice and weevils will not waste it, she will prepare the food so as to get its full value and waste nothing.

Best of all, the home will be a progressive force. At present it is

the citadel of ignorance, superstition and conservatism. When a man is advised to change an uneconomic or unhygienic custom he now says his wife won't let him. Once the wife is educated and trained he will no longer be able to say that. His wife will encourage him to try new things. 'I am trying a hay-box' she will say, 'and I have a new and better way of making the baby's clothes. You too must make experiments.'

All over the world it is difficult to persuade peasants to try new things. Where the women are uneducated and untrained it is more than difficult; it is impossible. The key therefore to the success of the food production drive is to design a better way of living and bring the vision of it, literally to every home in the land. The women, no less than the men,—and the girls no less than the boys, at school—must be so educated and trained that they will be convinced that it is so much better than their present manner of living and is so obviously possible to achieve, that they will gladly do all the work, the saving and scraping, the self-denial and the abandonment of bad customs and prejudices that are necessary to bring their vision to life in their homes.

Indian Farming

TAPIOCA AND ITS DERIVATIVE PRODUCTS

By

R. KRISHNA MOORTHY.

TAPIOCA and sweet potatoes, on account of their large carbohydrate content have an important place in the existing food economy of the country. With intensive propaganda on the use of these as vegetables as dehydrated or sundried chips, as flour or sago, it is possible to supplement the shortage of cereal production. It is said that even in the past, during periods of famine, tapioca and sweet potatoes have helped in tiding over the difficult period. What would have been otherwise a hopeless famine in the past has been reduced to a mere food crisis, with the aid of these subsidiary food crops.

Sandy loams, of five to six feet depth in preferably not low-lying areas are the best suited for tapioca. Loamy soils with a smaller percentage of sand are less suited for this crop, due to the greater resistance offered for the full development of the tuber. About four or five deep ploughings are given usually as preparatory cultivation. Five cart loads of mill wastes or ten cart loads of green-leaf are spread on the soil and covered well.

After levelling, the field is divided into two feet squares, both lengthwise and breadthwise. The best season for planting on high level lands is from June to September. In low levels it will be advisable to plant from October to January. The essential point to remember is that there should be very little moisture

at the time of planting and about a month or two thereafter. Hence early plantings in low-lying lands at the beginning of the monsoon will handicap tuber development on account of too much moisture in the early stages in the root zone.

Planting material.

Full length shoots, immediately after harvest are planted in a cluster called "Podies", which are channels, 2 ft. wide 3 ft. deep and 10 ft. long, where one and half cartloads of shoots are placed vertically and covered up with earth. If there is sufficient moisture in the soil no irrigation is given. Otherwise it is moistened with a little water. The 'Podi' is said to be ripe for seed material usually after ten or twelve days when leaf buds just begin to put in their appearance. The latex in the shoots at this stage will be at a maximum. Each shoot is cut into nine inch long sets and planted. Usually a "Podi" will provide sufficient material to plant an acre. On no account should a 'Podi' be allowed to mature for more than a fortnight or till the leaf buds change into leaves, as it then indicates that rooting has taken place at the bottom. Sets from such over-mature shoots make poor seed material. The latex content in over-mature shoots of 'Podies' is considerably less and shoots also become pithy.

For introducing in new areas where the seed material is not avail-

able in the neighbourhood, it is best to take the shoots from the fields immediately after harvest, transport them expeditiously to the destination and to put them into a 'Podi' in the new area. Even here the shoot must be planted in 'Podies' within 4 days. Seed materials from 'Podies' of growing areas, however quickly they are transported has not given satisfactory viability. It is due to the fact that the latex content dries up very rapidly and the usual precautions of covering them during transport do not prove of much use.

Seed rate and planting.

Usually a 'Podi' or a cartload and a half of material cut into nine-inch sets give about 12,000 sets and this will plant an acre. The sets are planted vertically at every junction of the two feet squares, one each, more than two-thirds of the length being inside the ground level. If there is not sufficient moisture, one irrigation is given. The plants will begin to root and put out green leaf buds in about a week.

Intercultivation.

Hoeing between the rows is done once a week in the first two months and once a fortnight for the next four months. Irrigation is given once a week when there are no rains. For normal plantings, beds containing five plants each way, are formed usually in January or February, as the South-west and the North-east monsoons will be able to provide enough water between the two, upto the end of December. After January, irrigation has to be continued right upto the day of harvest, once a week

if the maximum yield is to be obtained. But in great many cases due to scarcity of water in the wells, the plants get hardly any irrigation but even there, it is found the yield is good enough to leave a margin of profit to the growers.

Harvesting.

Just before the actual harvest commences the field is irrigated once. It is advisable to harvest early i. e., when the crop is six to eight months old, for marketing the crop as a vegetable. But for making sago or flour or chips, it is better to allow the crops to stand for full eleven or twelve months. Actual harvesting operation is done by a man gripping the bottom of the shoot with both the hands firmly, with legs planted squarely and pulling out. In a few cases where portions of tubers remain lodged in the soil they are dug out with the mammuti. The pulled-out tubers are cleaned, and carted either to the market or to the factory as the case may be. Twenty labourers can pull out, and clean, an acre's produce, i. e., about four tons. Even where the plants are fully twelve months old, the tubers can be kept on in the ground for another six months without damage. This is a favourable point for the sago manufacturer, as it gives him time to prolong his working period.

Yields.

A normal crop gives eight to ten cart-loads or four to five tons of

tubers per acre. Even where the irrigation has been inadequate the yield is two to three tons per acre. The best tubers weigh 9 to 10 lbs. though the general average will be only one pound or so. When sold as a vegetable a viss or $3\frac{1}{8}$ lbs. at $2\frac{1}{2}$ annas will fetch a return about 400 to 500 rupees per acre. After meeting the working expenses a normal crop leaves him Rs. 100/- per acre as net profit.

Manufacture of Sago:

(As a cottage industry)

Robust, well developed, freshly pulled-out tubers are brought to the factory site. The outer skin is peeled off, either with hand or with a knife. The peeled tubers are scraped into fine, uniform shavings by means of a hand-driven scraping machine. The scraping machine consists of a horizontal spindle with sharp, small curved spikes or projections over its entire surface. In the middle of the rotary there is a two-inch wide groove. The rotary is connected to a cranked wheel, by means of a circular rope which passes round the wheel and along the groove of the rotary like a belt drive. By turning the wheel the rotary begins to rotate on its own axle. While it is rotating the tubers are gently pressed against its surface and the shavings that fall off are collected in a tray placed underneath. The shavings so collected are taken to a cement tub, and mixed with water. They are then transferred on to a cloth and strained. The out-flowing liquid is collected in another cement tub, with plugged outlet holes at different levels. After two or three hours

of standing, a floury white mass settles down and the supernatant water is drawn out by unplugging one of the outlets. The white powdery residue is dried for an hour or two and sieved by means of a special superfine meshed sieve till all the fine flour is separated. The coarse flour is mixed with the next charge in the first tub. The sieved fine flour is placed on a clean, dry white cloth and oscillated gently till they form into uniform small pellets. These are then graded by means of a suitable sieve, bagged and sold as sago. Coalesced pellets and the coarse grain are marketed as *tapioca rice*, at a slightly cheaper price.

The pulp, left over after straining the starchy liquid is dried and fed to cattle or made into fine flour and sold about at Re. 1/- per maund of 25 lbs. for making kumkum (saffron) or as a substitute for Fuller's earth, or kieselguhr for making face powder of a cheaper quality. One ton of tubers give one-sixth of a ton of sago. During the War period a maund used to sell about Rs. 20/- and one acre's produce used to bring in a gross-return of Rs. 1,200/-. The sago so manufactured keeps on its quality unspoiled for nearly a year.

Chips.

(Sundried): After peeling off the skin, the tapioca tubers are cut into slices half an inch long and sun-dried for two days. This is used for curry or mixed in cooking along with meat and put to several other culinary uses. Fifty maunds of tubers give sixteen maunds of sun-dried chips or nearly one-third of it.

The chips keep unspoiled for four or five months, provided it is sun-dried once a month.

Flour.

Well-dried or dehydrated chips are ground into fine flour and used as a substitute for rice flour, for almost all the preparations where rice flour happens to be the main constituent. Sixteen maunds of chips give about $13\frac{1}{2}$ maunds of flour. The flour keeps on unspoiled, up to six months with occasional sun drying. The war-time price of flour used to be Rs. 45/- per cwt. The present price is about Rs. 22/- per cwt.

There is a great future for the growers of these subsidiary crops; with proper propaganda on the nutritive value of tapioca and sweet potatoes, many low-yielding sandy loams can be brought under these

root crops with little expense and great profit. At present, the following factors are hampering maximum production. More than 50% of tapioca crops come to harvest after inadequate irrigation, due to want of water in the wells. A concerted drive to sink boreholes with the Government supplying the necessary equipment, even on a hire basis, will go a long way towards remedying the dearth of irrigation water. By starting processing factories for manufacture of sago and removing the export restrictions, and by conducting intensive propaganda for making greater use of the products of tapioca by the common man, the consumption and production of this crop can be stepped up to considerable extent. Allotting manure purchase loans without interest at the time of sowing and collecting the same after harvest will also help the grower to increase the area under this useful food crop.

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Food Production Campaign.

Co-op. Farming to be encouraged.

CONFIDENCE that food self-sufficiency will be realised by the target date is the general feature of the deliberations of the conference of agriculture officials of the Provinces and States which has been meeting in New Delhi. Formation of larger agricultural units, effective measure against plant pests and diseases, legislation to bring fallow lands under cultivation and a compulsory preparation of compost by Municipalities, are some of the recommendations made by the conference at today's meeting. Another subject which was discussed at length was the provision of iron, steel, cement and coal for agricultural purposes and the Provinces expressed satisfaction at the arrangements made by the Centre for the prompt supply and speedy movement of these essential agricultural commodities.

Small, uneconomic holdings caused by extreme fragmentation of land which is the general feature of India's agricultural economy, are an important cause of the low agricultural yield of the country and the conference considered how larger units could be brought about for increasing production. Among the various suggestions placed before the conference were consolidation of holdings, State farming, commercial farming, collective farming and co-operative farming. To what extent compulsion could be exercised in creating larger agricultural holdings was also discussed and the

representatives of the Provincial Governments gave details of their experience as a result of the experiments already launched by some of the Provinces on co-operative farming.

As the first step towards introduction of co-operative farming on a large scale, it was recommended that land reclaimed by Government should be settled on this basis. Simultaneously, efforts should be made to encourage the formation of co-operative units of farming as much as possible as they provided a sure way of increasing production. In this connection it was pointed out that the necessary leadership must be forthcoming from the people as otherwise co-operative adventures could not be a success. To make co-operative farming successful it was suggested that cottage industries based on agriculture should be encouraged which would provide additional income to the co-operative societies.

Mr. R. K. Patil, Commissioner of Food Production, said that in order to encourage co-operative farming, various inducements, e. g., remission of land revenue for a specified period and supply of manures and agricultural implements at preferential rates were proposed to be offered.

Supply of Essential Materials.

Supply of essential agricultural requisites, e. g., iron, steel, cement

and coal which are at present allotted from a special quota set apart for agricultural purposes was considered in detail and the Provinces expressed general satisfaction over the supply and movement arrangements. Mr. R. K. Patil assured the Provinces that while the best efforts would continue to be made to increase the provincial quotas and to ensure speedier movement, the materials were still in short-supply and therefore the Provinces and States should make the maximum use of the materials supplied. As against a total demand of 63,000 tons of iron and steel for the first quarter of 1950 (January to March), 34,880 tons had been allocated. For cement, against a demand of 1,00,6000 tons had been allocated.

Compulsory cultivation of fallow lands.

With a view to bringing fallow lands under cultivation, the conference suggested that legislation enabling the Government to direct owners of fallow lands to put them under crops should be passed in the Provinces.

The conference recommended that composting of urban refuse should be undertaken in all Municipalities and the Provinces might consider granting financial assistance under the grow-more-food schemes to such Municipalities as were not in a position to undertake the work without such assistance. It was, however, pointed out that the proper disposal of night-soil and other town refuse was a primary function of a municipality and every municipality should undertake this work.

As regards the transport of ripe compost from the Municipal dumps to rural areas, the conference recommended that where special trucks were not available to the Municipalities, lorries and other transport belonging to the Government might be made available for the purpose.

Discussion on measures to protect plants against pests and diseases revealed that most of the Provinces had set up organisations for the purpose. The representatives of U. P., Orissa, Madras, and West Bengal gave details of the organisations which they had set and added that the cultivators had taken very enthusiastically to the services rendered by these Departments. The U. P. representative pointed out that the demands in U. P. were so great that sometimes the Government found it impossible to cope with them.

In addition to the machineries for plant protection purposes, such as sprayers, dusters, etc., which the Provinces kept for their own requirements, the conference recommended that a central pool of power-operated machinery should be maintained at different places in India in order to tackle major epidemics when they occur. This pool will be operated by the Centre and help will be rushed from the nearest centre to the spot where an epidemic has started, to supplement remedial measures already undertaken by the Province or State concerned. For this central assistance the Provinces will have to pay hire charges for the machines and some contribution to the depreciation fund.

WHEN NATURE TAKES CHARGE

By

T. S. RAMAKRISHNAN, B. Sc. Ag.

YET another charge levelled against chemical fertilisers is, that their use is something totally artificial and does not conform to the plan of Nature. The anti-fertiliser school of thought says that Nature would never tolerate their application in general agricultural practice. They opine that Nature is the supreme Farmer and she abhors any human encroachment in her scheme of things. "The field crops should be nurtured in the lap of Mother Nature chiefly with the help of natural products and any material that is inorganic and artificial will only 'poison' the crops as well as the soil. (By natural products are meant such materials as dung, compost, green leaf, oil-cakes etc.). Nature has never needed any artificial manures and so we will be wise if we leave the intricate problem of fertility maintenance to the plan of Nature, merely ensuring the return of organic wastes for the effective action of soil micro-organisms." So runs their argument.

All this reads beautifully of course and the language employed by these advocates of the exclusive use of humus is so persuasive that even matter-of-fact men will be tempted to feel that there is something in what they say. But we will presently see that this accusation is based on pure sentiment. The human mind is a very complex affair and in spite of its inherent capacity to analyse and reason out things, yet most often it falls a prey to

easily aroused sentiments and emotions. This particular charge is couched in an effective language, which makes a direct appeal to all lovers of Nature. Nature is here brought to the witness stand and she is called upon to expound the anti-fertiliser charge sheet. But if we only analyse the point and think out for a while we will realize all charges can hold good only if they are supported by undisputable field data based on experimentation. A mere battle of words will carry us nowhere.

Just for the sake of argument let us assume this charge to be completely true. What follows next? Three conclusions may then be drawn: (1) Use of organics alone conforms to the plan of Nature. If inorganic fertilisers are used Nature will stage a sort of stay-in strike. (2) Since chemicals are not to be used all our farmlands have to be fed only with organic wastes. (3) In case there is insufficiency of these 'natural' manures, (which by the way, is an undisputable fact) then we are to be satisfied only with that amount of food that can be raised by utilising the available organic manures. Let us now discuss these points in detail.

According to the Theory of Evolution enunciated by Darwin, Man is the descendant of the anthropoid ape. During the early periods man sustained himself only by hunting down other weaker animals. He

perhaps found it a tiring job and most of the days he went hungry. But his mind was meanwhile developing and he did not succumb to the rigid laws of Nature. He looked about and found that he could eat the seeds of a few grasses he saw growing around him. He supplemented his usual diet of flesh with this. But even this was very difficult; he had to roam about and collect the few seeds from grasses that grew here and there. Then came a brain wave. Why not try to grow these nutritious grasses by himself? This was, nothing short of direct violation of Nature and her ruthless laws. He collected the seeds and planted them in a spot, perhaps near his cave. They germinated and came up. But to his dismay he found other plants also growing there and his precious grass had to compete with these invaders. This was Nature's Law—she has no partiality all her children have to fight with one another for their survival. What did the prehistoric man do? Did he show any mercy to these weeds, as we now call them? No, he could not afford to do so. He ruthlessly plucked out these plants so that his food crop could develop unhindered. Thus he had to violate Nature once again. When the crop had matured he collected the seeds and used them as food. This in short is the history of all agricultural crops like paddy, wheat etc. Agriculture is indeed an artificial job. Few things in this world are more artificial than a field of potato, or wheat, or for that matter, any crop. Man is forced to violate the fundamental laws of Nature at every stage if he is to survive on this

planet. If he tries to conform to the Nature's tenets then he should be prepared to allow his crops to compete with weeds and unwanted plants, which if permitted to develop unchecked, will smother out the crop in no time. No, he cannot afford to do this, for, what is at stake is nothing more nor less than the very existence of man.

Coming to the problem of manuring, it can be truly stated that the very idea of manuring is highly artificial. Of course Nature has a way of fertility maintenance, but it is too slow a method. According to the plan of Nature plants grow on the land, develop, then die out and decay thus adding to the humus-content of the top soil. Other plants grow on them and they in turn disappear and thus after years and years the top soil becomes rich in fertility and all plants—herbs, shrubs and trees—thrive very well on this strata of decaying vegetation. But the question is, can we afford to conform to this plan of Nature? Let us be practical. We cannot wait that too long. Our idea is to grow crops year in and year out—a long succession of crops coming on endlessly one after another to feed the evergrowing population. This we cannot accomplish if we are to wait for nature to replenish the soil in her own way. We can do this only if we make good the recurring losses of plant food in the soil in time.

The prehistoric man had at first no idea why his crops failed after a few years. He perhaps thought that just like his own body, the soil also

got tired and refused to do any more work. But his was a simple problem, for he had just to move on to another spot and break open another bit of virgin land. But our problem is not so simple. We cannot just move about, for the simple reason there is very little elbow room to move about. We have already brought most of the available land under the plough. Hence the solution has only in generous application of all manures so as to avoid soil-exhaustion.

From time immemorial organic wastes, both of plants and animals, are being applied to our lands. But now the area under cultivation is vast and most of the soils exhibit serious deficiencies of plant foods. The total quantity of organic wastes is limited and not at all adequate to supply all the nutritional needs of all our crops. The quantity needed is not to be had. Even supposing sufficient quantities can be made available the problem of handling such huge masses of these materials is a formidable one demanding truly colossal efforts in terms of labour, transport and planning. Effort just for the sake of effort is wasteful. When there is an easier solution of supplementing the available quantities of organics with concentrated forms of plant-foods, namely, fertilisers is it not unreasonable to keep on repeating the slogan, 'No Chemicals—at any price'? Will it not involve us in a colossal waste of human effort?

The humus school pins their faith on a scheme of universal composting. It is true that vast quantities of plant and animal wastes are at present ignored and they can be

converted into good compost. But the query is, can we satisfy the needs of all our farms by composting alone? Even if we adopt a very moderate dose of 5 tons of compost per acre (which by itself will not be able to supply all the NPK-requirements of a single crop (let alone 2 or 3 crops that have to be raised every year) the total quantity needed for all the area under cultivation will be so formidable that most men who have some knowledge of *practical* agriculture will agree that it is impossible to collect.

Under the circumstances therefore, if we still stick to the radical plan of using only organic manures then we will have to be satisfied with that quantity of food that can be raised by using only these manures. Food and More Food is the cry of the day. Our aim is to achieve self sufficiency with regard to food within the shortest period and a dead line has been fixed by our leaders to achieve this. Such being the case, can we afford to limit our production for the sake of sentimental objections. Our present critical position forces us to make use of all our resources for this purpose. All manures, whether 'natural' or 'artificial' have to be used, and that too generously, so that we can go on raising one crop after another all through the year. We have seen that this division of manure, into the afore-said two classes is purely for the sake of convenience of classification. In fact all manures are artificial, inasmuch as all of them are being manufactured by man. Is not composting a highly artificial job? Does it not call for some technical and scientific skill?

Our knowledge in plant nutrition is expanding further and further and now we know what exactly is taken by the crop from the soil and we also know the effects produced by each plant food on the development of the crop. In every industry in the world new ideas, appliances and implements are being evolved from time to time. Farming is also an industry, in fact, the mother of all industries and in this field also new ideas are being evolved and worked out. One of such new ideas is fertiliser and it is now being used on ever-increasing scale, inspite of all criticisms.

Summary:-

(1) The charge that fertilisers are artificial and so their use is direct violation of Nature's laws does not hold good for the simple reason that farming itself is highly artificial. (2) The distinction between

'natural' and 'artificial' manures is only of academic importance, but in practical agriculture both are complementary to each other.

(3) The organic manure came first as it was easily procured and the so-called artificial manure arrived later after years of scientific research both in the laboratory and the field.

(4) Due to the present vastness of our cropping area and the ever-going demand of food, the need for manures for feeding the soils adequately has grown to enormous proportions. Organics alone are not sufficient and hence have to be supplemented by chemical fertilisers.

(5) As our aim is to attain self-sufficiency in food and thus put a stop the heavy drain on our financial resources, we cannot afford to limit our production just for the sake of objections based on mere sentiment.

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FACTS THAT INTEREST.

Disk Brake Self-Energizing.

An entirely new self-energizing disk brake will soon be introduced as standard equipment on Chrysler Corp. Imperial models. The brake is self-compensating, requiring no service adjustments during the life of the lining. The new brake provides 30% greater lining area, better cooling, and greater rigidity.

Brake consists of two flat pressure plates with six steel balls placed between them in sockets. When brakes are applied, the outer plate is rotated by two hydraulic cylinders. The balls are thus pushed out of their sockets and into small ramps in the plates, forcing the plates apart and into contact with the inside surfaces of the rotating brake housing.

Cathodic Vacuum Etching.

Ford Motor Co. has developed a new etching process for preparing metal surfaces for microscopic examination. Known as cathodic vacuum etching, it utilizes argon as the etching agent.

The metal sample is placed under a bell jar, air is evacuated, and argon is admitted. Electrical discharge at 12,000 volts between specimen and an electrode ionizes the argon. Ions then bombard the specimen surface, removing minute particles and so etching the surface.

In-Plant Chlorination.

Break-point chlorination has given considerable impetus to use of

chlorinated water in food plants. Many industries, including brewing, dairy products, meat, and confectionery, have adopted the system. Chlorinated water in cleaning systems prevents rapid buildup of the bacterial "load," thus cutting costs from cleaning delays.

Here is a typical application:

In shellfish plants, fish are put in heavily chlorinated water for 48 hours to allow them to draw in the water through their systems. This lowers the danger from the dirt these fish bring into the plant.

Modifying Gear Designs For Wear from Heavy Loads.

Signs of distress frequently appear on tooth faces when gears are operated under severe torque loads. Under moderate loads, these gears will operate for long periods with no measurable wear. As loads are increased, the first signs of wear occur at the first point of contact. A further load increase often causes a second region of wear to begin at the last point of contact. Very sensitive machines or trained eyes are the only means of determining this wear.

To prevent wearing at these points, gear teeth may be modified. Here is the recommended procedure for modification.

1. Determine accurately the deflection curve of a pair of teeth.
2. Modify tip of driven gear tooth

or root of the driving pinion tooth so that little or no load is carried at the first point of contact.

3. Modify pinion tip or gear root so that a high load is not carried at different points of contact.
4. Make shape of modification such that reasonably uniform angular velocity is obtained at the most critical operating load.
5. Make tests to see if original modifications should be increased or decreased.

Remote Control of Boilers.

Successful operation of television has caused the installation of 10 television cameras on five new boilers in the American Gas and Electric system.

One unit on each boiler views the water level while the other reproduces the six oil-burner flames. The water-level indicator is televised directly. The six flames are reflected by mirrors to two master mirrors. This reflected image is then recorded by the television cameras.

Signals are transmitted over coaxial cable to the monitor-receiver, enabling the operator to control water level, oil lighters, and coal burners, from a central location.

The cost of the industrial installation is eight to ten times greater than that of a home television. Cost-saving analyses have not yet been made, but elimination of manpower and increased safety should make it pay.

New Nylon Developments.

A new resin size, Tyze, for slashing continuous-filament nylon warps, is a white, free-flowing, essentially dustless powder. It is said to be water soluble; easy to apply and remove, and to form a tough flexible, strongly adhering, non flaking film. Tyze solutions are acid (pH 3.8 to 4.0) but in the dry state it has proved so far to be non-corrosive to weaving equipment. It was developed by E. I. du Pont de Nemours & Co., Inc.

De Cetex 104, a development of Dow Corning Corp., is new silicone product designed to give durable water repelling quality to nylon and cellulose acetate (Estron) fibres. The new, easily-applied, low-cost finish is said to be resistant to oxidation, soaps, dry cleaning.

Vacuum Fumigation Kills.

The U. S. Army Quartermaster Corps has found vacuum fumigation the best method for controlling insect pests in stored foods. Dried foods, which are highly susceptible to infestation by insects when stored in warm places, are now adequately protected.

Commodities to be fumigated are brought into an airtight chamber and left packed. The chamber is kept over 75°F. Because susceptibility of insects to gases increases with temperature rises. A high vacuum is drawn and a lethal gas introduced. The gas rapidly and completely destroys the insects in all stages of development. Chamber

is then exhausted and flushed with fresh air.

To date, the most effective gases for this work have been methyl bromide and acrylon. Different dosages are used for different kinds of foods. But, regardless of the type of commodity being processed, a fumigation cycle lasts about 4 hours.

Sound Waves wash Clothes.

Two Australian inventors have made use of sound waves to wash clothes. Their machine produces a 100-cycle sound wave, which makes the clothes in a tub oscillate, shaking dirt particles loose.

In use clothes are packed around the sound-wave generator in a tub. The usual amount of soap and hot water is then added, and the vibrator turned on. In most cases, the clothes are washed completely in less than 5 min. Dirt particles are left suspended in the water.

Nitrogen Protects Foods From Process to Consumer.

Deterioration of foods from oxidation may be prevented in many instances with proper use of nitrogen in packaging and processing. In some cases, a nitrogen blanket protects the foods during the processing and until they are consumed.

Liquid foods may be purged of oxygen with nitrogen, carbon dioxide or steam. Nitrogen has been found to be most economical. In purging, the liquid is completely saturated

with nitrogen under pressure. A nitrogen blanket may be simultaneously used. Care however must be exerted in packing the product to assure complete absence of oxygen; otherwise, the purging is useless.

Another application of nitrogen is to break the vacuum in cans. In these instances the air has been removed, but to prevent collapsing of the cans, nitrogen is used. A similar situation occurs in head spaces of bottles. There, in addition to purging, the nitrogen creates a partial vacuum.

Many other applications of nitrogen in the food field are being discovered. In fact, almost any situation where oxygen is not desired can make good use of nitrogen.

Infra-red Dries Tungsten.

Infrared heat lamps have been found effective and comparatively inexpensive in drying gravity and flotation concentrates. These lamps reduce moisture content to less than 0.02% at less than \$1.85 per ton. Previously it cost \$3.00 per ton on an open hearth.

At Tungsten Mining Corp., the aim is to dry completely without roasting any of the contained sulphides. This is accomplished by mixing and turning the concentrates by screw conveyors. Altogether, three or four tons of high-grade tungsten concentrate are treated daily.

Matted Cotton Filler Strengthens Laminate.

A new material with exceptionally high impact fatigue values and superior machinability is being produced by the Synthane Corp., manufacturer of laminated phenolic plastics for industry. These properties, obtained without sacrifice in electrical or chemical values, stem from the use of a cotton mat filler whose fibres lie in random distribution within the laminations (above, right). Thus the texture of the new filler contrasts with the woven fabric used as filler in Grade C Synthane (above, left).

Even distribution of the matted, unwoven cotton fibre gives the new Grade L-RF a more uniform strength and superior resistance to repeated impact. The new mat material is made from a filler having long-fibre virgin cotton, and should not be confused with mat materials made from linters.

Average values for tensile, flex-

ural and compressive strength of the new Synthane Grade L-RF considerably exceed the NEMA averages for Grade L and Grade C. If is in flatwise impact fatigue values, however, that Grade L-RF demonstrates its greatest superiority. Tests conducted by Synthane Corp., consisting of dropping a 1-lb. weight from a height of 1 ft. at a rate of 40 blows a minute on a notched impact specimen, showed that Grade L-RF resisted 5,000 blows, as against 50 blows for Grade L and 100 blows for Grade C. Another outstanding characteristic of Grade L-RF is its ability to be machined to finish to a very smooth surface. These properties suggest many applications.

Grade L-RF is currently being produced in standard sheets, 36 x 36 in., in thickness ranging from 1/32 in. up to and including 2 in. Thickness tolerances currently applicable to Grade L can be maintained in Grade L-RF, and closer tolerances can be attained by sanding operations.

Definitions

Willie—"Pa, what is a Politican?"

Father—"Son, a Politician is a human machine with a wagging tongue."

Willie—"Then what is a Statesman?"

Father—"It is an ex-politician who has mastered the art of holding his tongue."

NEWS & NOTES.

Conference on large dams to be held in India.

The International Commission on Large Dams will hold its fourth conference at New Delhi, India, in 1951. It is expected to bring together eminent dam designers and builders from all over the world.

The U. S. Committee of the International Commission may submit to the conference a limited number of papers prepared by engineers of this country on one of the following four subjects:

1. Method for determining the maximum flood discharge which may be expected at a dam and for which the dam should be designed. Selection of type and general arrangement of the temporary or permanent outlets and spillways and determination of their capacities.

2. Design and construction of earth dams or rock-fill dams; core walls and diaphragms of earth dams and rock-fill dams.

3. Sedimentation in reservoirs and related problems.

4. Concrete for large dams.

Communications on other subjects of unusual interest will also be accepted at the option of the United States committee.

Engineers of the United States who are interested in submitting papers on the above subjects before April 1, 1950, should communicate

with the United States Committee on Large Dams Gail A. Hathaway, Chairman, 4316 Van Buren Street, University Park, Hyattsville, Md.

Synthetic Rice.

India, Pakistan and other countries may be offered synthetic rice from Australia as a result of enterprise in Western Australia.

The Western Australian Government has decided to buy from the Federal Government a power alcohol distillery built during the war years at Collie, W. A., and to use the plant to convert wheat into synthetic rice, which should be readily saleable in the Philippines, India, Pakistan, Malaya and Far Eastern countries.

If present proposals reach fruition 79,000 tons of wheat will annually be processed, and from it 51,600 tons of synthetic rice, 2,400 tons of ordinary bran, and 15,000 tons of high quality cooked bran produced.

Processing of wheat into rice consists of washing and cleaning the grain, which is then subjected to repeated steamings with steam at 20 lb. a square-inch pressure.

Effect of this is to distil off fatty acids and remove the characteristic wheat flavour and aroma.

The steamed wheat is then vacuum-dried until a hard gelatinised mass is produced, and the

individual grains are casehardened so that they will be resistant to breaking up and cracking when milled.

Outside husk is then removed in an ordinary rice mill, and the product packed for shipment.

Synthetic rice produce by this method is resistant to weevils, rancidity is greatly retarded, and the grain has almost the same vitamin content as wheat. It cooks like rice and does not go mushy with prolonged cooking.

The by-products, bran and cooked bran, will relieve the present Australian shortage of mill offal for stock feeding.

Cooked bran is a particularly valuable ingredient of stock feed. Experiments made at the Milky Way cattle ranch in Tennessee, U. S. A., with a herd of 20,000 cattle gave a saving in feeding costs of about 40 per cent, when this type of bran was substituted for ordinary mill offal.

Processing of wheat into synthetic rice is expected to begin early next year in Western Australia.

Pakistan May Make Paper From Native Bamboo.

Karachi—Swedish and Canadian consultants have been retained by the Dominion government to prepare a project survey covering the establishment of a 100-ton-a-day paper mill at Karachi, Pakistan, based on the vast bamboo jungles of the Chittagong Hill Tracts of Eastern Pakistan.

Preliminary studies indicate such a plant could be put into operation at a cost of about \$18,000,000 within three years from finalization of specifications. At present Pakistan has no indigenous paper industry.

Haifa has Fertilizer Plant in Operation.

Israel will reduce its imports of fertilizers and basic chemicals by millions of dollars annually through a new company recently established near Haifa, the only one of its kind in the country, according to Robert Szold, board chairman of the Palestine Economic Corp., American development company operating in Israel.

The firm, Fertilizers and Chemicals, Ltd., in which the corporation is a leading advisor and investor, represents to date an investment of \$1,500,000, Mr. Szold said. Expansion plans calling for the addition of a mixed fertilizer plant will require about \$3,000,000 more for buildings and equipment. This plant will be able to supply all of Israel's fertiliser needs.

To cover part of the additional facilities an application has been made for an allocation from the \$100,000,000 loan recently granted Israel by the U. S. Export-Import Bank.

After more than 18 months, preparation and construction, Fertilisers and Chemicals, Ltd., has begun operations with a daily output of 55 tons of superphosphate and 25 tons of sulphuric acid. The buildings and outdoor installations are located

on a 90-acre site about 11 miles from Haifa. Negotiations were recently started in this country for the purchase of \$220,000 worth of new equipment.

Raw materials are now being imported, but eventually some will come from the Dead Sea when Palestine Potash Ltd., resumes its work there. This company in which the Palestine Economic Corp. is also an investor, has a concession for extracting the vast chemical deposits in the Dead Sea. Operations, halted by the Arab War, are expected to be resumed soon on an enlarged scale. A blue print for this work is being prepared by the Chemical Construction Co. of New York.

Salt Production in India Below Needs.

Bombay—Proposals for the modernization of India's Salt Manufacturing industry are being prepared by an official committee which has just surveyed production and demand and found domestic use to be careless and wasteful.

The survey showed that India produced 2.6 million short tons of salt last year compared with 2 million tons in 1947, but that imports to meet the gap between supply and demand continue at about 4,00,000 tons a year. Taking India's population at 330 million, this puts the annual per capita consumption at more than 18 lb., far more than required by standard dietary requirements.

In view of the shortage, salt imports from soft currency areas are

freely permitted subject to a landed cost ceiling of 78 c. per 100 lb.

Britain's Sixth Atomic Centre.

A further addition, making a total of six, to the atomic energy establishments in the United Kingdom was anticipated in a statement this week from the Ministry of Supply. The official account, which omits to state to what department of atomic energy research the new establishment will be devoted, says that the site is at Capenhurst (near Little Sutton), Chester, where the Ministry already has a storage depot. It would be necessary to acquire an additional 150 acres, the Ministry foresees, and while this would necessitate the employment of agricultural land, the special geographical requirements of such a centre made that unavoidable.

The new establishment would be comparatively near the existing ones at Riseley and Springfield. Work on the site is to begin next year and will employ several thousand.

Estimates suggested this week in the Liverpool area indicate that some 3000 constructional workers will be needed and it is recalled that Cheshire Country Council has in hand a "priority scheme" to erect 500 houses on a 70-acre site at Little Sutton.

Atomic Power in Five Years ?

The possibility that a small reactor for the production of power for industry may be operating within four or five years was foreshadowed by

Dr. C. J. Mackenzie, president of Canada's National Research Council, speaking recently in Winnipeg to the Manitoba Chamber of Mines. That depended upon certain technical difficulties being overcome. "There is no indication that atomic power will become generally competitive with ordinary central power plants for many, many years," he added. Meanwhile, in Canada, the use of atomic energy for peaceful purposes was making progress in the face of "hampering restrictions of secrecy."

Outlining the progress of research at the atomic energy plant at Chalk River, Ontario—the only plant in the Western Hemisphere in which heavy water, instead of graphite, is used to slow the atomic chain reaction, Dr. Mackenzie recalled that the director of reactor projects for the U. S. Atomic Energy Commission had described the Chalk River reactor as the "world's most advanced." The experimental pile offered research facilities unrivalled at the moment anywhere. Poore-leum chemistry was a beneficiary.

Teacher: "If Abraham Lincoln were alive today, what do you think he'd be doing?"

Young modern: "Drawing an old age pension."

Plastic Piping for Farm Irrigation

Plans are under discussion between the Scottish Council (Development and Industry) and Mr. Roy Newton, an Australian Engineer and chairman of Die Casters, Ltd., of Melbourne, for the production in Scotland of equipment for the latter's system of land irrigation. The council has taken a six months' option on the scheme, which involves the irrigation of land by plastic conduits 1 ft. under-ground.

Work is already being done in Australia on the project, for which machinery and equipment worth £50,000 has been shipped from Britain. The Scottish Council has been active in recent years in developing the agricultural equipment and machinery industries in Scotland and has taken particular interest in irrigated systems.

Coinciding with this news is the report that the first installation of Alkathene plastic anti-corrosion piping to be laid in Scotland has just been installed at Cupar, Fife, on Rungally Farm. The piping, made by I. C. I. Ltd., is extremely light. Almost as flexible as rubber, it is claimed to stand severe frost and will not readily corrode.

CO-OPERATION—A MASS MOVEMENT.

Its Present and its Future

By

G. R. PILLAI, B. A. & B. L.

AS an organised movement the Co-operative movement in the United State of Travancore and Cochin is in its third decade. Latterly, its balance sheet has been rather satisfactory because of the recent enormous increase in the prices of agricultural produce and the consequent favourable conditions in the money market. But the social, political and economic state of the country is hardly favourable to the movement. It is to this broader aspect of the movement that I wish to invite your attention. It is obvious that the co-operative movement finds its best soil in closely integrated and highly educated societies such as those which existed in pre-war Denmark and Sweden. Wherever there is strong sense of citizenship, of identity of interests and no wide gaps between various classes or groups, co-operation finds ideal soil. It is a natural outgrowth of the community and of national life. From this point of view, conditions here are, if anything, even more unfavourable than in the past.

There are now more widespread and deepening antagonisms between communities, religions and groups here than in the past. There

is no dearth for slogans and they catch and hold popular imagination. The monetary inflation, the stupendous rise in prices, black markets, speculation, fortunes quickly made and lost and the general disintegrating forces of a long war have led to a moral and social laxness which is threatening the very foundations of organised social living. The general picture we see in the country today is in many respects not an encouraging one but rather disheartening if not alarming. Something is fundamentally unsound in the whole situation.

Numerically, the co-operative movement in Travancore has been expanding well, very well of late. In 1947-48 there were in Travancore alone 1782 working societies, of which 992 were credit societies. The number of credit societies which did distribution work along with credit was 477. The total membership in all the societies together was 220,936. There were 29,523 ladies as members. The total working capital was Rs. 1,08,37,249. The average working capital per society was Rs. 5,792/-. The total share capital was Rupees 35,25,157. The total receipts and disbursements under deposits were Rs. 62,18,769 and

Rs. 1,49,26,293 respectively. The aggregate Reserve Fund of all classes of societies amounted to Rs. 13,09,623. The turnover of all the societies together was Rs. 18,10,72,796. The societies are spread throughout the State. There is no taluk without a society. Good figures and satisfactory—one may think. But of the societies 60% have been classified by the Co-operative Department as average, poor and bad. And if you wish to examine how far these societies have been functioning in true co-operative way and how far they have been able to spread the co-operative ideal the answers would be disappointing.

Let us take the members of this organisation. Of the two and a quarter lakhs, I dare say 5% realises the significance of the membership of this world-wide organisation. They do not know what the membership of societies stands for and rarely do two persons feel that both of them have a common bond of belonging to a co-operative fraternity. People have been attracted to the movement by temporary conveniences and when those conveniences cease to exist, there is no compunction on their part to fall away. Of late, the membership has been rather static. The movement has no appeal for the younger generation. They are more responsive to the clarion calls of communism and socialism and the message of co-operation has not been able to rouse any enthusiasm in them. No movement which cannot convey a direct appeal to the younger generation has a future. Why is this so? The

co-operative movement essentially centres its activities around the economic structure of society and the mass appeal and fanaticism closely connected with political and religious movements are significantly absent in the movement. This may probably account for the lack of responsiveness among younger persons who practically live their daily life on political slogans and creeds. But should not those who are affected by the economic trends in daily life gather round the banner of this oft-held-out panacea for all economic ills? To use a current phrase in political economy, other things being equal, they should. But here other things are not equal. Let us go back to the economic condition of society in England when the Rochdale Pioneer conceived the idea of their first co-operative society. The co-operative movement of Britain has its roots in the social structure of a people and its economic outworking follows from that. The consumers' co-operative of Great Britain rest upon the social solidarity of the lower middle class and the more skilled and better educated workers. These groups have gone to the same schools, same chapels and clubs and often intermarried and live the same general pattern of life. It was only natural that their demand for food, drink, clothing, furniture, amusements, papers and books should be roughly similar. In as much as these groups had considerable purchasing power, were dependable, intelligent and loyal, these stores were a natural economic out-growth or expression of their social complex. When a group of several score daily farming families in Wisconsin or Sweden

start a co-operative creamery, with butter and cheese as by-products, it seems a natural result of the social homogeneity of the group. They live, think and act much alike, they inter-marry, attend the same church and can rely upon one another.

Now, had we ever such a social pattern to offer as a background to the co-operative movement? The social pattern of our villages is totally different from that of Western countries. It always revolved round caste occupational groups doubting between the choice of single caste structure and multi-caste structure of village primaries. But that was not the fundamental difficulty. Co-operatives in the west were just natural evolution of the unavoidable economic needs of a society. They just had to find out some means of solution, some structure which would help them to get over the exactions of competitive capitalism. They knew that if they did not unite and work out a common plan, they would just go under, and cease to exist. Had we such troubles? or did we realise that our conditions were so bad? Here, the organisation of the first co-operative society should have given the first Registrar of Co-operative Societies innumerable headaches. Societies were organised by officials under orders of Government. Admission of members and the working of the societies were the responsibilities of the Co-operative Department. People joined the co-operative societies in the early stages to oblige the officers of the co-operative department and later to reap the benefits of concessions which Government

showered on co-operative societies to encourage the development of the movement. This exploitation of concessions has of late become cancerous and given rise to the birth of very novel economic institutions by way of pocket capitalistic concerning the movement. The exploitation of the co-operative label for purposes of self aggrandisement has become the bane of the movement and unless strong measures are taken to check this tendency, co-operation will cease to have any meaning in this country. In the United Provinces, this is attempted to be got over by insisting that the societies will be eligible to get their privileges only if one has 25% of the population of the area which it professes to cater, as members. This is a correct move as this would enable the people to ponder over the utility of co-operation and influence them to come to a voluntary decision as to whether they should have a co-operative society for them.

Co-operation has been a spoon-fed movement. In the words of the late Sir Horace Plunkett, it has largely been a policy of Government. Government action has killed the initiative in man and perpetually effaced the voluntary character of the movement. Thirty years of official guidance and direction of the movement by officials have not been able to stabilise the movement. It is time that the non-officials are given a chance. In England the Registrar under the Industrial and Provident Societies Act has only to discharge the statutory functions of registration, audit, cancellation, etc. The British Co-opera-

tive Union is the Centre of co-operation for the whole co-operative movement. It has a Congress, Central Board and Secretariat, National Executive, Legal Finance, Agricultural labour, Publications, Research and Statistical Departments, National Co-operative Authority, Joint Parliamentary Committee, Co-operative Party, Education Department, Trade Associations, National wages Board, External arrangements committee, and a standing joint committee of the Executive and C. W. S. Board. Our own non-official side of the movement can be developed in a similar manner and probably under non-official direction we may have better results. No institution can grow in stature and achieve success unless tutelage is removed and freedom with complete responsibility is given to the workers. If I am asked when this change-over should take place, I will say tomorrow if not today. There need not be any apprehension on this point. If we can take over the administration of a country one morning why not the direction of a mass movement?

One good Samaritan one day dreamed of a Co-operative Commonwealth. We have been parrotlike repeating the words without realising its implications and without raising our little finger even to strive to achieve the ideal. If co-operation is the accepted basis of national reconstruction and if a co-operative commonwealth is the accepted goal of the country, the co-operative movement must expand and properly look after the great branches of

the economic life of the country, finances, agriculture, trade and industry. In the task that lies ahead of us, it is very necessary to secure the close association of the co-operators themselves in the plans, policies and programmes of the State. We cannot afford to allow co-operation to remain merely a state policy. It must now become definitely a people's movement. Technical experts' meeting of the F. A. O. which recently met at Lucknow resolved that co-operation should be brought up to the level of a standard subject and there should be a separate Minister for Co-operation alone. With a separate Ministry and with a separate Director for each of the credit, marketing, industries and trading, the stage would be properly set for a quick and rapid development of the movement in all directions. Local leadership and sterling national character are pre-requisites for full success. As a great condition precedent for co-operative expansion, Adult Education as distinct from adult literacy in the principles of Co-operation should be insisted. Competition is instinct; but co-operation is culture and we cannot hope to build up a Co-operative State on the foundations of ignorance or weakness of character. Unless the mass level in knowledge and character rises sufficiently high, we cannot expect their economic level to rise. For, after all, people's destinies are in their own hands and no amount of state patronage or state drive will lead to the results unless the masses attain a certain amount of education and culture.

A VISIT TO THE CONTINENT

SOME IMPRESSIONS

By

S. NALLAPERUMAL B. A., B. Sc. (Eng.) M. I. S. E., A. A. I. E. E., A. I. I. Chem. E.

I had the opportunity of spending seven weeks abroad between the last week of October and middle of December 1949.

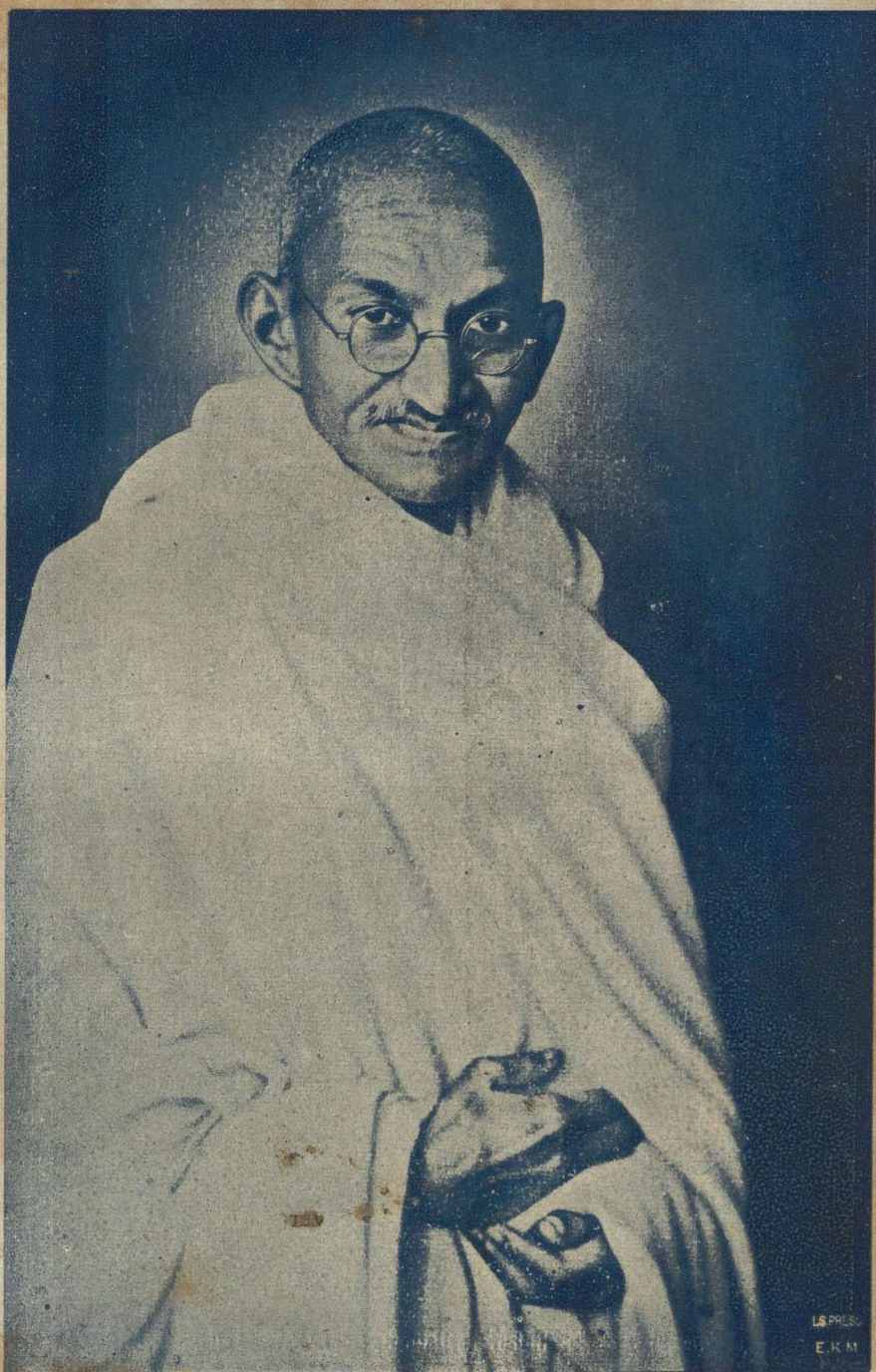
The main object of the visit was to attend the Conference of the International Superphosphate Manufacturers' Association held at Milan during the last week of October as the representative of the Fertilisers and Chemicals, Travancore Ltd., and delegate of the Indian Chemical Manufacturers' Association. The conference was held under the auspices of Montecatini Concern, which is the most powerful industrial organization in Italy and occupies a position of the highest importance amongst the world's biggest industrial enterprises in the field of mining and chemical production. This industrial concern employs over 60,000 workers and owns 160 production units. Montecatini's position is somewhat similar to that of the biggest chemical industries in the world-I. C. I. in Great Britain, I. G. Farben Industries in Germany, & Du Pont de Nemours in U. S. A.

In the conference technical papers connected with the manufacture of phosphatic fertilisers were discussed for three days. The conference was attended by over 90 representatives from all over the world and elaborate arrangements were made by Montecatini for making the con-

ference a success. The services rendered to the delegates during the conference were excellent. After the conference we had the opportunity to visit the Montecatini stand a few miles away from Milan and also Montecatini Laboratory. The G. Doregam Research Institute, Novara is one of the largest in Europe with apparatus for scientific research and technological tests. It is the most complete and modern which science may wish to have today. The field of activity is very vast as it covers the whole range from theoretical chemical study to complete elaboration. The institute is equipped with complete laboratories for analytical chemistry, spectrography, micro and structural x-ray diffraction and electronic microscope.

The capital of the company is about Rs. 20 crores.

I visited two of the most modern superphosphate plants. The production in all the Montecatini factories is about 2 lakhs tons per annum and the daily production of superphosphate in one plant is on the average 300 to 400 tons. The whole operation is completely mechanised. The sulphuric acid plants which are adjuncts to the superphosphate plants are chamber plants using pyrites. Pyrites is got from Cyprus and rock phosphate from Russia, America, North Africa



The Father of Indian Freedom — Mahatma Gandhi



The Speaker of Indian Parliament—Sri. J. V. Mavlankar

and Egypt. The most modern superphosphate plant is in Assisi.

Assisi is the home of the world's best loved St. Francis. The beautiful Church here has historic importance.

I had the opportunity of spending two days in Rome, three days in Milan, a day in Assisi and another at Florence. Italy with her incomparable art treasures and sun-soaked beauty is a land of romance. What you have read of ancient history comes back to your mind when you see the Eternal city. There are many Churches in Rome and the most famous is St. Peters which stands in the Vatican City. Here can be found the accumulation of 2000 years' history and art still pulsating with life. Here can be seen the gorgeous Sistine Chapel, paintings of Raphael and Michelangelo. The other places that I visited are the Pantheon, the Colosseum and the Palatine. Rome, Florence, holy Assisi and modern Milan each has its own importance.

I had to spend about six days in Paris, contacting phosphate rock suppliers. The best and the highest grade of rock is mined at French Morocco and the head offices are in Paris. The Comptoir des Phosphates de l'Afrique du Nord, Paris, have a well equipped laboratory where pilot plant work is done on phosphoric acid and phosphate fertilizers. Here work on the concentration of phosphate rock is also done. There is an excellent Government demonstration farm. A new type of material called "hyperphosphate" is used in abundance in France and is sent to all parts of world. It is a good fertilizer for acid soils.

Paris is the most beautiful city in the world. It is rightly called the city of thousand charms. It is the city of light, beauty and love. Everything about Paris is beautiful. The palace at Versailles is the biggest and the most beautiful in the world. The spoken French is so very pleasant to the ear and the ear finds even names very pleasing eg. Madeleine, Malmaison, Champs-Elysees, Arc de Triomphe, Place de la Concorde etc. The Eiffel tower is an imposing structure of steel 608 ft. high. One can ascend in an elevator and have an aerial view of the whole city. There is no speed limit for cars and it appears there are no traffic rules also. You almost feel that in Paris you have got freedom for every thing. One can get excellent food and services in the Paris hotels and the floor-shows in the night clubs like Folies Bergere, Lido, Tabarien and Casino de Paris, are extremely enjoyable.

In England I had the opportunity to visit one of the largest and powerful fertiliser manufacturing concerns, Fisons Ltd. Fisons have factories all over the country. They manufacture all sorts of fertilisers. In almost all the factories they have mixing and granulating equipment. Granulation is very common in England. One of their most modern plants is in Ipswich, making about 400 tons of granulated compound manure a day. Most of the work is mechanised. The location of the factory is such that pyrites and rock phosphate are unloaded directly from the ship to the storage by overhead belt conveyors. Production of superphosphate is about

400 tons a day. The acid is got from the Mills-Packard Sulphuric acid plant. Messrs. Mills and Packard were of great help to me during my visit to the factory.

At Immingham, a sulphuric acid plant similar to ours (Monsanto) but of 250 tons capacity is being erected. This acid is to be used for the production of about 200 tons of triple superphosphate a day. Besides this Fisons produce a good percentage of the ammonium sulphate needed for the country. In some of the factories Broadfield continuous process and in others Standaert den are installed. In none of the factories that I have seen any effort is made to recover fluorine.

I visited the famous Rothamsted Agricultural Research Station. Now new work is being started on radio-active fertilisers and also influence of trace elements in plant growth. The Laboratory has an electron microscope. This experimental station was started by John Lawes who was the first to patent superphosphate manufacture.

The Power Gas Corporation who are our contractors for the producer gas plant have a big engineering workshop at Parkfield, Stockton-on-tees. Stainless steel crystallisers for the Sindhri plant are nearing completion there. At Stockton one finds the first railway locomotive exhibited as memorial.

At Barking there is a compound fertiliser company called Lawes Chemicals. This is the original place where John Lawes started superphosphate manufacture. The plant

is an old one but the work is carried on in the most efficient manner and about 300 tons of granulated compound fertilizers are produced a day.

In London the most important places that I have seen are the Houses of Parliament, Westminster Abbey, Buckingham Palace and all the museums. In France there is absolutely no control and no ration. In England it is just the other way round. Every thing is rationed, eggs, chocolates etc. Heavy tax is levied on cigarettes and similar luxury goods but all utility articles are obtainable at reasonable rates. Though there are so many restrictions and controls the people take these in the right spirit and everybody is working hard. The efficiency of the worker is high and his basic needs are met. There is approval and recognition of his work. Outside his work hours he is on equal footing with the General Manager. There is understanding and goodfeeling and everyone is keen on greater production. The price of food and rent for accommodation are reasonable. There is a big export drive. Hence for all luxury articles heavy duty is to be paid by home consumers. The chemical plant manufacturers and in fact all manufacturers are desirous of exporting as much as possible. It is possible to obtain almost all materials from U. K. But the delivery times are very much prolonged due to demand in the internal market. Many plants are being renovated and many new installations taken up.

From England I went to Belgium, by train to Dover and by boat from Dover to Ostend. I toured

almost the whole of the country visiting five fertiliser factories, all of them manufacturing superphosphate, triple superphosphate and phosphoric acid. The best phosphoric acid plant that I have seen is at Prayon. There thirty tons of P_2O_5 are manufactured a day from rock phosphate. Superphosphate of 16% water & citrate—soluble is made from Gafsa rock. Belgium is one of the biggest producers of superphosphate. As in other places sulphuric acid is made by the tower process starting from pyrites as raw material. From Brussels I went to Germany.

The effects of war are not at all felt in Belgium. Ghent is a fascinating ancient city. Belgium has the densest road and rail net works in the continent.

From Belgium I went to Frankfurt. It is not easy to get military permit to the U. S. S. R. zone of Germany; but to the U. S., French and U. K. zones it is easy. I stayed in Frankfurt for two days. The Lurgi Chimi is a firm of chemical engineers and designers. The I. G. Parkers Industry sales office is one of the largest buildings and at present the American Military office is housed in that building. Prices of articles are high and the value of mark is low.

I visited the house of the great German poet Goethe. Many of the buildings in Frankfurt are heavily damaged and there are no signs of

rebuilding on any large scale. One gets very good food in Germany.

From London I flew to Cairo. At Cairo we find a confluence of all the European nationalities. There are only one or two neat hotels in Cairo. The purpose of my visit to Cairo was to see the phosphate mines in Safaga and Kossier. These two mines being on this side of the Suez Canal, it will be easier for India to get rock phosphate from these zones than from the Egyptian ports or Casablanca. The production at Kossier is of the order of 1200 tons a day of rock phosphate and at Safaga 400 tons.

I am greatly indebted to Mr. R. M. Collins and Mr. Morgan who helped me very much in arranging my visits to the various factories and also my stay in Milan, Assisi and London. They are the Secretaries of the International Superphosphate Manufacturers' Association and command a good deal of respect with all the manufacturers. They have in their office all data and information relating to phosphates, superphosphate, triple super and ammonium phosphate. The Association has really done a great deal in co-ordinating and correlating as well as making available to the manufacturers most up-to-date information and data on the various problems confronting them.

The attendance at the meetings as well as the great enthusiasm

shown are really a tribute to the organisational ability of these two men.

The production of superphosphate in our country is low and has to be stepped up very much and a good deal of propaganda has to be done on the most efficient and scientific use of chemical fertilisers. Departments of Publicity are a vital unit in all these factories I visited, and the public are constantly reminded on the importance of chemical fertilisers for increased food production, by means of attractively printed pamphlets and other literature.

South Africa and France have invited the association to hold the next meeting in those countries. It will be of great help to this country if we could persuade the association to hold one of their meetings somewhere here. Failing this at least a delegation could be invited to visit the country and give us the benefit of their ripe experience.

The plane Journey was very pleasant and I feel that I had a very useful and profitable sojourn in the continent, thanks to the management of F.A.C.T., as also the I.C.M. association.

Cramming

Two little girls were discussing their families. "Why does your grand-mother read the Bible so much?" asked one.

Replied the other: "I think she's cramming for her finals."

Rehearsal!

Author: "Have you read my new book about the couple who were always quarrelling?"

Neighbour: 'No, but I hear you and your wife rehearsing it every night.'

A Blue Print for Progress

By

S. SUNDARAM, M. Sc.

THE history of India through the ages had been punctuated with spiritual ideas unlike other modern nations whose background of existence had been fundamentally material. India had not faced an Industrial revolution, pestilence or wars which had been the prime movers of progress in the West during the ages. Even when she started her existence as an independent country, she began on a pattern of society and state, non-violent in policy and Gandhian in outlook. The Gandhian era is passing out with the establishment of the Republic based on secular ideas. In the present context of her relationships with the other nations of the world today, India realises that she has to reorient her life in a competitive environment faced on either side by the Seylla and Charybides of rival ideologies.

The rise of capitalism in U. S. A. and the resurgence of communism in Russia all point to the existence, at one time or other, of a national crisis which they had to face. They had to fight starvation, was or vested interests. Until the present day India had not been threatened or faced with such a disaster on a national scale. Necessity is the mother of invention. The necessity had not arisen till now to face facts and solve them. But the trend of events in the country following attainment of Independence and partition of India have placed her

today in a peculiar predicament from which sheer Herculean effort and planned organisation alone could save her.

India faces today two major crises—namely food and finance. The one is closely interlinked with the other. The foundations of Modern Indian Society stand or shake depending on how well these problems could be solved. These two interdependent factors of food and finance depend in their turn on Agriculture and Industry. The picture presents a vicious circle which demands to be broken if India wants to progress. The ways and means to cut the Gordian knot of food deficit and agricultural backwardness, Industrial backlog and economic muddle are the fundamentals of a Blue print for progress.

Industrial expansion, higher productivity, tapping of new sources of national income without unnecessary taxation, plugging up of national drain, prevention of man-power and material waste and in short a drive towards national self-sufficiency in quick time are the basis of a national plan for progress. In the beginning of 1944 the well known Bombay Plan emerged as the brain child of some leading Industrialists of India. It adumbrated proposals for the expansion of agriculture and Industry with a view to increase the 'per capita' income of India and Indians. It presented a beautiful vision of great expectations about India's

future for the next three five years. The first five years have now passed. India appears to have progressed very little. Even a fraction of the prospects held out for the future has not been accomplished and she is still where she began or even worse. In short, the Bombay plan has failed. The failure has not been due to lack of enthusiasm or nervousness of the planners, but because the planners failed to realise that the translation of a vision is different from the vision itself. Besides it was planned at a time when things appeared rosy and hopeful.

India earned a lot of good money during the war. But against the advice of old Micawber, either for good or for bad, she spent it easy. Easy money ill spent becomes cheap money and both the planners and the Government seldom realised it until it was too late. Historians remind us often of the old adage that though Rome by her valour conquered Greece, yet Greece conquered Rome ultimately by her soft ways. This has been true in India also, which like an old Zamindar playing ducks and drakes with the hard earned wealth of his forefathers, failed to think for a moment about the future. Seven hundred crores of rupees have been spent in the past five years and every one is asking the other how it was spent. The planners and the Government failed to understand that twenty-five per cent of the national income was from Indian industries. Many were reluctant to have replacements for old machinery and new lines of development were ignored or shelved. The money was spent on the purchase of food and luxury articles

abroad instead of devising ways and means to produce more on our lands. Not much capital goods were purchased, but instead money was being idly spent on fresh items of political adventure and melodramatic tomfooleries.

The tragedy is acute when one thinks of the Bengal famine of 1943 which decimated more than a million people. Money was unnecessarily spent on missions, councils and committees and good time wasted in political wranglings and power seeking within and without. Construction of dams and power houses were being talked about only in Grandiloquent terms without thinking of the other foundations to be improved namely—steel, chemicals and cement.

India was already well advanced in the steel and cement industries. The production of steel in 1944 was above one million tons which was roughly a fifth of her requirements which were of the order of five to six million tons per annum. Encouragement was not forthcoming both from the Government and planners to strengthen and improve this vital industry. Recently a few missions toured the country at the Government's invitation to advise them on increasing steel output. Their estimates suggested two new units each costing more than seventy crores of rupees. The plans had been on paper for some months, but unfortunately for want of enough finance the projects have to be kept in cold storage. This will adversely affect the construction of dams and erection of new industries. To prevent

this backlog it is urgently necessary for the Government to get together the three leading steel manufacturers—Tata Steel Corporation of Bengal and Indian Iron and Steel—to devise methods of increasing output and adding fresh replacements. The mutual fear and jealousies between Government and the steel industry, both its labour and capital should cease in the national interest.

Cement is another essential material for national prosperity. At present India's capacity as installed is of the order of three million tons while actually two-thirds of it only are produced. The Indian requirement is roughly about ten million tons. The raw materials required are only limestone and coal and India has an abundance of these two materials. Also the capital equipments required are quite easy to get. Though new units have been started in a few places in the south and additions have been already made to existing units, yet the progress is not so happy as expected. Besides it is a quite strange turn of events that India should be allowed to get cement from outside while it can be produced here.

In the chemical Industry again the planning has been quite poor and the drive quite in-efficient. The manufacture of salt has not advanced even a little compared with pre-war levels. India possesses a vast sea coast and endowed with natural resources for the manufacture of salt. It is absolutely necessary to adopt new and modern methods of salt

manufacture to increase the quantity produced. Besides it is necessary that inter provincial barriers for the transport of this material do not exist.

The vogue import policies of the Government until a few months ago coupled with the dishonest methods of a few anti-social elements who were prepared to exploit the situation if embargoes are placed on imports of foreign chemicals have led us into a situation with regard to the market for chemicals which is rather unhappy. For instance India imported large quantities of foreign soda ash and caustic soda some months ago because the quality of the Indian product was poor and whatever was available was also scarce. Besides very little progress was made by existing units either to improve production methods or the quality of the product. Installation of new units took a rather slow pace. Here again is an instance where lack of national responsibility has been the cause for the crippling of this industry.

The problems involved have to be tackled in a spirit of mutual co-operation, give and take and with a sense of national responsibility. It is heartening to note that a beginning has already been made by our able leader Sardar Vallabhai Patel in his recent conferences and utterances. Let us join together to offer him our 'blood, tears and sweat' to cross this Rubicon of a national crisis. This in simple is the Blue Print for progress and not a paper plan.

The Indian Chemical Industry

By

GEORGE PHILIP, B. Sc.



WHATEVER might be the evil effects of wars the Indian Chemical Industry owes its existence and progress to the two World Wars. It was found impossible to transport the huge requirements of chemicals in neighbouring war theatres, from abroad. Apart from pressure of demand plenty of loose money and prospect of high wartime profits turned both capital and enterprise in this direction. In planning for post-war development the basic nature of chemical industries was well recognized and this branch of industry has made greater headway than other projects envisaged in national reconstruction plans. Several large sized plants to make primary requirements like fertilisers and cement are already in production or in construction. The Fertilisers and Chemicals, Travancore, Ltd., deserve just credit in the hold and vital line of business chosen and having come into production in almost record time, while similar projects sponsored by other Governments are still in the planning or construction stage.

Chemical Industry is relatively favourably placed for development, in several respects. In starting chemical manufacture a high development in the other branches of industry is not an essential prerequisite as it would be say in automobile manufacturing. Chemicals come under commodities capable of primary production. Chemical ma-

chinery are mostly simple and easily understandable, in the matter of raw materials, technical and ordinary labour the position is good. Labour is cheap and strikes rarer than in most countries.

With all these, there has been a lull in the industry after the war. Many wartime installations have failed to adapt to post-war conditions and have either closed down or seriously cut down activities. After the first World War too, government had to afford tariff protection to most industries to save them from collapse. But unfortunately sufficient use was not taken of the opportunity to stabilize production costs by adopting economical improvements in management and production techniques. Only the second World War could restore the declining concerns to stability.

This apparently chronic weakness to withstand normal peacetime prices and foreign competition is the problems confronting the government and manufacturers. One reason is that most of the smaller units put up in wartime were to make advantage of the artificial differences in price levels. The easy profits thus obtained had a very bad effect on business outlook. It made patient and careful running of business and depending on efficiency and large outturn look dull and not worth while in comparison.

Small size in itself need not always be a disadvantage. Management and personnel relations can be brought upto a high level of perfection impossible in big factories. With the increase in efficiency thus obtained the small scale manufacturer can hold his own against big concerns which thrive by sheer virtue of big size.

A realistic appreciation on the part of the manufacturers of the changed conditions and adopting sound business principles is essential for stabilizing the industry. As the gap between selling price and production costs approach closer steadiness of operations, minimizing lost time, adopting improved production techniques all become factors which make all the difference between success and failure. Factory management then turns out to be a work requiring the very best skill, talents and character, rather than an envied privilege. Realizations of this fact by the labour might be of use in soothing up employee-employer relationship.

It is not all within the power of the manufacture to build up the industry. A good deal depends on the attitude of the Government. More help than promises of less taxation and assurances against nationalization are necessary. An organization under government auspices for stringent quality control would save new enterprises the trouble and cost of laboriously establishing a reputation for quality. In the pharmaceutical and fine chemical industry, small industries are unnecessarily handicapped by the tendency of the customers to go in for products of big foreign countries. Our growing industries can ill-afford

to lavish money on constant advertisements. Providing necessary liaison between foreign firms and markets is another activity that the Government can do much easier than individual manufacturers. This is very important when it is the policy of the Government not to encourage big cartels capable of looking after their interests both at home and abroad. When this policy is practised the responsibility of the Government in granting loans affording discriminate tariff protection and such other aids are greatly increased.

At present further strides in the industry have been rendered very difficult by the fact that enterprise and investment has been scared off from the field. The indifferent progress of the industry and the anti-inflationary measures of the Government seem to be at the bottom of it. It appears to have gone out of the hands of the capitalists to re-establish faith of the public in the jointstock company system. Contrary to common belief it is the small investors and not the capitalist that owns most of the shares in companies though the enterprise and management come from the latter. Even if it means some interference it would be better if the Government sets up a competent Board of control and guarantee the soundness of fresh ventures rather than not to have them at all. Such a procedure modelled after the policy towards insurance companies, must be enough to disposal the fears of the public and prompt investment. In a growing chemical industry like ours, both Management and Labour will only be benefited and encouraged by an active and understanding co-operation from the Government.

HUMAN RELATIONS IN INDUSTRY

By

N. G. Bose, B. Sc., L. C. C. (Sr.) F. R. Econ. S.

A MACHINE is not complete without the man behind it. Efficiency of the machine depends mainly on the operator. Industrialists are eager to attend to any defects in the machines, but are not so conscious of the need for maintaining the efficiency of the men behind the machine. In industrially advanced countries it has been accepted that efficient personnel management is one of the most essential elements of the whole science of management and fortunately there appears to be a growing recognition of this fact in India.

Now what is personnel management? Briefly it may be defined as the art of fostering the spirit of co-operation between employer which will ensure efficient production.

It is a well known fact that how a person will do a piece of work depends largely on his attitude to the job. No work by itself is pleasant or unpleasant; the attitude of the worker is the deciding factor.

How are we to engender and maintain the correct attitude of workers to their work? This brings us to the domain of industrial psychology, and leaving aside the too technical details such as time and motion study, study of fatigue etc. for the more ambitious writers, only the broad principles of human behaviour will be considered here. These principles were established long ago but are unfortunately often overlooked by management. Co-

operation is neither a one sided business nor is it a static function. Constant vigilance is necessary on the part of management to guarantee harmonious relationship between management and labour and the consequent efficient running of the factory.

Now to the principles:

1. The proverb goes "one can lead a horse to the water but one cannot make him drink." Everybody knows, a man will do a job better if he is inclined to do it than if he is forced to do it. Supervision should not be too crude and overbearing; let the worker feel that he is trusted. Management should be more in the nature of guidance than giving orders from pedestals.

2. Some men on new jobs are handicapped by a fear of failure. This fear melts away if they get praise from their supervisors which helps them to get back their self-confidence. If on the other hand the supervisor, in his eagerness to educate the worker to be efficient from the very beginning, points out his every defect with displeasure the situation grows worse. The worker is more afraid of failure and his work deteriorates still further. So the correct approach is always to find something to praise a new hand for, and then point out to him his defects when his work is not up to the standard. Appreciate his difficulties, sympathise with him. Try to put oneself in his place and think as he thinks.

3. Next comes the question of incentive. Incentives, like drugs, differ with different persons. Money is not the most effective incentive in all cases. To some persons recognition or praise means more than a few rupees extra in the pay envelope. There are many different reasons for doing a good job. Management should try different incentives to find out which carry the most weight.

4. Another stumbling block on the path of smooth industrial relations is the subject of criticism. It often becomes incumbent upon management to criticise a man. But how it should be done is not known by many. It is very easy to criticise, but it is very difficult to criticise so that the person affected does not become antagonistic. The inexperienced manager when he gets an opportunity to comment adversely, eagerly grabs it, because it gives him a chance to inflate his ego and express his feeling of superiority. But this has a very damaging effect on the ego of the person criticised, however deserving the criticism is. The manager should be careful not to put himself on a pedestal, and he should never criticise a man before his workmates. If a manager must criticise a man individually, he should be taken aside.

5. Always listen. The proverbial last straw breaking the camel's back is not an imaginary thing. It is not the weight of this 'last straw', which really breaks, but the accumulated burden under which the camel have been so long suffering. Small grievances act in the mind of em-

ployees in the same way. If little grievances are allowed to accumulate them some day they are sure to come out as an explosion over an apparently minor matter. Then it will be too late. To avoid this the supervisors and managers should always be ready to listen. Encourage your men to talk with you. Talking with the boss helps them get the little grievances off their chests. Before making a decision which affects your men, let them express their opinions. They will accept a decision in a better spirit if their views have been considered.

6. Again co-operation needs for its growth an exchange of information. The employee's morale will be boosted if it is explained to them what the factory is up against.

Explain thoroughly. Give your men every bit of information you can about the company's plans and problems. Show them that the management feel it is important that they know what is going on. Never let them feel that all the important thinking is done behind closed doors. Invite their suggestions.

7. Another fundamental concept of human relationship is that sympathy begets sympathy. So when your men deserve pay increases or promotion do not hesitate to pay. If they have serious grievances take the problem to a higher authority. Do not fail to give recognition to good job and never steal another's credit. When a man does a good job go out of your way to see that he gets full credit.

(Industrial Relations, '49.)

ഗ്രാമങ്ങളെ ഉദ്ധരിക്കുക.

ശ്രീ. ഹേമേന്ദ്രപ്രസാദ് ഘോഷ്.

രാജ്യത്ത് കടിൽവ്യവസായങ്ങൾ അഭിവൃദ്ധിപ്പെടുത്തുന്നതിൽ ഇന്ത്യാ ഗവണ്മെന്റ് പ്രദർശിപ്പിക്കുന്ന ഒരു സൂക്ഷ്മ പ്രശംസാർഹമാണ്. സാധാരണയായി ഭീമമായ സംഖ്യകൾ ചിലവഴിക്കി വൻ തോതിലുള്ള വ്യവസായങ്ങൾ ആരംഭിക്കുവാൻ വ്യഗ്രത കാണിക്കുന്ന ഒരു ജനതക്ക് ചെറിയ കടിൽവ്യവസായങ്ങൾ എപ്പോഴൊക്കെ ഉണ്ടാകുന്നുവോ അത്രയും ഉണ്ടാകുന്നുവെന്നു പറയാം. എന്നാൽ ഇന്ത്യാഗവണ്മെന്റിന്റെ നയം നേരെ വിപരീതമായ ഒന്നാണ്.

1933-ൽ ബംഗാളിനെപ്പറ്റി സർ ജോൺ ആൻഡേഴ്സൻ അഭിപ്രായപ്പെട്ടത്, ഒരു വർഷത്തിൽ മിക്കവാറും ഒൻപതു മാസം ഗ്രാമീണജനത തൊഴിലില്ലാതെ കഴിഞ്ഞുകൂടുന്ന ഒരു പരിതസ്ഥിതി ഒട്ടും അനുവദനീയമായിട്ടുള്ളതല്ലെന്നും, ബഹുഭൂരിപക്ഷം ജനങ്ങൾക്കും തൊഴിൽ ആവശ്യമായിരിക്കുന്നുവെന്നുമാണ്. ദാരിദ്ര്യം, പട്ടിണി, അനാരോഗ്യം എന്നീ ദുരിതരൂപങ്ങളായ സാഹചര്യങ്ങളിൽനിന്നും ഗ്രാമീണരായ ജനങ്ങളെ മോചിപ്പിക്കണമെങ്കിൽ അവരുടെ ഇടയിൽ ചെറുതരം വ്യവസായങ്ങൾ സംഘടിപ്പിക്കണമെന്ന് പറയുകയുണ്ടായി. ഇന്ത്യയെ ഒട്ടാകെ സംബന്ധിച്ചിടത്തോളവും ഇതുതന്നെയാണ് യഥാർത്ഥസ്ഥിതി. ഇന്ത്യയിലെ സാമാന്യജനതയുടെ സാമ്പത്തിക വ്യവസ്ഥിതിയിൽ കാരണമെന്ന അസമത്വങ്ങളും, അസമാധാനവും ദുരിതപ്പെടുത്തുന്നതിലേക്ക് അവർക്ക് തൊഴിലുണ്ടാക്കി കൊടുക്കാതെ ഗത്യന്തരമില്ല. നമ്മുടെ രാജ്യത്ത് ധാരാളം പ്രകൃതിദത്തമായ വിഭവങ്ങളുണ്ട്. ജനസംഖ്യ വളരെ കൂടുതലായിട്ടുണ്ട്. എന്നാൽ സൗഹൃദപരമായ ഒരു മാർഗ്ഗത്തിൽകൂടി ഇവ രണ്ടും സംയോജിപ്പിച്ച് എല്ലാവർക്കും തൊഴിലുണ്ടാക്കി കൊടുക്കേണ്ടതായിരിക്കുന്നു.

ഇന്ത്യയിൽ ഏകദേശം 2000 ലക്ഷം ജനങ്ങൾ ശരിയായ ആഹാരത്തിനു മാർഗ്ഗമില്ലാതെയും ദാരിദ്ര്യപീഡിതരായും അസങ്കാരത്തിൽ നിമഗ്നരായി കഴിയുന്നു. അവർക്ക് ജീവിതം ഒരു സുഖവും നൽകുന്നില്ല. ജീവിച്ചിരിക്കുന്നതുതന്നെ ഒരു ഭാരമായിത്തീരുന്നു. കർഷകവൃത്തിയെ മാത്രം ആശ്രയിച്ച് ജീവിതം കഴിക്കുവാൻ സാധിക്കുകയില്ല. തൊഴിൽ പരമായ വികസനം അത്യന്താപേക്ഷിതമായിട്ടിരിക്കുന്നു.

ഇന്ത്യയിലെ കടിൽവ്യവസായങ്ങൾ എത്രത്തോളം പ്രാധാന്യം അർഹിച്ചിരുന്നുവെന്ന് റോമാ സാമ്രാജ്യത്തിന്റെ പ്രതാപകാലത്ത് ഇന്ത്യയെപ്പറ്റി പ്ലേനി പറഞ്ഞിട്ടുള്ളതിൽനിന്നും മനസ്സിലാക്കാം. ഒരു വർഷത്തിലെങ്കിലും ഇന്ത്യൻ സാധനങ്ങൾക്ക് റോമാസാമ്രാജ്യത്തിൽനിന്നും 458000 പവനൈകിലും കൊടുക്കാതിരിക്കുന്നില്ലെന്നാണ് അദ്ദേഹം പറയുന്നത്. വാസ്തോവിശദമായ ഇന്ത്യയിലേക്കു പുറപ്പെട്ടതും ഈ ആകർഷണശക്തിയുടെ പ്രേരണയാലായിരുന്നു.

ഇന്ത്യയുടെ ഗ്രാമീണജീവിതത്തിന്റെ ഒരു അഭേദ്യമായ ഭാഗമായിരുന്നു കടിൽവ്യവസായങ്ങൾ. ഓരോ ഗ്രാമത്തിലും എല്ലാ തരത്തിലുമുള്ള കരകൗശല സമ്പ്രദായങ്ങൾ നടപ്പിൽ ഇരുന്നതായി കാണുന്നു. മൺപാത്രവ്യവസായം, കശവയെണ്ണ, കൈയ്ത്തറി വ്യവസായം, വിശ്വകർമ്മരുടെ വ്യവസായങ്ങൾ, മരപ്പണി, ശില്പവേലകൾ തുടങ്ങി നിരവധി ഗ്രാമീണവ്യവസായം പ്രശസ്തമായ നിലയിൽ നടത്തിവന്നിരുന്നു. എന്നാൽ കാലാന്തരത്തിൽ അവയെല്ലാം നാമാവശേഷമാകുകയോ അധഃപതിക്കുകയോ ചെയ്യുകയുണ്ടായി. ഡാക്കായിലെ മസ്തീൻതുണി ലോകമാസകലം പ്രചരിച്ചിരുന്നു.

ബ്രിട്ടീഷ് ഭരണം ആരംഭിച്ചതു മുതൽ ക്രമേണ ഇന്ത്യയിലെ വിദഗ്ദ്ധന്മാരായ ടൊഴിൽക്കാരുടെ ഓരോ വ്യവസായവും അധഃപതിച്ചു, നിർജ്ജീവമായി, നശിച്ചു. ഓരോ ഗ്രാമീണകേന്ദ്രവും വ്യവസായാടിവുദ്ധിയിൽ മുഴുകിയിരുന്നത് നാശോന്മുഖമായ പരിതഃസ്ഥിതികളെ സൃഷ്ടിച്ചു. ജനങ്ങൾ പരിഷ്കാരസൂത്രന്റെ കിരണങ്ങളോട് നൂതന ജീവിതചക്രകളിലേക്ക് ചലിച്ചുതുടങ്ങി. ഇതിന്റെ ഫലമായി നമ്മുടെ ഓരോ വ്യവസായവും നശിച്ചുതുടങ്ങി. യാന്ത്രികവ്യവസായങ്ങളുടെ ബഹുലതയും വമ്പിച്ച പുരോഗതിയും പാശ്ചാത്യർ ഇന്ത്യയുടെമേൽ അടിച്ചേൽപ്പിച്ചു. ഇന്ത്യൻ വ്യവസായങ്ങൾ അധഃപതിച്ച ചരിത്രം പരിതാപകരമായ ഒന്നാണ്.

ഇന്ത്യ ഇന്ന് സാതന്ത്രയായിരിക്കുന്നു. ഇപ്പോൾ നാം നമ്മുടെ വ്യവസായങ്ങളെ പുനരുദ്ധരിക്കുവാൻ സീകരിക്കേണ്ട പരിപാടികൾ ഓരോ പ്രവിശ്യയിലെയും ഗവണ്മെന്റ് സതപരമായി ശ്രദ്ധിക്കേണ്ട ഘട്ടത്തിൽ എത്തിയിരിക്കുകയാണ്. ഇംഗ്ലീഷ്കാരിൽ ചില മാനുവൽ ഇവിടത്തെ കുടിൽവ്യവസായങ്ങൾ പുനരുദ്ധരിക്കേണ്ടതിന്റെ ആവശ്യകതയെപ്പറ്റി പല പ്രാവശ്യവും ആവർത്തിച്ചു പറയുകയുണ്ടായിട്ടുണ്ട്. ലോർഡ് കേംഡൺ അധരമാത്രമായ അനുകമ്പ പ്രദർശിപ്പിച്ചു. എന്നാൽ സർജോജ്ജ് ബർഡ്വുഡിനെപ്പോലെയുള്ള മഹാനാർ അതിലേക്കു വേണ്ടി അനവരതം പ്രയത്നിക്കുകയുണ്ടായി. ഇന്ത്യാക്കാർ ഇന്ത്യയിൽ നിമിഷിക്കുന്ന വസ്തുതനെ ഉപയോഗിക്കേണ്ടതാണെന്നുകൂടി അദ്ദേഹം ഉൽബോധിപ്പിച്ചു. അമരാവതി, സാഞ്ചി എന്നീ സ്ഥലങ്ങളിലെ കലകൾ പുനരുദ്ധരിക്കുവാൻ പ്രചാരണം നൽകി. പുതിയ വ്യവസായങ്ങൾ ആരംഭിക്കുന്നതിനും, നശിച്ചുകൊണ്ടിരിക്കുന്ന ചില വ്യവസായങ്ങൾ ഉദ്ധരിക്കുന്നതിനും മി. ചാറൻടൺ തീവ്രമായി ശ്രമിച്ചു. ഗ്രാമീണരുടെ ഇടയിൽ പ്രബുദ്ധത ഉളവാക്കി,

വ്യവസായങ്ങളും ഗ്രാമീണ ജീവിത സൗകര്യങ്ങളും സജ്ജമാക്കുന്നതിനും ഇന്നത്തെ ഗവണ്മെന്റ് ശ്രമിക്കുന്നുണ്ട്. ഇന്ത്യൻ ജനത ഗ്രാമങ്ങളിൽ നിവസിക്കുന്നു. ഗ്രാമീണരുടെ സാമ്പത്തികസ്ഥിതി ഉയർത്തുക എന്നുള്ളതാണ് ഗവണ്മെന്റിന്റെ കർത്തവ്യം. അതിലേക്ക് അവരുടെ ഇടയിൽ കുടിൽവ്യവസായങ്ങൾ നടപ്പിലാക്കണം; വികസിപ്പിക്കണം. വ്യവസായപരമായി അവരെ സംഘടിപ്പിക്കണം. ചെറിയതരം യന്ത്രങ്ങൾ ഉപയോഗിച്ച് പുരോഗമിപ്പിക്കുവാൻ സാദ്ധ്യതയുള്ള വ്യവസായങ്ങളെ അപ്രകാരം ചെയ്യണം. നവീന സമ്പ്രദായങ്ങൾ നമ്മുടെ ചില വ്യവസായങ്ങളിൽ നടപ്പാക്കണം. ഉല്പാദനം വർദ്ധിപ്പിക്കുന്നതിനും ഇത് ആവശ്യമായിരിക്കുന്നു.

അടുത്ത കാലത്ത് ഇന്ത്യാഗവണ്മെന്റ് രണ്ടു ഉദ്യോഗസ്ഥന്മാരുടേയ ഒരു സംഘത്തെ ജപ്പാനിലെ കുടിൽവ്യവസായങ്ങളെപ്പറ്റി അന്വേഷിച്ച് ഇവിടെ സീകരിക്കാവുന്ന മാർഗ്ഗങ്ങൾ നിർദ്ദേശിക്കുവാൻ നിയോഗിച്ചിരുന്നു. അവർ മടങ്ങിവന്ന് അവരുടെ റിപ്പോർട്ട് ഗവണ്മെന്റിലേക്ക് സമർപ്പിച്ചിട്ടുണ്ട്. അത് ഗവണ്മെന്റിന്റെ പശ്ചാലോചനയിൽ ഇരിക്കുന്നുമുണ്ട്. ജപ്പാനിൽ കുടിൽവ്യവസായങ്ങൾ വളരെ പുരോഗമിച്ചിട്ടുണ്ട്. ചെറുതരം വ്യവസായങ്ങൾ കാർഷികമരാംവിധം നടപ്പിലാക്കാൻ ചെറുതരം യന്ത്രങ്ങൾ ഉപയോഗിക്കേണ്ടതായി വന്നേക്കും. ഇതിലേക്ക് കുറച്ചു ധനം വ്യയം ചെയ്യേണ്ടിവന്നാൽ അതിലേക്ക് ഗവണ്മെന്റ് സന്നദ്ധത പ്രകടിപ്പിക്കേണ്ടിയിരിക്കുന്നു. ഇന്ത്യയിലെ ജാതിവ്യവസ്ഥ, ചില തൊഴിലുകൾ നടത്തുന്ന ജനങ്ങളുടെ ഇടയിൽ അസാമാന്യമായ വൈദഗ്ദ്ധ്യം പാരമ്പര്യമായി സൃഷ്ടിച്ചിട്ടുണ്ട്. കലാപരമായ സാമർത്ഥ്യം ഇന്ത്യൻ തൊഴിലാളിയുടെ ഒരു വിശിഷ്ട സമ്പത്തു തന്നെയാണ്. എന്നാൽ ഈ മഹത്തായ ഗുണങ്ങളെ കൂട്ടിയിണക്കി ഒരു നവീനവ്യവസ്ഥി

തിരിയിൽ നമ്മുടെ വ്യവസായങ്ങളെ പുനരുദ്ധരിക്കുവാനുള്ള പദ്ധതി ആസൂത്രണം ചെയ്യേണ്ടതായിട്ടിരിക്കുന്നു. ജപ്പാന്റെ മാതൃക നമുക്ക് പല കാര്യങ്ങളിലും സ്വീകർത്തമാണ്. ഇന്ത്യയിലെ ഗ്രാമീണ ജനതയുടെ സ്ഥിതി എപ്രകാരമൊരു അതുപോലെ തന്നെയാണ് ജപ്പാനിലും. എന്നാൽ ജപ്പാനിലെ വിദ്യാഭ്യാസ പദ്ധതിയിൽ തൊഴിൽപരമായ ഒരു മനോഭാവം സൃഷ്ടിക്കുവാനുള്ള വ്യവസ്ഥകൾ അവരുടെ വിദ്യാഭ്യാസ പദ്ധതിയിൽ ഉൾപ്പെടുത്തിയിട്ടുണ്ട്. അതുപോലെ ഇന്ത്യയിലെ വിദ്യാഭ്യാസ പദ്ധതിയിൽ കലാസൗകര്യമായ മാറ്റങ്ങൾ വരുത്തേണ്ടിയിരിക്കുന്നു. ജപ്പാനിലെ മിക്കവാറുംയുടെ “Edict” മുഖേന സാധിക്കുന്ന കാര്യങ്ങൾ നമ്മുടെ ഗവണ്മെന്റ് ഉചിതമായി തീർത്തിയിൽ നടപ്പിലാക്കണം. സുധീരവും ദുർവ്വമായ ഒരു വിദ്യാഭ്യാസപദ്ധതി തൊഴിൽപരമായ പരിജ്ഞാനം പ്രദാനം ചെയ്യുന്നതിലേയ്ക്കായി ആസൂത്രണം ചെയ്ത് നടപ്പിലാക്കണം. ജപ്പാനിൽനിന്നും ചെറിയ യന്ത്രങ്ങൾ വരുത്തി വ്യവസായികളുടെ ഇടയിൽ വിതരണം ചെയ്യുന്നതിനോടൊപ്പം, അത്തരം യന്ത്രോപകരണങ്ങൾ ഇന്ത്യയിൽത്തന്നെ നിർമ്മിക്കുവാനുള്ള മാർഗ്ഗങ്ങൾ ആരായേണ്ടതാണ്. ജപ്പാനിൽനിന്നും സാങ്കേതിക വിദഗ്ദ്ധന്മാരായ 100 പേരെ ഇന്ത്യയിൽ വരുത്തി ഇ

വിടെയുള്ള യുവാക്കൾക്ക് പരിശീലനം നൽകുകയും വ്യവസായങ്ങൾ പുനഃസംഘടിപ്പിക്കുന്നതിന് നിരോധിക്കുകയും ചെയ്യണമെന്ന് കമ്മീഷൻ ശുപാർശ ചെയ്തിട്ടുണ്ട്. ഇന്ത്യാ ഗവണ്മെന്റ് ഈ ശുപാർശ സ്വീകരിക്കുന്നതിനേക്കാൾ കുറെ ഇന്ത്യാക്കാരെ പരിശീലനത്തിനായി ജപ്പാനിലേയ്ക്കയച്ച് പരിശീലനം നടത്തിവരുന്നതായിരിക്കും നല്ലതെന്നു തോന്നുന്നു. ഇതിനു മുമ്പ് ബംഗാളിൽ ഇപ്രകാരമൊരു പരീക്ഷണം നടത്തിയതിൽ കാര്യമായ വിജയമുണ്ടായില്ല. എന്നാൽ നമ്മുടെ യുവാക്കൾ പരിശീലനം നടത്തി ഇവിടെ തിരിച്ചുവരികയാണെങ്കിൽ കളിമൺ വ്യവസായം, തീപ്പെട്ടി വ്യവസായം, ഗ്ലാസ്സ് വ്യവസായം, സോപ്പുവ്യവസായം തുടങ്ങി നിരവധി വ്യവസായങ്ങൾ ജപ്പാന്റെ മാതൃകയിൽ ഇവിടെ ആരംഭിക്കുവാൻ സാധിക്കും. ഇന്ത്യയിലെ വ്യവസായികൾ ശ്രദ്ധിക്കേണ്ട ഒരു പ്രധാന സംഗതി, നാം നിർമ്മിക്കുന്ന സാധനങ്ങളുടെ വില കുറവു രാജ്യങ്ങളിലെ അത്തരം സാധനങ്ങളുടെ വിലയുമായി കിടന്നില്ലാത്ത ഒരു രീതിയിൽ ഉള്ളതായിരിക്കണമെന്നുള്ളതാണ്. വ്യവസായ പുരോഗമനത്തിന് “വില” ഏറ്റവും പ്രധാനമായ ഒരു കാര്യമാണ്. ഇന്ത്യയിലെ വ്യവസായികൾ ഈ തത്വം മനസ്സിലാക്കേണ്ടതായിരിക്കുന്നു.

കൃത്രിമവളങ്ങൾ.

(പി. ഗോപാലസ്വാമി ബി. എസ്സ്. ഡി.)

രാഷ്ട്രപിതാവായ മഹാത്മജിയുടെ മഹത്തായ ആദർശഗുണങ്ങളെ പഠിച്ച് അവയെ പ്രായോഗികമാക്കേണ്ടത് സ്വതന്ത്രയുഗത്തിൽ ജീവിക്കുന്ന ഓരോ വ്യക്തിയുടേയും കർത്തവ്യമാണ്. നാം സ്വതന്ത്രരെന്നു് അഭിമാനിക്കുന്നെങ്കിലും സ്വാതന്ത്ര്യത്തിൽനിന്നുളവാകുന്ന ആനന്ദം അനുഭവിക്കുവാൻ നമുക്കുസാധിച്ചിട്ടില്ല. അതു തീർച്ചയായും നമ്മുടെ തെറ്റാണ്. “സ്വയംപര്യാപ്തരായി ജീവിക്കുക” ഇതാണ് ബാല്യജീവന്റെ ശ്രേഷ്ഠങ്ങളായ ആദർശങ്ങളിലൊന്ന്. ഭക്ഷണം നമുക്കു ഒഴിച്ചുകൂടാൻ പാടില്ലാത്ത ആവശ്യമാണ്. അതുകൊണ്ടു് സർവ്വധാനമായി നമ്മെ അഭിമുഖീകരിക്കുന്ന “ഭക്ഷണപ്രശ്നത്തെ” ഉറച്ച വിശ്വാസത്തോടും, തികഞ്ഞ ആദർശബോധത്തോടുംകൂടി നാം നേരിടണം. “1951-നു മുൻപെ നിങ്ങൾ ഭക്ഷണക്കുരുത്തിൽ സ്വയം പര്യാപ്തരാകണം”. അതിൽപിന്നെ പുറമെയുള്ള രാജ്യങ്ങളിൽനിന്നും ഭക്ഷണസാധനങ്ങൾ നമുക്കു ലഭിക്കയില്ലെന്ന് പ്രഭാഷണങ്ങൾ വഴിയായും മറ്റും നേതാക്കന്മാർ അനുനീമിച്ചും നമ്മെ ഉപദേശിക്കുന്നുണ്ടു്. ആധുനിക കാഷികപലാതികൾ ഉപയോഗിച്ചു് ഭക്ഷ്യോല്പാദനം ത്വരിപ്പിക്കാമെന്ന് പരീക്ഷണങ്ങൾ തെളിയിക്കുന്നു. ഊഷ്മാ ഭൂമികളെപ്പോലും നമുക്കു് ഫലഭൂയിഷ്ഠമാക്കണം. എന്നാലെ നാം ആശിക്കുന്ന ‘സ്വയംപര്യാപ്ത’ കൈവരികയുള്ളൂ. ആധുനിക ഭക്ഷ്യോല്പാദനരീതികളിൽ കൃത്രിമവളങ്ങൾക്കുള്ള സ്ഥാനം പ്രാധാന്യമർഹിക്കുന്നതാണ്.

ഭക്ഷ്യഉല്പന്നങ്ങളുടെ പുഷ്ടിയായ വളയ്ക്കു് ആവശ്യമുള്ള ഘടകങ്ങൾ ഭൂമിയുടെ എല്ലാ ഭാഗങ്ങളിലും കണ്ടെത്താവരികയില്ല. ആവശ്യമായ മൂലകങ്ങൾ ലഭിക്കാത്തതിനാൽ ചെടികൾ പ്രായേണ മരടി

ച്ചു നശിച്ചുപോകും. പുഷ്പവളമുള്ള പ്രാപിച്ചതിനുമേൽ പുഷ്പിച്ചു് ധാരാളം ഫലത്തെ പ്രദാനംചെയ്യുന്നതിനു് ചെടിക്കു വശ്യമുള്ള മൂലകങ്ങൾ വളങ്ങൾ വഴിയായിട്ടാണ് ലഭിക്കുന്നതു്. ധാണകം, പച്ചില മുതലായ ‘ജൈവവളങ്ങളിൽ’ ഈ ഘടകങ്ങൾ സംയുക്തരീതിയിലാണ് സ്ഥിതിചെയ്യുന്നതു്. ഇവയിൽ അടങ്ങിയിരിക്കുന്ന അംശങ്ങളെ വേർതിരിച്ചെടുത്തു് ഉപയോഗപ്പെടുത്താൻ കൂടുതൽ സമയം വേണ്ടിവരുന്നു. പുരാതന കൃഷിസമ്പ്രദായത്തിൽ വിശ്വാസം നമ്മൾക്കുണ്ടു്. പക്ഷെ, അതു മൂലം കാര്യക്ഷമമായ രീതിയിൽ ഉല്പാദനം വർദ്ധിച്ചുകാണുന്നില്ല. ‘കൃത്രിമവളങ്ങൾ’ വഴിയായി എളുപ്പത്തിൽ മണ്ണിന്റെ ഫലഭൂയിഷ്ഠത വർദ്ധിപ്പിക്കാനാവശ്യമായ ‘പ്രധാന മൂലകങ്ങൾ’ മണ്ണിൽ ചേർക്കുവാൻ സാധിക്കുന്നു.

മഹായുദ്ധത്തിനു മുമ്പു് ഗ്രേറ്റ് ബ്രിട്ടനു് ആണ്ടൊന്നുക്കു് ശരാശരി 250 കോടി പവൻ വിലയുള്ള ഭക്ഷ്യോല്പന്നങ്ങൾ ലഭിച്ചിരുന്നെന്നു കാണുന്നു. എന്നാൽ ഏകദേശം 50 കോടി പവൻമാത്രമേ വളം മുതലായ കൃഷി ആവശ്യങ്ങൾക്കു് ചിലവായിരുന്നുള്ളൂ. അതേ-അവസരത്തിൽ ഇന്ത്യയ്ക്കു് ശരാശരി 1200 കോടി രൂപയ്ക്കുള്ള ഭക്ഷ്യപദാർത്ഥങ്ങളേ ലഭിച്ചുകാണുന്നുള്ളൂ. കൃഷിചിലവിനത്തിൽ തുല്യമായ ഒരു സംഖ്യ മാത്രമേ ഇന്ത്യയ്ക്കു് ചിലവായിട്ടുള്ളൂ. ഇതിൽനിന്നു് ന്യായമായ രീതിയിൽ പണം ചിലവാക്കിയാൽ കൂടിയ തോതിൽ ഉല്പാദനം പുരോഗമിപ്പിക്കാൻ സാധിക്കുമെന്ന് നമുക്കു മനസ്സിലാക്കാം. പശ്ചിമ രാജ്യങ്ങൾ കൃത്രിമവളങ്ങൾ ധാരാളമായി ഉപയോഗിച്ചാണ് കൃഷി നടത്തുന്നതു്. റോമിലെ ‘അഗ്രികൾച്ചറൽ ബ്യൂറോ’യുടെ കണക്കുകൾ ഇതിനു് സാക്ഷ്യംവഹിക്കുന്നുണ്ടു്. കൃഷിവിദഗ്ദ്ധന്മാരുടെ പതുവേക്ഷണ

ഫലമായി ഇന്ത്യൻ മണ്ണുകൾ അധികം അധഃപതിച്ചുപോയിട്ടുണ്ടെന്ന് നമുക്കറിയാൻ കഴിയുന്നു. ഒരേക്കറിൽ ശരാശരി വിളയുന്ന നെല്ല് ഇന്ത്യയിൽ 1295 പൗണ്ടും, ജപ്പാനിൽ 3040 പൗണ്ടും, ഈജിപ്തിൽ 2783 പൗണ്ടുമാണ്. താരതമ്യേന ഇന്ത്യയുടെ ഉല്പാദനക്കുറവ് ഇതിൽനിന്നു സ്പഷ്ടമാണ്. കന്നുകാലിവളം അധികം അധികം ഉണ്ടാക്കി വിറകായി ഉപയോഗിച്ചുപോകുന്നുവെന്നും, കൃത്രിമവളങ്ങൾ ഉപയോഗിച്ച് മണ്ണിനെ പുഷ്ടിപ്പെടുത്താത്തതും ഇന്ത്യയിലെ കൃഷി അധഃപതിച്ചുപോയി. കൃത്രിമവളങ്ങളുടെ പരിമിതമായ അറിവ് മിക്ക കൃഷി വലന്മാർക്കുമുള്ള അതുകൊണ്ട് പലരും ഇവ ഉപയോഗിച്ച് കൃഷി ചെയ്യുന്നതിൽ വിമുഖരായി കാണുന്നുണ്ട്.

പ്രധാനമായി കൃത്രിമവളങ്ങളെ നാലായി തരംതിരിക്കാം. അവ: (1) ഭാസ്യവളങ്ങൾ. (2) നൈട്രജാത്മകവളങ്ങൾ. (3) പൊട്ടാഷ് വളങ്ങൾ. (4) സംയുക്തവളങ്ങൾ.

ഭാസ്യവളങ്ങൾ - ബോൺ മീൽ, ബോൺ ബ്രാൻ, ലയിച്ച അസ്ഥികൾ, സൂപ്പർ ഫോസ്ഫേറ്റ് മുതലായവ ഭാസ്യവളങ്ങളാണ്. അവയ്ക്ക് താഴെപ്പറയുന്ന പ്രത്യേക ഗുണങ്ങളുണ്ട്.

(എ) അവ ഫലങ്ങളേയും കിഴങ്ങുകളേയും കൂടുതൽ തടിയുള്ളവയാക്കുന്നു. (ബി) അവ ചെടികളെ പുഷ്ടിക്കാര്യം ഫലിക്കാൻമുള്ള ശക്തിയെ ബലപ്പെടുത്തുന്നു. (സി) അവ ഫലങ്ങൾ വളരെവേഗം പാകമാകാൻ സഹായിക്കുന്നു. (ഡി) ക്ഷുദ്രജീവികൾ, പരപുഷ്പങ്ങൾ മുതലായവയുടെ അക്രമത്തിൽനിന്ന് ചെറിയ ചെടികളെ സഹായിക്കുന്നു.

ഭാസ്യവളവർണ്ണങ്ങൾ പ്രധാനമായി മണ്ണിലും കല്ലിലും 'അപ്പ് റൈറ്റ്' എന്ന ധാതുരൂപത്തിൽ സ്ഥിതിചെയ്യുന്നു. ഈ ധാതുവിന്റെ അണുആകൃതിയിലുള്ള പര

ലുകൾ ചില സ്ഥലങ്ങളിൽ ധാരാളമായി കാണുന്നു. കടുപ്പമുള്ള ഈ ധാതുഭൂവും യന്ത്രസഹായത്താൽ പൊടിച്ചാണ് ഫോസ്ഫേറ്റ് റോഡ് ഉണ്ടാക്കാൻ ഉപയോഗിക്കുന്നത്. ഏറ്റവും ശുദ്ധമായ ഈ ധാതുവിൽ 12 ശതമാനം 'ട്രൈകാൽസിയം ഫോസ്ഫേറ്റ്' അടങ്ങിയിരിക്കുന്നു. 'ഫോസ്ഫേറ്റ് റോഡ്' ധാതുക്കൾ ധാരാളമായി പൊടിച്ചു കൃഷിപ്പയോഗിക്കുകയോ 'സൂപ്പർഫോസ്ഫേറ്റ്' എന്ന കൃത്രിമവളമായി രൂപാന്തരപ്പെടുത്തുകയോ ചെയ്യുന്നു. കമ്മായത്തിലുള്ള 'സൂപ്പർഫോസ്ഫേറ്റ്'ന്റെ മിശ്രിതത്തിനെ 'ബേസിക്' എന്ന പേരിൽ അറിയപ്പെടുന്നു.

"സൂപ്പർഫോസ്ഫേറ്റ്"—ധവളമായി പൊടിച്ച ഫോസ്ഫേറ്റ് പാറപ്പൊടിയിൽ സൾഫ്യൂറിക് അമ്ലത്തിന്റെ പ്രവർത്തനംകൊണ്ടാണ് 'സൂപ്പർഫോസ്ഫേറ്റ്' ഉണ്ടാക്കുന്നത്. എന്നാൽ ആധുനികരീതിയിൽ ഈ ലവണത്തിന്റെ വൻ തോതിലുള്ള നിർമ്മാണം പ്രധാനമായി മൂന്നു പ്രയോഗങ്ങളെ ആസ്പദമാക്കിയാണ്. അവ: (1) നിർമ്മാണത്തിനാവശ്യമായ ധാതുഭൂവുത്തെ ധവളമായി പൊടിക്കുക. (2) അതിനെ സൾഫ്യൂറിക് അമ്ലത്തിൽ ലായനീകരിക്കുക. (3) പ്രവർത്തനഫലമായി ലഭ്യമാകുന്ന സൂപ്പർഫോസ്ഫേറ്റ് വേർതിരിച്ച് ഉണക്കിയെടുക്കുക എന്നിവയാണ്. ധാതുഭൂവും പൊടിക്കുന്നതും, പൊടിച്ച ഭൂവുത്തെ സൾഫ്യൂറിക് അമ്ലത്തിൽ ലായനീകരിക്കുന്നതും യാന്ത്രികസഹായത്തിലാണ്. ലയിപ്പിക്കുന്ന അവസരത്തിൽ വാതകോല്പാദനം മൂലം ദ്രാവകം പതഞ്ഞു പൊങ്ങിവരുന്നു. ക്രമേണ ലായനിയുടെ ഊഷ്മാവ് 248-മുതൽ 302-വരെ ഉയരുകയും ചെയ്ത് പ്രവർത്തനം പുരോഗമിക്കുകയും അന്ത്യഘട്ടത്തിൽ ഒരു പരുപരുത്ത ഘനപദാർത്ഥം അവശേഷിക്കുകയും ചെയ്യുന്നു. ഈ ഘനപദാർത്ഥമാണ് സൂപ്പർഫോസ്ഫേറ്റ്.

എല്ലുപൊടി—എല്ലുവളങ്ങളെ ഫോസ്ഫേറ്റ് വളങ്ങളുടെ കൂട്ടത്തിൽ ഉൾ

പ്പെടുത്തിയിരിക്കുന്നു. നൈട്രജൻ ധാരാളം കൊടുക്കാൻ സാധിക്കുന്ന എല്ലുകളുണ്ട്. എല്ലു പൊടിച്ചു വളമായി ധാരാളം ഉപയോഗിച്ചുവരുന്നുണ്ട്. എല്ലിൽ ശരാശരി 12 ശതമാനം ജലവും, 28 ശതമാനം കൊഴുപ്പും, 44 ശതമാനം കാൽസിയം ഫോസ്ഫേറ്റും, 5 ശതമാനം കാർബണേറ്റും അടങ്ങിയിരിക്കുന്നു. വലിയ എല്ലുകളുടെ വികലനം ക്രമേണയെ സംഭവിക്കുന്നുള്ളു. ഒരിഞ്ചു വലിപ്പത്തിൽ മുറിച്ചു എല്ലകുഷണങ്ങൾ 'ബെൻസീൻ' ദ്രാവകവുമായി തിളപ്പിക്കുന്നു. ഈ ക്രിയമൂലം എല്ലിലുള്ള കൊഴുപ്പും ജലാംശവും വേർതിരിക്കപ്പെടുന്നു. അതിനുശേഷം ശേഷിക്കുന്ന 'എല്ലു ഓട്ടികൾ' ഉണക്കി പൊടിച്ചെടുക്കുന്നു. ഈ പൊടി വളമായി ഉപയോഗപ്പെടുത്തുന്നു. ഗ്രാമപ്രദേശങ്ങളിൽ യാത്രികസഹായത്താൽ എല്ലു പൊടിയാക്കാൻ സാധിക്കുകയില്ല. അതിനാൽ മറ്റു വഴികൾ ഉപയോഗിക്കുന്നു. വലിയ വീപ്പുകളിൽ എല്ലു ഇടയ്ക്കിടെ പുതുതായി നീർറിയ ചാരവുമിട്ടു അടുക്കിവയ്ക്കുക. മിശ്രിതത്തിൽ കൂടക്കൂടെ ജലം തളിച്ചുകൊടുക്കണം. കാലാന്തരത്തിൽ എല്ലു പൊടിയായിത്തീരുന്നു.

എല്ലുകുരി—അടച്ച വാലുകളിൽ എല്ലു ചൂടുവിടിപ്പിക്കുന്നു. വളരെ കൂടിയ ഊഷ്മാവിൽ എല്ല കുരിഞ്ഞു കരുത്ത പൊടിയാക്കി രൂപാന്തരപ്പെടുന്നു. ഈ കരുത്ത പൊടിയാണ് 'എല്ലുകുരി.' ഇതിൽ പത്തു ശതമാനം കരിയും 75-മുതൽ 78 ശതമാനം വരെ 'കാൽസിയം ഫോസ്ഫേറ്റും' ഉണ്ട്. ഇതു വളമായും മറ്റും ഉപയോഗിക്കുന്നുണ്ട്.

നൈട്രജോല്ലാദകവളങ്ങൾ—നൈട്രജൻ ചെടിയുടെ ഒരു പ്രധാന ആഹാരംഗമാണ്. ഈ മൂലകം ധാരാളം ചേർന്നിരിക്കുന്ന വളങ്ങൾ ചെടികളെ കൂടുതൽ ഫലഭൂയിഷ്ഠങ്ങളാക്കുന്നു. അമോണിയം സൾഫേറ്റ്, സോഡിയം നൈട്രേറ്റ്, കാൽസിയം സയനാമൈഡ്, രക്തം,

മാംസം, മുടി, കൊമ്പുകൾ മുതലായവ പ്രധാന നൈട്രജോല്ലാദക വളങ്ങളാണ്.

ഈ ഇനത്തിൽ പെട്ട വളങ്ങൾ ചെടിയുടെ ഇലകൾ സമൃദ്ധിയായി വളരുന്നതിനുപകരിക്കുന്നു. ക്യാബേജ്, വെററില, പുകയില, മൾബറി മുതലായ ചെടികൾക്ക് ഈ വളങ്ങൾ പററിയതാണ്.

'ലിക്ക് അമോണിയ'— 'അമോണിയ വാതകം' നിമ്നീകൃതവോർ ഒരു ഭിത്തിയോലുന്നമായി കിട്ടുന്ന ദ്രാവകമാണ് 'ലിക്ക്.' അതു അമോണിയം കാർബണേറ്റിനേറയും അമോണിയം അസറേറ്റിനേറയും ഒരു അശുദ്ധലേയിനിയാണ്. ഗാഢമായ ലിക്ക് അമോണിയായിൽ നിശ്ചിത അളവു വെള്ളമൊഴിച്ചാണ് അതു വളമായി ഉപയോഗപ്പെടുത്തുന്നത്.

പയർവർഗ്ഗത്തിൽ പെട്ട ചെടികൾ നൈട്രജോല്ലാദകവളം ധാരാളം ഉപയോഗിച്ചുവരുന്നുണ്ട്. ഈ ചെടികൾ ഭൂമിയിൽ ധാരാളമായി കൃഷിചെയ്തു പിഴുതെടുക്കാതെ ഉഴുതു ചേക്കുന്നു. ഈ ക്രിയയ്ക്ക് 'Green manuring' എന്നു പേർ പറയുന്നു.

അമോണിയം സൾഫേറ്റ്— നൈട്രജോല്ലാദകവളങ്ങളിൽ പ്രാധാന്യമുള്ള ഒന്നാണ് സൾഫേറ്റ്. തുടച്ചുതൊട്ട ഈ വളം ഉപയോഗിച്ചാൽ ദോഷഫലങ്ങൾ ഉണ്ടാകും. കാരണം, ഇതു മണ്ണിലുള്ള കുമ്മായഅംശത്തെ നശിപ്പിക്കുന്നു. അതുകൊണ്ടു ഇടയ്ക്കിടെ കുമ്മായവും ഈ വളത്തോടുചേർത്ത് ഉപയോഗിക്കണം. നിശ്ചിതവ്യാപ്തം നൈട്രജൻ-നൈട്രജൻ വാതകമിശ്രിതത്തെ, ഒരു നിശ്ചിത ഊഷ്മാവിലും സമ്മർദ്ദത്തിലും പ്രത്യേക രാസതന്ത്രരീതിയിൽ കടത്തിവിടുന്നു. തന്മൂലം 'അമോണിയ വാതകം' ഉണ്ടാകുന്നു. ഈ വാതകത്തെ സൾഫ്യൂറിക് ആസിഡിൽ ലായിനീകരിച്ചു 'അമോണിയം സൾഫേറ്റ്' വൻതോതിൽ നിമ്നീകുന്നു.

സോഡിയം നൈട്രേറ്റ്—വ്യാവസായികതോതിൽ ഈ ലവണം 'കലീച്ചി' എന്നു

ന്ന ധാതുവിൽനിന്നാണ് നിർമ്മിക്കുന്നത്. ഈ വളം ചെടികൾ വേഗം സ്വീകരിക്കുന്നു. ശലഭങ്ങൾമൂലം ചെറിയ ചെടികൾ കണ്ടുകൊണ്ടിരിക്കാൻ ഈ വളത്തിന് കഴിവുണ്ട്.

കാൽസിയം നൈട്രേറ്റ്—ലൈം സ്റ്റോണിൽ നൈട്രിക് അമ്ലത്തിന്റെ പ്രവർത്തനംകൊണ്ടാണ് കാൽസിയം നൈട്രേറ്റ് ഉണ്ടാകുന്നത്. ഈ വളം മണ്ണിന് വേണ്ട ലൈം പ്രദാനം ചെയ്യുന്നു.

കാൽസിയം സയനാമൈഡ്—തവിട്ടു കറുത്ത കറുത്തവെള്ളിൽ കൂടി വായു പ്രവേശിച്ചാണ് കാൽസിയം സയനാമൈഡ് നിർമ്മിക്കുന്നത്. കമ്മായത്തിന്റേയും കോക്കു എന്നു ഒരുതരം കരിയുടേയും സംയുക്തമാണ് കാൽസിയം കാർബൈഡ്. വൈദ്യുതശക്തിമൂലം പ്രവർത്തിക്കുന്ന അടുപ്പുകളിലാണ് ഈ സംയുക്തം നിർമ്മിക്കുന്നത്. 1200°C ഉഷ്ണാവിലാണ് പ്രവർത്തനം നടക്കുന്നത്.

പ്രവർത്തനഫലമായി ലഭിക്കുന്ന പദാർത്ഥം സൈനാമൈഡിന്റെയും ഗ്രാഫൈറ്റിന്റെയും മിശ്രിതമാണ്. ഇതിനെ 'നൈട്രോലിം' എന്ന് പേർ പറയുന്നു. 17 മുതൽ 20 ശതമാനംവരെ നൈട്രജൻ ഇതിലുണ്ട്. വെള്ളം ഒഴിച്ചു പ്രവർത്തിക്കാതെ കിടക്കുന്ന കാർബൈഡ് നീക്കംചെയ്യുന്നു.

പൊട്ടാഷ് വളങ്ങൾ—പൊട്ടാഷ് മുഖ്യമായി ഫെൽസ്പാർ, Mica എന്നീ ധാതുരൂപങ്ങളിലാണ് പ്രകൃതിയിൽ സ്ഥിതി ചെയ്യുന്നത്.

പൊട്ടാഷ് വളങ്ങൾ 'സ്റ്റാച്ച്' നിർമ്മാണത്തിൽ ചെടികളെ സഹായിക്കുന്നു. ചെടികളുടെ വേരും, കായ് മുതലായവയു

ടെ തുടങ്ങിയവയും ആകൃതിയിലും സാരമായ വ്യത്യാസം വരുത്താൻ പൊട്ടാഷ് വളങ്ങൾക്കു കഴിവുണ്ട്. പൊട്ടറൊ, ടൊമറൊ, സുഗർബീറ്റ്, ബാർലി മുതലായ ചെടികളുടെ പുഷ്പിയായ വളയ്ക്കും പൊട്ടാഷ് അത്യന്താപേക്ഷിതമാണ്.

ആദ്യകാലത്ത് ജർമ്മനിയിലെ സ്റ്റാസ്ഫർട്ട് ഖനികളിൽനിന്നാണ് പൊട്ടാഷ് ലഭിച്ചിരുന്നത്. വളങ്ങളുണ്ടാക്കാൻ പ്രധാനമായി ഉപയോഗപ്പെടുത്തിവന്നത്. സ്റ്റേയിൻ, അമേരിക്ക, പോളണ്ട് മുതലായ രാജ്യങ്ങളിലും പൊട്ടാഷ് ഖനികളുണ്ട്. പ്രകൃതിയിലുള്ള പൊട്ടാഷ് ഖനികളിൽ, സിൽവിനൈറ്റ്, കെയ്നൈറ്റ്, പൊട്ടാശിസം ക്ലോറൈഡ് മുതലായ പൊട്ടാഷ് ധാതുകൾ അടങ്ങിയിരിക്കുന്നു.

പൊട്ടാസിയം ക്ലോറൈഡ്, പൊട്ടാസിയം സൾഫേറ്റ്, പൊട്ടാസിയം നൈട്രേറ്റ് മുതലായ ലവണകൾ വളങ്ങളായി ഉപയോഗിച്ചുവരുന്നു.

ചാരം—സർവ്വസാധാരണമായ പൊട്ടാഷ് വളം ചാരമാണ്. ഏകദേശം 10 ശതമാനത്തോളം പൊട്ടാഷ് ചാരത്തിലുണ്ട്. ചാരത്തിൽ 'Potassium Carbonate' എന്ന സംയുക്തമായിട്ടാണ് പൊട്ടാഷ് സ്ഥിതിചെയ്യുന്നത്.

കൂട്ടുവളങ്ങൾ—വളങ്ങൾ കൂട്ടിച്ചേർത്ത് ഉപയോഗിക്കുന്നതുകൊണ്ട് പ്രത്യേക ഗുണങ്ങളുണ്ട്. ചെടിക്കാവശ്യമായ എല്ലാ അംശങ്ങളും കൂട്ടുവളങ്ങളിൽനിന്ന് ലഭിക്കുന്നു. മണ്ണിന്റെ ഫലഭൂയിഷ്ഠ അനുസരിച്ച് കൂട്ടുവളങ്ങൾ തയ്യാറാക്കി ഉപയോഗിക്കണം.

(മലയാളരാജ്യം)

റാൽ ബാക്കിംഗ് *

ശ്രീ. കെ. മധവക്കുറുപ്പ് എം.എ.

അടുത്ത കാലത്തു് സാമ്പത്തികമായ ആശയങ്ങൾക്കും പ്രവർത്തനങ്ങൾക്കും കൂടുതൽ പ്രാധാന്യം കല്പിച്ചുവരികയാണല്ലോ. സാമ്പത്തികസ്വാതന്ത്ര്യം കൂടാതെയുള്ള രാഷ്ട്രീയസ്വാതന്ത്ര്യം അർത്ഥശൂന്യമാണെന്ന് ജനങ്ങൾ മനസ്സിലാക്കിവരുന്നു. ജനകീയഭരണത്തെ, നാട്ടിലെ സാമ്പത്തിക-സാമൂഹ്യസ്ഥിതിയെ അഭിവൃദ്ധിപ്പെടുത്തേണ്ടതിനുള്ള ഒരു ഉപാധിയായിട്ടുമാത്രമേ കരുതേണ്ടതുള്ളൂ. ഇൻഡ്യയുടെ ഭാവി ഭരണഘടനാനിയമം കഴിഞ്ഞ ആഴ്ചയിൽ പാസ്സാക്കിയതോടുകൂടി നാട്ടുരാജ്യങ്ങളെ പേരിൽ അറിയപ്പെട്ടിരുന്ന പ്രദേശങ്ങൾ ഉൾപ്പെടെ ഇൻഡ്യൻ രാഷ്ട്രീയസ്വാതന്ത്ര്യം പരിപൂർണ്ണമായി സിദ്ധിച്ചുവെന്ന് നമുക്കു തൃപ്തിയടയാമെന്നുള്ളതുകൊണ്ട് മേലാൽ നമ്മുടെ ശ്രദ്ധ മുഴുവനും സാമ്പത്തികവും സാമൂഹ്യവുമായ അഭിവൃദ്ധിയിൽ സവിശേഷം കേന്ദ്രീകരിക്കാവുന്നതുമാണല്ലോ. ജനകീയ ഗവൺമെന്റുകളുടെ പരമലക്ഷ്യം സാധാരണക്കാരന്റെ ജീവിതത്തോടു് ഉയർത്തുകയാണെന്നുള്ളതു് പരക്കെ അംഗീകരിക്കപ്പെട്ടിട്ടുണ്ട്. രാഷ്ട്രത്തിന്റെ ധനാഗമമാർഗ്ഗങ്ങൾ വർദ്ധിപ്പിക്കുന്നതിലും പൊതുവെ സാമ്പത്തികാഭിവൃദ്ധി കൈവരുത്തുന്നതിലും ബാങ്കുകൾക്ക് അതിപ്രധാനങ്ങളായ കർത്തവ്യങ്ങളും കഴിവുകളുമുണ്ട്. കാഷ്വലുകോല്ലാഭങ്ങൾ വികസിപ്പിക്കുന്നതിനായാലും, പ്രകൃതിവിഭവങ്ങൾ മുഷണംപെയ്യുന്നതിനായാലും, വ്യവസായങ്ങൾ അഭിവൃദ്ധിപ്പെടുത്തുന്നതിനായാലും, എന്നുവേണ്ട ജീവിതസൗകര്യങ്ങൾ വർദ്ധിപ്പിക്കുന്നതൊരതു പ്രവർത്തനത്തിലും മൂലധനം അത്യന്താപേക്ഷിതമാണ്. ബാങ്കുകളുടെ മൗലികമായ ധർമ്മത്തിന് രണ്ടു വശങ്ങളാണുള്ളതു്. ഒന്നു ജനങ്ങളുടെ സമ്പാദനം

സങ്കതിയെ പ്രചോദനംചെയ്തും പ്രോത്സാഹിപ്പിച്ചും മൂലധനം സംഗ്രഹിക്കുക; മറെറൊന്ന്, ഇപ്രകാരം ശേഖരിക്കപ്പെടുന്ന മൂലധനത്തെ ദേശീയസമ്പത്തു വർദ്ധിപ്പിക്കുന്നതിന് അനുയോജ്യമായ പദ്ധതികൾക്കു ബുദ്ധിപൂർവ്വം വിനിയോഗിക്കുക എന്നിവയാണ്. കഷ്ടകൻറ ഐശ്വര്യനില ഉയർത്തുന്നതിനുള്ള ഗ്രാമോദ്ധാരണരീതികളിൽ ഒന്ന്, അധരംകു ജീവിതവൃത്തിയും ആദായമാർഗ്ഗവും ഉണ്ടാക്കികൊടുക്കുന്നതും ഉല്പാദനങ്ങൾ വർദ്ധിപ്പിക്കുന്നതും ഈ ഇച്ഛസ്വലമായ വ്യാപാരസമ്പ്രദായങ്ങളെ പോഷിപ്പിക്കുന്നതുമായ ഒരു ഗ്രാമീണ വ്യവസായപദ്ധതിയുടെ ആവിഷ്കരണമാണ്. മിതവ്യയശീലം സാമാന്യജനങ്ങളിൽ പരിപോഷിപ്പിക്കുകയും സ്വന്തം ആസ്തികളെ ബുദ്ധിപൂർവ്വം വിനിയോഗിക്കുന്നതിൽ അവരെ സഹായിക്കുകയും മിച്ചമുണ്ടാകുന്ന മുതൽ ശേഖരിച്ച് പ്രാദേശിക മൂലധനം രൂപീകരിച്ച് ശക്തിപ്പെടുത്തുകയും ചെയ്യേണ്ടതു് ഒരു സുപ്രധാന കർത്തവ്യമാകുന്നു ഗ്രാമാന്തർഭാഗങ്ങളിൽ, നിക്ഷേപിക്കപ്പെടാതെയുള്ള മുതൽ ഇപ്ലോയ്മുണ്ട്. ആ മുതൽ മുഷണം ചെയ്യുന്നതിന് ഒരു നിശ്ചിതപദ്ധതി ഉണ്ടെങ്കിൽ, അതു വിജയിക്കുന്നതെന്നു ചെയ്യും. നിക്ഷേപണാസക്തിയും മിതവ്യയശീലവും ഉത്തേജിപ്പിക്കുന്നതിന് ഉപയുക്തമായ ആകർഷണങ്ങൾ നൽകിയാൽ മതിയാകും.

ഗ്രാമപ്രദേശങ്ങളിൽ ബാങ്കിങ്ങിന്റെ വികസനത്തിനും അഭിവൃദ്ധിക്കും ആവശ്യമായ നിശ്ചേദങ്ങൾ സമർപ്പിക്കുവാനായി ഇൻഡ്യാ ഗവൺമെന്റിൽനിന്നും ഒരു വിദഗ്ദ്ധാക്ഷമ്മന്ററിയിലെ നിയമിച്ചിട്ടുള്ളതും ജപ്പാൻ മാതൃകയിൽ കടിൻ വ്യവസായങ്ങൾ വികസിപ്പിക്കുന്നതിന് വിപുലമായ ഒരു പദ്ധതി ആസൂത്രണം

* കേരള സർവീസ് ബാങ്കിന്റെ തിരുവനന്തപുരം ശാഖ ഉൽഘാടനം ചെയ്യുവാൻ കൂടിയ സമ്മേളനത്തിൽ ചെയ്ത പ്രസംഗത്തിന്റെ ഒരു ഭാഗം.

ചെയ്തുവരുന്നതും സാമ്പത്തികപ്രശ്നത്തിന്റെ പരിഹാരത്തിനുള്ളതെന്നു ബുദ്ധിപൂർവ്വമായ രണ്ടു പരിപാടികളാണ്. ഗ്രാമീണ ബാങ്കിങ്ങ് കമ്മററി പ്രസിദ്ധപ്പെടുത്തിട്ടുള്ള പ്രശ്നാവലിയിൽ ഉൾപ്രദേശങ്ങളിലേയ്ക്ക് ബാങ്കിങ്ങ് സൗകര്യങ്ങൾ പ്രവഹിക്കുന്നതിന് ഗവണ്മെന്റു ചെയ്യേണ്ടുന്ന സഹായത്തിന്റെ രീതിയും തോതും ഉൾപ്പെടുത്തിക്കൊണ്ടു നാല്പ്പതാം വർഷം മുതൽ പാലിയോളം വരെ പരിപാടികൾ നടന്നിട്ടുണ്ട്. പ്രശ്നാവലിയിൽ സൂചിപ്പിച്ചിരിക്കുന്നത് ഗ്രാമപ്രദേശത്തു ബാങ്കുശാല നടത്തുന്നതിനുള്ള ചിലവിൽ ഓരോ ഗവണ്മെന്റിൽനിന്നും ഗ്രാൻറായി നൽകുന്നത് യുക്തമായിരിക്കുമെന്നാകുന്നു. സർക്കാർ വജനാവകാശിയിൽ ഇപ്പോൾ ചെയ്തുവരുന്ന ജോലികളിൽ ചില ഭാഗങ്ങൾ ബാങ്കുകളെക്കൊണ്ട് നിർവ്വഹിക്കാമെന്നുള്ള പ്രതീക്ഷയും മേല്പറഞ്ഞ വിദഗ്ദ്ധ കമ്മിറ്റിക്കുള്ളതായി കാണാം.

കുടിൽവ്യവസായപോഷണത്തിന് ബാധകമായി നിൽക്കുന്ന ഒരു പ്രധാന പ്രതിബന്ധം മൂലധനത്തിന്റെ അഭാവമാണ്. ഒരു വ്യവസായിക്ക് ആവശ്യമുള്ള ചെറിയ മൂലധനം കിട്ടുന്നതിന് ഇപ്പോൾ തീരെ സൗകര്യങ്ങളില്ല. ഈ കൃത്യം ഗ്രാമബാങ്കുകൾക്ക് നിർവ്വഹിക്കാവുന്നതാണ്.

കേന്ദ്രഗവണ്മെന്റിന്റെ ഈടുപരിപാടികളുടെ പ്രത്യാഘാതങ്ങൾ കാലാന്തരത്തിൽ തിരുവിതാംകൂർ-കൊച്ചി ഐക്യ സംസ്ഥാനത്തും ഉണ്ടാകാതിരിക്കയില്ലെന്ന് നമുക്കുശരിക്കാം.

പരിഷ്കൃതരാജ്യങ്ങളിൽ ബാങ്കിങ്ങ് വ്യവസായം വിവിധരൂപങ്ങളിൽ പുരോഗമിച്ചിട്ടുണ്ട്. നിക്ഷേപങ്ങൾ ചുരുങ്ങിയ പലിശയ്ക്ക് സ്വീകരിക്കുകയും അവ കൃത്യസമയത്തു് മടക്കിക്കൊടുക്കുകയും നല്ല ഊടിന്മേൽ ഏറ്റവും കൂടുതൽ പലിശക്ക് കടം കൊടുക്കുകയും ഈ വിധത്തിൽ എത്രയും കൂടുതൽ ആദായം ഓഹരിക്കാക്കു് സമ്പാദിക്കുകയും ചെയ്യുക എന്നതല്ല ബാങ്കുക

ളുടെ കർത്തവ്യസമുച്ചയം. പണയത്തിന്മേൽ പണം കടം കൊടുക്കുകയും പണയം വിറു് മുതൽ ഈടാക്കുകയും ചെയ്യുക എന്നതു് ഒരു ബാങ്കിന്റേയും സാധാരണ ജോലിയായി കരുതുവാൻ നിവൃത്തിയില്ല. തക്കതായ ഉറപ്പിന്മേൽ കൊടുത്ത വായ്പയായിരുന്നാലും അതു് സമയത്തു മടക്കിക്കിട്ടാതെ കുടിശ്ശികയായിത്തീരുന്നതു് ബാങ്കുടെ വിവേചനക്കുറവിന്റെ ലക്ഷ്യമായി കരുതപ്പെടുന്നു. ബാങ്കിംഗ് വ്യവസായം ഇപ്പോൾ ഒരു സമുദായസേവനമായിട്ടാണ് ഗണിച്ചുവരുന്നതു്. ഇതാണ് ബാങ്കുകൾ ദേശീയമാക്കണമെന്നുള്ള മുൻവിളിയുടെ പ്രധാന കാരണം. ഈ തത്വങ്ങളെ മനസ്സിൽ വച്ചുകൊണ്ടാണ് കേരള സർവീസ് ബാങ്ക് ഗ്രാമപ്രദേശങ്ങളിൽ ശാഖകൾ തുറക്കുന്നതിനും സാമാന്യജനങ്ങളുടെ ഇടയിൽ ബാങ്കിടപാടുശീലവും ചെയ്തുകൊടുക്കുകയും ഉപജോഗിക്കുന്ന സ്വഭാവവും വളർത്തുന്നതിനും പ്രാധാന്യം നൽകുന്നതു്.

ഈ സാഹചര്യങ്ങൾകൊണ്ടു മാത്രം ഞങ്ങൾ തൃപ്തിപ്പെട്ടിട്ടില്ല. ബാങ്കിങ്ങ് ഒരു കലയും ഒരു ശാസ്ത്രവും കൂടിയതാണ്. പ്രത്യേക പരിശീലനംകൊണ്ടു മാത്രമേ അതിൽ വൈദഗ്ദ്ധ്യം സിദ്ധിക്കുകയുള്ളു. തുറക്കുവാൻ ഉദ്ദേശിച്ചിരിക്കുന്ന ശാഖകളുടെ ഭരണം നടത്തുവാൻ വേണ്ടി ബി. കോം മുതലായ സാങ്കേതികപരീക്ഷാ യോഗ്യതകളുള്ള യോഗ്യന്മാരായ യുവാക്കന്മാരെ തിരഞ്ഞെടുത്തു് പ്രായോഗിക പരിശീലനം നൽകുന്നതിന് ഏർപ്പാടുകൾ ചെയ്തുവരുന്നുണ്ട്.

കൂടുതൽ ബാങ്കുകൾക്കും ശാഖകൾക്കും ഇന്നാട്ടിൽ ധാരാളം പ്രവർത്തനസാധ്യതകൾ ഉണ്ടു്. അമേരിക്കയിൽ മൂവായിരം ആളുകൾക്ക് ഓരോ ശാഖാബാങ്കു വീതം സേവനം നടത്തുന്നു. തിരുവിതാംകൂറിൽ അറുപതു ലക്ഷത്തിൽപരം ജനങ്ങൾക്ക് ഇരുനൂറ്ററിയൻപതു് ബാങ്കിംഗ് സ്ഥാപനങ്ങൾ മാത്രമാണുള്ളതു്. ഒരാളുടെ ശരാശരി വരവിന് അമേരിക്കയിലും ഇന്ത്യയിലുമുള്ള അന്തരം ഗണിച്ചാലും ഇ

പ്രോൾ ഇവടെയുള്ള ബാങ്കിംഗ് സൗകര്യങ്ങൾ തീരെ അപര്യാപ്തമാണെന്നു തീർച്ചയാണ്. ജനങ്ങളുടെ ഇടയിൽ ബാങ്കിംഗ് പാട്രണീലം വളർത്തിക്കൊണ്ടു വരേണ്ടതു് അതിപ്രധാനമായ ഒരു ആവശ്യമാണ്. എന്തെന്നാൽ, ബാങ്കുകൾ വെറും പണ വ്യാപാരക്കാർ മാത്രമല്ല, — പണം ഉണ്ടാക്കുകയും അതിനെ ഉപയോഗപ്രദമായ സരണികളിൽ കൂടി വിതരണം നടത്തുകയും ചെയ്യുന്ന മഹത്തായ സാമ്പത്തിക സ്ഥാപനങ്ങൾ കൂടിയാണ്. സമ്പാദ്യങ്ങൾ — അവ നിർവ്വഹണവിധിയോ ഐക്യീകരണ ആയിക്കൊള്ളട്ടെ — എത്ര വേഗത്തിൽ വളർക്കുന്നുവോ അത്രയും വേഗത്തിൽ ഗവണ്മെന്റിന് മൂലധനച്ചിലവു് വിപുലമാക്കാവുന്നതാണ്. എന്തെന്നാൽ, സമ്പാദ്യങ്ങളുടെ സമാഹരണം ഭണ്ഡാരത്തിലേക്കുള്ള ധനാഗമമാർഗ്ഗങ്ങൾ തുറക്കുന്നതാണ്.

വരുന്ന എന്താനും മാസങ്ങൾക്കുള്ളിൽ — ഈ ഐക്യസംസ്ഥാനത്തിന്റെ ഇന്ത്യയുമായുള്ള സംയോജനം പൂർത്തിയാക്കുമ്പോൾ — ഈ പ്രദേശത്തെ ബാധിക്കുന്ന ബാങ്കിംഗ് നിയമത്തിനും സാരമായ പല മാറ്റങ്ങളും വന്നുചേരുന്നതാണ്. ഇന്ത്യയിലെ പുതിയ ബാങ്കിംഗ് നിയമത്തിൽ ബാങ്കുകളുടെ പ്രവർത്തനങ്ങളെ നിയന്ത്രിക്കുന്നതിനുള്ള വിപുലമായ അധികാരങ്ങൾ റിസർവ് ബാങ്ക് ആഫ് ഇന്ത്യയ്ക്കു നൽകിയിരിക്കുന്നു. പക്ഷേ, രാഷ്ട്രീയമണ്ഡലത്തിലെന്നപോലെ ഈ കാര്യത്തിലും അമിതമായ അധികാരകേന്ദ്രീകരണം വരുത്തിക്കൂടിയിട്ടുണ്ട്. അംഗങ്ങളുടേയും നിക്ഷേപകന്മാരുടേയും രക്ഷയ്ക്കുവേണ്ടിയുള്ള പല ചട്ടങ്ങളും അതിലുണ്ട്. പുതിയ ബാങ്കിംഗ് നിയമം, അധികൃതം, വാഗ്ദാനം, പിരിഞ്ഞുകിട്ടിയതു് എന്നീ ഇനങ്ങളിലുള്ള മൂലധനങ്ങൾ തമ്മിൽ ഒരു നിശ്ചിതാനുപാതം വേണമെന്നു നിഷ്കർഷിച്ചു് ശക്തമായ ഒരു മൂലധന വിധാനത്തിനു വേണ്ട ഉറപ്പു നൽകുന്നുണ്ട്. അതു് ഓരോ ബാങ്കിന്റേയും പ്രവർത്തനത്തിനുള്ള പരിധികൾ നിർണ്ണയിക്കുന്നു. വീതി

ക്കാവുന്ന ലാഭവിതരണിന്റെ ശതമാനം ക്ലിപ്തപ്പെടുത്തുന്നു. മാനേജ്മെന്റിന്റെ പ്രതിഫലം നിശ്ചയിക്കുന്നതിൽ ഇടപെടുന്നതിനും, നിക്ഷേപകരുടെ താല്പര്യങ്ങൾ പരിരക്ഷിക്കുന്നതിനും ഡയറക്ടർമാർ വാസ്തവം എടുക്കുന്നതിനെ തടയുന്നതിനും അതിൽ വ്യവസ്ഥകളുണ്ട്. ഒരംഗത്തിന്, ഒരു ബാങ്കിൽ എത്ര ഓഹരികൾ ഉണ്ടെങ്കിലും അഞ്ചു ശതമാനത്തിൽ കൂടുതൽ സമ്മതിദാനാവകാശം നിഷേധിക്കപ്പെട്ടിരിക്കുന്നു. ഒരു ബാങ്ക് ഡയറക്ടർ മരണകാലത്തെ ഡയറക്ടർമാർ പാടില്ലാത്തതാണ്. റിസർവ് ബാങ്കിൽനിന്നും പരിശോധനകൾ നടത്തുന്നതിനും സഹായങ്ങൾ നൽകുന്നതിനും അതിൽ വ്യവസ്ഥകൾ ചെയ്തിട്ടുണ്ട്. ആ നിയമം ഇവിടെയും നടപ്പിലാക്കുമ്പോൾ നികുതിമണ്ഡലത്തിൽ ഇതുവരെ നമുക്ക് അനുഭവപ്പെട്ട വരുന്നതുപോലെ അസ്വാധീനതകളും ബാധ്യതകളും ചുമത്തുക മാത്രമായിരിക്കയല്ല ഫലമെന്നും അതിലെ അനുകൂലഭാഗങ്ങളിൽ ചിലതെങ്കിലും ഈ നാട്ടിന്റെ നന്മയ്ക്കു് വന്നുചേരുമെന്നും ആശിക്കാം.

ഐക്യനാട്ടിലെ ഗവണ്മെന്റ് അതിന്റെ സേവിംഗ്സ് ബാങ്ക് പ്രവർത്തനം മൂലം ഇവിടത്തെ ഏറ്റവും വലിയൊരു ബാങ്കായി തീർന്നിട്ടുണ്ട്. ബാങ്കുകളെല്ലാം സുപ്രധാനമായ ദേശസേവനം നടത്തുന്നു എന്നുള്ള വസ്തുതയെ അംഗീകരിച്ചു് ഗവണ്മെന്റിന് അവയെ പലവിധത്തിലും സഹായിക്കാവുന്നതാണ്. പക്ഷേ അതൊരു സ്ഥാപനത്തിന്റെ കാര്യത്തിൽ ആദായനികുതിയിൽനിന്നും ഒഴിവാക്കിയോ മറ്റൊന്നിന് ഒരു സ്ഥിരനിക്ഷേപം നൽകിയോ പ്രത്യേകത കാണിക്കാതെ, പൊതുവെ ഐക്യരൂപമുള്ള വിധത്തിലുള്ള സഹായമായിരിക്കണം.

ഈ നാട്ടിൽ ബാങ്കിംഗ് പ്രവർത്തനം അടിവുലിപ്പെടുത്തുന്നതിലേയ്ക്കു് ഗവണ്മെന്റ് ചെയ്യാവുന്ന ഒന്നരണ്ടു് സംഗതികളെപ്പറ്റി ഇവിടെ പറയുന്നത് അസംഗതമായിരിക്കുമെന്ന് വിചാരിക്കുന്നു. സ്വകാര്യവ്യക്തികൾ പണം കൊടുക്കുന്നതി

നെ നിയന്ത്രിക്കാൻ നിയമം നിർമ്മിക്കുന്നതിനുള്ള നടപടി എത്രയും വേഗത്തിൽ ആരംഭിക്കുന്നത് നന്നായിരിക്കും. കാഷി കവായയെ സംബന്ധിച്ചിടത്തോളം പ്രത്യേകിച്ചും ബാക്കിങ്ങ്സ്റ്റീയെ അഭിപ്രതിപ്പെടുത്തുന്നതിന് പൊതുവേയും ഇങ്ങനെയൊരു നിയന്ത്രണം ആവശ്യമാണ്. പണം കടം കൊടുക്കുന്നത് തൊഴിലാളിയിടുള്ളവർ ലൈസൻസ് വാങ്ങണമെന്ന നിർബന്ധിക്കണം. നിശ്ചിത ഫാറങ്ങളിൽ അവർ കണക്കുകൾ സൂക്ഷിക്കണമെന്നും രസീതുകൾ കൊടുക്കണമെന്നും കാലാകാലങ്ങളിൽ വാസ്തവക്കാരെ കണക്കു ബോധ്യപ്പെടുത്തണമെന്നും നിയമം ഉണ്ടാകേണ്ടതാണ്. പരമാവധി പലിശനിരക്ക് നിശ്ചിതമാക്കണം. അമേരിക്കയിലെ സ്റ്റാർ ലോൺസ് ലജിസ്ലേഷൻ പ്രകാരമുള്ള വ്യവസ്ഥകൾ അനുസരിച്ച് ഇത്തരം വാസ്തവകൾ പരിശോധിക്കുന്നതിന് ഗവണ്മെന്റിന്റേതാണ് ഒരു പദ്ധതി ആവശ്യമാണ്. ഉത്തമവിശ്വാസത്തോടുകൂടി പ്രവർത്തിക്കുന്ന ഉത്തമസ്റ്റാർക്കും അധമസ്റ്റാർക്കും രക്ഷാപ്രവസ്ഥ നൽകേണ്ടതാണ്. കർഷകൻ സഹായകവും ചെറിയ ബാങ്കുകൾക്ക് പ്രയോജനപ്രദവുമായ “തിരുവിതാംകൂർ വെയർഹൗസ്സ് ആക്ട്” എന്നപേരിൽ ഒരു നിയമം ഇവിടെയുണ്ട്. നിയമാവലിയുടെ അലങ്കാരത്തിനു മാത്രമേ പ്രത്യേക ഉദ്യോഗസ്ഥന്റെ സേവനങ്ങൾക്കുശേഷവും അത് ഉപകരിക്കുന്നുള്ളൂ. നിയമം ഉണ്ടാക്കിയതുകൊണ്ടുമാത്രം പോരാ; പ്രവർത്തനത്തിനു വേണ്ട കാര്യങ്ങൾക്കുടി ചെയ്യേണ്ടതാണ്. ലൈസൻസിങ്ങ് ഏപ്പാർട്ട് പ്രവർത്തനത്തിൽ കൊണ്ടുവരുന്നതിനും അതിന്റെ പ്രവർത്തനം കാലാകാലങ്ങളിൽ പരിശോധിച്ച് ഗ്രാമീണ ധനസഹായ പ്രസ്ഥാനത്തിൽ വരുത്തേണ്ട ഭേദഗതികൾ നിർദ്ദേശിക്കുന്നതിനും വേണ്ട വ്യവസ്ഥകൾ ചെയ്യേണ്ടത് അത്യാവശ്യമാണ്. പണ

മിടപാടുകൾ നടത്തുന്ന വ്യക്തികൾ ഗ്രാമപ്രദേശങ്ങളിലെ ധനസഹായ സ്ഥാപനത്തിൽ കാര്യമായ പുരോഗതികൾ വഹിച്ചുവരുന്നു. മേലിലും അവർ ചുമതല വഹിക്കേണ്ടതായിരിക്കും. ആ ഇടപാടുകളും അവയിലെ കക്ഷികളും സത്യസന്ധതയും വിശ്വാസ്യതയും പാലിക്കേണ്ട ആവശ്യമുണ്ട്. ഇങ്ങിനെയുള്ള ഒരു നിയമം ബാക്കിങ്ങ്സ് വ്യവസായം അഭിപ്രതിപ്പെടുത്തുന്നതിനും സുഗമമാക്കുന്നതിനും ഉതകുന്നതാണ്. ഇത്തരം നിയമങ്ങൾ പല പ്രവിശ്യകളിലുമുണ്ട്. ഇല്ലാത്ത സ്ഥലങ്ങളിൽ നിയമങ്ങൾ ഉണ്ടാക്കുന്നതിന് ആലോചനയുമുണ്ട്.

മറ്റൊരു സംഗതി ഈ അവസരത്തിൽ പ്രസ്താവിക്കാനുള്ളത്, തിരുവനന്തപുരത്ത് ഒരു ബാങ്കേർസ് ക്ലിയറിങ്ങ് ഹൗസ്സ് സ്ഥാപിക്കേണ്ട ആവശ്യത്തെപ്പറ്റിയാണ്. ഗവണ്മെൻറു സഹായത്തിൽ വളർന്നുവരുന്ന ട്രാവൻകൂർ ബാങ്കിന് ഇതുചെയ്യാവുന്നതാണ്. ഇതുപോലുള്ള ക്ലിയറിങ്ങ് ഹൗസുകൾ ആലപ്പുഴ, കോട്ടയം, കൊല്ലം, ആലുവാ എന്നീ വാണിജ്യ-വ്യവസായ കേന്ദ്രങ്ങളിലും സ്ഥാപിക്കാവുന്നതാണ്.

കമ്പനികൾക്ക് പൊതുവെ അസൗകര്യം നേരിടുവിക്കുന്നതും എന്നാൽ താരതമ്യേന വലിയ പ്രാധാന്യമില്ലാത്തതുമായ മറ്റൊരു സംഗതി, ഓഫീസുകൾക്കുള്ള സ്റ്റാമ്പുകൾ കിട്ടാനുള്ള വൈഷമ്യമാണ്. അനേകായിരം എണ്ണം എളുപ്പത്തിൽ ഇവിടെത്തന്നെ അച്ചടിച്ചുണ്ടാക്കാവുന്നതും ഗവണ്മെൻറിലേക്ക് നല്ലൊരു വരുമാനമുണ്ടാക്കുന്നതുമായ ഈ ചെറിയ കടലാസ്സുകണക്കുകൾ വേണ്ടവോളം തയ്യാറാക്കി എല്ലാ ഖജനാവുകളിൽനിന്നും വീല്ക്കാൻ എപ്പാർട്ട്മെന്റുവാൻ എന്താണ് തടസ്സങ്ങളെന്നു മനസ്സിലാകുന്നില്ല.