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THE ALL-INDIA VILLAGE INDUSTRIES ASSOCIATION

SCIENCE AND PROGRESS

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BY

J. C. KUMARAPPA



MAGANVADI
WARDHA C. P.
1949

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THE ALL-INDIA VILLAGE

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SCIENCE AND PROGRESS

Home Economics Dept

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PREFACE

A number of articles bearing on the subject which have appeared in the "Gram Udyog Patrika" and the "Harijan" are collected together in this pamphlet in compliance with requests from readers. At present many, especially youths, are carried away by the flaunting of high sounding terms from public platforms. Science, progress, up-to-dateness, use of machinery, material wealth are all attractive and rightly so. Steel is good and amoral. When it is used to cut a fruit its use is commendable but when used to stab another fellow being to death, it is a misapplication of a good instrument. Similarly all our actions are to be judged by their reaction on our fellow-men. If the knowledge obtained from science is used in such a way as will harm our fellowmen, it is an improper use of a possible good medium. The purpose of this pamphlet is to indicate how real progress of mankind can be conditioned by the proper use of Science.

8th January, 1948. }
Maganvadi, }
Wardha, C. P. }

J. C. Kumarappa.

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EX 2

SCIENCE & PROGRESS

Part I

I

WHAT IS PROGRESS ?

The idea of spreading largescale industries seems to be associated with being up-to-date, scientific and progressive. Correspondents often harp on this and enquire if the discouragement of textile mills and banning of rice mills are not putting the clock back. Hence it is profitable to spend a few moments to ponder over what is progress and what is scientific.

Today, the public may be made to believe anything provided they are told often enough what to believe. Propaganda has become a science and is ousting all individual thought. Even education in our colleges and schools is taking the form of promulgation of undigested half truths. When rightly understood, science is the basis of all village industries, and village industries afford the fullest scope for scientific research and application.

WHAT IS SCIENCE ?

Science is not the creation of man. Nature works in well-defined grooves according to immutable laws. When man understands these laws and reduces them to a system of knowledge, we call it science. It follows, therefore, that any course of action to be termed scientific should conform to nature in all its bearings and where we deviate from nature, to that extent we are unscientific. Man may understand vaguely the lines on which nature works, and makes use of that partial knowledge for his own purpose, deviating by so doing from the course ordained by nature. Such deviation will lead ultimately to his own destruction because he himself

is a product of nature. Destruction so caused may be at his own hands or through mala-pplication of a partial understanding.

PROGRESS

Progress signifies both the search after knowledge and truth as found in nature and its application to satisfy human needs. In the measure in which we are able to pull alongside nature's dictates, we shall be progressing in the right direction. But in so far as we are pulling against the course of nature, we shall be creating violence and destruction, which may take the form of social conflicts, personal ill-health and the spread of anti-social feelings, such as, hatred, suspicion and fear. From these symptoms we shall know whether we are progressing scientifically or not. If our course of action leads to goodwill, peace and contentment, we shall be on the side of progress, however little the material attainments may be, and if it ends in dissatisfaction and conflict, we shall be retrogressing, however much in abundance we may possess material things.

ECONOMIC ACTIVITY

The activity of man to satisfy his elementary needs must therefore, not merely produce the material goods but should also be conducive towards the growth and development of his own personality. When a man eats food it does not only satisfy his palate but replenishes the waste products of his body, maintains it in good condition and 'allows for growth and further development. If the food that he ate only satisfied the palate without contributing to the two other aspects of his needs, it will be of no use. If a person drank water sweetened by saccharin all the time, however much he may like the sweet taste, he cannot enjoy good health and strength as all the elements necessary for his body building, maintenance,

replacement of wastage are not present in proper proportions. Taste is a good thing but it is not all. The main function that food plays is performed after it has left our palate. It is the manner in which the food gets assimilated in the body that is going to tell ultimately. Similarly, work also must not be judged by its outward appearance, nor by the quantity of things produced. Work should develop the human personality and be as food to all the human faculties. When we, through greed or false notions or a wrong sense of proportion, interfere with nature hoping to obtain short-cuts, we generally end up by being wasteful. Nature does not believe in short cuts. The mills of God grind slowly. Hence in our hurry, we often bring destruction on our heads and we imagine such quick results to be a sign of progress.

FOOD

For instance, nature packs up all nutritious articles, *e. g.* foodgrains, fruits, eggs, etc. carefully in such a way that the ingredients are kept intact and in proper proportion as will be necessary for the users. But when we destroy nature's packing we create counter influences which also destroy the value of food.

Rice, to cite one example, is packed up well in the husk coated with bran and equipped with pericarp and the grain. When this is to be eaten all that we have to do is to dehusk the rice. Such dehusked rice, because of its nutritive nature, will be attacked by weevils, vermins, rats, etc. Therefore, when we require rice we should dehusk what is needed at the moment and keep the rest as paddy. Then alone we get the whole benefit from eating the cereal. But man in his hurry uses a rice mill, and as he cannot store rice when dehusked, he proceeds to polish it and takes away all its nutritious elements

By so doing he no doubt increases the storage properties of rice but at the cost of its food value. This is an instance in which human interference with nature is thoroughly unscientific and injures man. Hence, rice mills are against progress and however skilfully the mechanism may have been devised, it is unscientific in the true sense.

HUSBANDING OF RESOURCES

A scientific use of resources should mean that we get the fullest benefit out of what we find around us. Man, in his eagerness to use mechanical devices, is often irrational in the utilization of resources. For instance, if paper is to be made out of bamboo by the simple hand process, we do not use bamboos cut fresh from the forest. The bamboos in the forest, when they are first cut, are used in various ways for roofing, for being made into mats, sieves, baskets and other household articles and then, when they have served their term as such the broken and used-up bamboo pieces are converted into pulp and paper is made from it.

But the so-called scientific industrialist cannot afford to work on this basis, as his machines are to be kept going all the time; so in his hurry he has to get the tender bamboos from the forest and feed them in his mills to be converted into paper. For this purpose, he has to cultivate forests of bamboos, directing human energy into lines which were totally unnecessary in the former case. Hence, the mill process of making paper as we have shown, is thoroughly unscientific and wasteful in the utilization of natural resources.

Similarly, if we have to utilize as food the nutritious elements found in nature, we may get *gur* from palm trees that grow wild on uncultivable lands and obtain the whole

benefit of the sap, minus the water which it contains, along with sugar in a digestible form, and various minerals and salts.

But man, in his anxiety to use his knowledge, puts up sugar mills, converts good lands which may be used for cultivation of cereals into sugar-cane growing lands and then the sugar-cane is converted into sugar, wasting bulk of the minerals and salts in the molasses, which are thrown out as unfit for human consumption, and from which he prepares rum and gin to poison the people and to acquire for himself the money they possess.

Even if sugar be required to be produced by hand, the *rab* prepared from palm juice can be centrifuged, and having obtained the sugar, the molasses left can now be converted into edible *gur* rich in minerals and salts. Molasses produced from the sugar mills, as they are affected by the use of sulphur compounds in the processes, are not fit for human consumption and have to be wasted or converted into intoxicating drinks as stated above.

Here again we see that sugar mills are thoroughly unscientific and wasteful of human resources. They, like the rice mills, are only to satisfy the greed for accumulation of wealth by individuals at the cost of nutritious food products found in nature.

UTILIZATION OF RESOURCES

In our quest for ways and means of satisfying our need we have to take into consideration the resources available to us and make the best use of them possible. It will be unscientific to use coal for fuel where it is not available and where crude oil can be easily obtained. Similarly, where coal is available and where no firewood is available, it would be senseless to bring firewood from distant places for purposes

of fuel. In the same manner, where human energy is available cheaply and in abundance, it will be irrational to obtain other motive forces from distant places. In India, where people are suffering from unemployment and lack of occupation, to produce our needs to resort to mill production, which ultimately spreads unemployment, is unthinkable. From this point of view, hand spinning, however slow it may be, is scientific and in line with human progress, while textile mills are irrational and spell ruin to the people.

PERVERSION OF TASTE

Through propaganda people's natural taste is perverted. They are made to believe smell and colour are to be avoided. They may be taught soon to hold that paper roses are better than natural ones as the latter do not "stink". The best example of this type of perversion for business purposes is the present drive to popularize *vanaspati ghee*. Here the mill prostitutes scientific knowledge to deodorize and decolourize the natural oil, to substitute nutritionally inferior oils for the traditionally used ones, to solidify vegetable oils while lowering or destroying their digestibility. They render all this disservice at an enhanced price. Is this not taking liberties with nature, science and progress? Do we not deserve it if in return nature visits us with blindness, loss of powers of growth and reproduction? This is industrialization in all its nakedness. Such is what passes for science and progress today, heralding their advent by highly paid advertisements, exploiting the ignorance of the people.

MACHINES AND TOOLS

This does not mean that there is no room for machines. Where standardization and regimentation of labour are called for, the use of largescale machines is indicated. Where

precision tools are to be made and standardized articles are essential, then production of these through machines will be necessary. But in consumption goods duplication and standardization are not of the very essence of their being. A comb may be made of horn by hand; but no two combs so made will be precisely alike. There is no purpose in standardizing such articles. Hence making combs from plastics is not called for. Similarly there are many articles in common use which do not call for standardization. On the other hand, most consumption goods call for the catering of individual need and taste. In such cases, only cottage and village industries can answer the purpose. When a man has to be fitted with a pair of shoes, the shoes have to be made for his feet, even so as to conform to any deformities that he may possess. Such making of shoes for a particular person's feet is scientific and will help the shoe-maker to use his resourcefulness and ingenuity to meet the need and thus help him to develop his capacity; while standardized shoes, though they may produce the articles in abundance, cannot be said to be thoroughly scientific, in so far as they are not calculated to fit any particular foot exactly. So largescale production of shoes, as compared with the work of the *mochi*, is again unscientific and so against progress.

VIOLENCE AND DESTRUCTION

In the last two generations we have known the results of mechanical production of standardized goods. The raw materials are needed in large quantities and they have to be collected from the four corners of the world and the finished products have to be assured of a definite market and for these the ocean routes have to be kept clear and safe. These conditions have brought about the two catastrophic global wars. In the course of these wars, much of the human produc-

tion and skill has gone into destruction. Any war is definitely against progress, it turns men back to the jungle and so can be termed unscientific. Since our activities to satisfy our human needs have culminated in these global wars, they are unscientific and retrogressive.

CONCLUSION

Therefore, when we attempt to plan production in our country to satisfy our needs, we have to be careful to choose the most scientific methods and the most progressive ways. We must remember that production of a multiplicity of goods is not synonymous with progress, nor is destruction a sign of science. Attainment of quick results is not conducive to the production of culture. Nature works in mysterious ways and demands its own time. No man in a hurry can be either progressive or scientific. We need patience and we need a ballast to our lives. This we can find only through satisfying our needs by village industries and decentralized production.

Large scale industries may be used as a necessary evil, as has already been referred to above, in the production of tools and machines needed for cottage and village industries and provision of basic raw materials such as sulphuric acid, steel, etc. It can also provide natural monopolies such as, communications, means of transport, public utilities like water and power. Anything more than this will spell ruin and destruction to humanity. It calls for great care and forethought to be able to judge. However, we cannot resort to centralized methods of production in the satisfaction of our daily needs. Wherever there is a doubt it is safer to fall back on the decentralized methods of production. Hence, we hold that the proper application of science and the way to real progress lies in resorting to village and cottage industries to satisfy our daily needs.



II

TRAVEL OR TRANSPORT ?

As days go on it seems travelling by air is becoming more and more common amongst at least the rich. All manner of means are being used to popularize and extend this service. Hence it becomes necessary for us to study the place of Air Travel in society.

The phrase 'a much travelled man' connotes generally the significance of travelling. We expect such a person to have come in contact with all sorts and conditions of men and things, and, therefore, through his intelligent approach to other people's lives, we expect such a person to be broad-minded, well-informed and cultured. Travelling, therefore, has various advantages attached to it. In ancient time, the pilgrimages in India were based on such cultural aspect of travel, though they were given a religious colouring.

A traveller at different stages comes in contact with different types of men. He enters into conversation with them, finds out what they are thinking, what their customs and traditions are and compares them with the conditions prevailing at home. This ultimately leads to cultural development. We encourage, therefore, our children to read books of travel which means educating them and giving them information in regard to our fellowmen. If we look upon travel from this point of view, the phrase "Air Travel" is a misnomer. All that air travel stands for today is pure and simple transport. A person is at one place at one moment and availing himself of the air service he is at another place

the next moment. A passenger may be at Karachi early morning and in London the same day late at night, with nothing added to him either in the form of information, culture and contacts. This is just as much simple transport as in the case of merchandise, say a bale of cotton!

It may be argued that time is thereby saved. Does this mean that man's life has been added to? No, it only means that the man has transferred to himself another slice of his life to spend it on his own business from spending it on cultural pursuit. When we send a boy of school-going age, to look after herds in the jungle, are we saving time? We are depriving the boy of his share of culture. Life does not consist in spending our time all the time in our own business. Man has to expand himself and come into contact with fellowmen as long as he wishes to remain a social being. Air transport, therefore, reduces a man from being a social being into a mere individual. It enlarges, you may say, self-centredness. Time saved therefore, signifies transference of time from cultural pursuits to self-centred occupations. This can hardly be looked upon as an advantage when we take life to mean the richness in which it is lived in the cultural sense and not in the material sense. To put it in another way, one may say that it elongates the animal life and shortens the human aspect of it. This is the basis of solitary confinement. While travelling by air, the deafening noise of the propellers and the limited accommodation makes it almost impossible to carry on any conversation with the fellow passengers.

It is equivalent to the person being asked to sit in a chair in a drawing room, with all the windows shut, continuously for the duration of the voyage. However comfortable the chair may be, the boredom becomes unbearable.

One cannot look around because not only is the window space limited, but also nothing can be seen with the naked eye. The long distance planes travel 15 to 18 thousand feet above the ground. That means you can see objects at a distance of about three miles. Very often, therefore, one sees a misty blue below and deep blue above and rarely can one recognize trees or even buildings excepting at the approach of landing places. With the mind shut and the eyes dim and the ears deafened, the traveller sits for hours together, night or day, and leaves the plane with an aching back glad that his destination has been reached. This is "modern travel" !

As regards food, packets of victuals are provided at the meal hours. As yet India has not received recognition in the catering line. Whether the person is a vegetarian or not, the packets are filled with cold non-vegetarian food. It is with much difficulty that one could procure an additional slice of bread and butter to meet one's needs. (It may be here suggested that it should be required of our Air Lines, calling at Indian air-ports, to cater for pure vegetarians also.)

One of the pleasures in fast travels, such as by motor car on the road or by train on the rails, is a sense of speed that man seems to crave for. The mere worm of man dashing through the air at 40, 50 or 60 miles per hour, gets an exhilaration of doing that which he cannot physically perform. Even this joy is denied in air travel. Being so high up, even though the plane may be going at 300 miles per hour, one just sees the ground underneath passing away like gentle, idle clouds at a snail-slow speed. Hence even this human desire for quick motion remains unsatisfied.

If we look at the technical part of this mode of travel, we notice that it consumes tremendous quantities of petroleum.

This fuel is in limited supply, as it is taken out from the bowels of the earth from various parts of the world. As stock gets less and less, the consumers' desire to obtain control over other reservoirs becomes greater and greater. This ultimately leads to greed, jealousy, hatred, suspicion, culminating in global wars. Therefore, an undue increase in this method of travel conduces towards developing unhealthy relationship with our neighbours.

All this does not mean that there should be no air travel at all, but it only indicates its shortcomings and warns us that we should use it with the utmost caution. The so called 'time saving' is not in itself sufficient compensation to make up for the various disadvantages connected with it. The more accurate way of calling it, as we have suggested, would be "air transport" and that would probably convey what it stands for more accurately. In these days, what man needs most is relaxation. Air transport adds to the pressure on life.

Nov. 47

—Gram Udyog Patrika

III

TEMPTING RUDRA

Shri C. Rajagopalachari has the credit of having brought into existence a Board of Research in Atomic Energy with Professor H. J. Bhabha as Chairman. In the statement announcing the formation of the Board, Rajaji assures us that "the atomic energy resources of India will not be frittered away or go to waste" and adds that "it would be a mistake to associate atomic research only with destructive activities."

Atomic research has been an expensive luxury of the rich Western nations. They have spent untold millions to harness *Rudra*, this God of Destruction. What is going to be our budget for it? If such funds were available, should not researches on cattle breeding and food production be a first charge in a starving country where production per acre is amongst the lowest in the world?

Of course, atomic research is not only for destruction. Has anybody used it for anything else? The road to hell is paved with good intention. May not this Board prove to be a high road?

We agree that the atomic energy may be a two-edged sword but to wield such a weapon calls for a high degree of discipline. Fire is a good thing. It has lit the path of the progress of man since the dawn of civilization. On this reasoning can we hand a torch to a child and expect it to keep the house from burning? At the moment, wherever we turn greed, jealousy and hatred face us in the world. Is such a

world fit to handle this weapon? May it not prove a spark in the ammunition magazine? Let us not play with fire.

A more outspoken and less sophisticated report comes from New Zealand. Professor Thomas Leech, Dean of the Faculty of Engineering of Auckland University, has been recently honoured for his researches in finding a substitute for the atom bomb. The research centre was established not at Florida but in New Zealand because of the fear of the danger from spies in America. The message candidly adds: "Few of the researchers know the object of their work and even today only a few people in Britain, United States, Australia and New Zealand are aware of the full implications of this method of warfare" and further adds that scientists are working "under top secret order."

As far as we can gauge, we must confess that we have not yet found the needed discipline in the management of our public affairs to enable us to have that assurance that we shall not be as the other men are! The Americans were tempted beyond their power by the possession of this Tree of Knowledge. What guarantee can we furnish that we have greater self-control and self-discipline than the original atom bomb users! If the sharing in the loot from Germany and Japan, against which we had already protested in these columns, represents the policy of the Government of which Shri Rajagopalachari is a distinguished member, we fear to notice the direction indicated by the straws in the wind. *Rudra* may be summoned sooner than we think! We should know our own limitations and programme our activities accordingly.

While the country is crying for researches in so many fields, does this type of work call for such priority? Can we not utilize our meagre resources in more fruitful ways?

13-7-47

—*Harijan*

IV

SCIENCE RUNS AMUCK

Early this month the foundation stone of the National Chemical Laboratories was laid at Poona. We trust the scientists will turn their ingenuity to help the small man.

Village Industries have been struggling on their own merits against an artificial current set up by the paddles of largescale industries. In season and out of season propaganda is carried on against the small producers. Real progress and the best utilization of natural resources are best achieved through village and cottage industries, and largescale industries are wasteful, though all scientific laboratories are focussed to help them.

We have previously drawn attention to the way the bullock ghanis and dairies are being crushed by financial interests pushing up oilmills for the production of '*Varaspati*' and how even the Central Government is helping in this programme by sanctioning new mills and shutting their eyes to the evils caused by mills and mill industries.

In spite of scientific evidence to prove the injurious effects of using polished rice on the health of the people, the rationing machinery has been used to distribute only polished rice regardless of the consequences to the people. Why could not our popular government follow the healthy lead given long ago by Travancore by banning all rice mills?

Since last November the Central Government has been circularizing all the Provincial Governments to discourage

hand processed sugar. A scientific approach to this question will indicate that thousands of acres of the best lands can be brought under the cultivation of cereals etc. if we can utilize palm trees growing wildy in the jungles and on waste lands. Palm gur and sugar can be obtained from these trees and such a programme will be complementary to the introduction of prohibition, as it will afford employment to thousands of displaced tappers. But then the strongly entrenched sugar mill interests are opposed to such a scheme as it undermines their industry. The government seems to have ears only for such.

Nutritional experts tell us that gur is a wholesome food containing minerals, vitamins and sugar, while mill sugar is a simple chemical for producing energy. Because it lacks the ingredients necessary for its own assimilation it draws the needed material from other items of food taken. Hence the Americans term the white sugar a "devitalizing food." Even as between hand processed sugar and mill sugar the former is more than ten times rich in iron contents. In spite of this in favour of hand processing of sugar, the Central Government wants the hand process discouraged! In many places factory made white cube sugar is outside the ration. So the rich can buy without any limit but their purse.

The ever obliging Provincial Governments only need the sign to take drastic measures. The U. P. Government by its Khandsari Sugar Control Order of November, 46 is dealing a death blow to both Khandsari Sugar and Deshi Chini producing industries.

The trend of events seems to be such that we shall end by hanging ourselves with "scientific" ropes. Our Governmental machinery appears to be set to destroy the industries of the

common man by the introduction of labour-saving device which may be otherwise termed "employment reducing instruments." Is it scientific to introduce such in a country teeming with unemployment and under employment?

At Lyallpur Agricultural College the Principal is a specialist in *maida* production. They have various kinds of electric machinery to remove all nutritive elements from wheat leaving purely starch behind. There is a revolving electric bakery also. The objective is to produce white bread, slices of which will be uniformly patterned like a honey comb. This can best be attained with the whitest *maida*. Should we not more scientifically and truthfully designate this Principal as "a specialist in food destruction?" Is there any place for such in a famine stricken land?

We in India, seem to be possessed with a mania to destroy all nutrition provided by nature by the use of mills—white rice, white sugar, hydrogenated oils. Is this where science is leading us?

April, 47

—Gram Udyog patrika

V

PRODUCTION VS. DESTRUCTION

There is a great deal of talk about 'increasing production' and 'improving the standard of living of the masses of the country.' These two phrases are being bandied about at every convenient occasion' But what these phrases mean is hardly ever defined. These words are little more than slogans to capture the imagination of the unwary and to convince the unthinking public, which is generally carried away by much talking.

In a country where people are starving and where there is not enough cloth to go round, these phrases should carry the meaning of providing at least the mere necessities of the people, food and clothing. Our effort should, therefore, be directed towards giving two meals a day where one cannot be obtained today. And our effort should be to enable the people to be clad, at least against the weather, if not to satisfy their aesthetic sense.

Industrialists appear to be more concerned with developing their industries than with the needs of the people, for they say that if India were to develop her industries on a permanent footing, the Government must follow a policy of export drive, even though we might have to suffer some privation for some time, and it is their firm conviction that the industrial development of India could not be put on a sound footing unless the products of Indian industries were exported abroad. They recommend our Government to base their proposals on the principles of an expansionist policy of

production advocated by Lord Keynes,—the more you eat of the cake the larger it becomes'. They believe that the social objectives of the Finance Member could be fulfilled only by such a policy. The hope that 'the more you eat of the cake the larger it becomes,' however absurd it may seem to the common sense of ordinary mortals, it can easily be made feasible by these demigods who eat the cake no doubt, but the cake is not theirs but others. Herein lies the secret of this apparent miracle. Of course if they merely ate other people's cake, their own cake ought to remain constant. But the method of doing this is generally to bite off from the other people's cake a larger piece than you can eat. That of course 'makes their cake grow larger.'

The methods adopted by the present types of large-scale industries have been anything but progressive. They are using science to destroy rather than create. This being so, it would be well to examine the proposition how to increase production. When we, with the help of rice mills, produce unwholesome polished rice, can we call it increasing production? Is it not destruction of the production of the paddy by the farmer? Similarly when sugar mills produce white sugar from sugar cane juice and thus provide a less nutritive product and perhaps devitalize the wholesome juice of the sugar cane, again would we be using the term 'increasing production' correctly? Is this also not an instance of destruction of nature's gifts? There can be an increase in production over what is found in nature, if man's efforts result in an increase not only quantitatively but also qualitatively. When a farmer sows a seed and reaps a hundredfold because of his effort we are justified in saying that the farmer has increased production. But when we look around at most of the efforts of mill-owners and measure their output and compare it with nature's

generous gifts, we can only say that the machines have been utilized by man for destruction rather than production, much less for increased production.

SHIFTING CROPS

In Bihar and in large sections of the U. P. thousands of acres have been brought under cultivation of sugar cane. Formerly these lands were not waste lands. If they had been waste lands and the sugar cane was an addition to the general production, we would be justified in calling it an increase of production. Before the advent of the sugar cane cultivation, Biharis used their lands for rice cultivation and consumed hand pounded, wholesome rice; but now the crops have been shifted, with the result that they cultivate sugar cane and are dependent on Burma for their rice. And Burmese rice comes polished—that means with all the nutrition removed—as pure starch. However much the sugar cane crop may have been increasing the bank balances of mill owners, can we, by any stretch of imagination, lay claim to having increased production when we drive the masses of people from the nutritive rice of their own cultivation to devitalized polished rice imported from outside? This shifting of crops from food to raw materials for mills, is not only a disservice to the country, but is injurious to the health of the people. It is not 'increasing production' when we are shifting the crop from food to long staple cotton for the mills and to tobacco and groundnut for export. At best it can be said to be pilfering and not production. This is the kind of 'increase' that has been taking place in the country and which has led to considerable distress to the people in meeting their primary needs.

In the same way, in Malabar, the former rice lands have been converted into coconut groves and these coconut groves are producing coconuts, not for human consumption,

but for oil for soap mills. Is producing 'Lux' soap, in however large a quantity, an increase of production when this is done at the cost of people's staple food? The people, who were formerly cultivating rice, are at present being given polished rice imported from Brazil. Hence, in the final analysis, the mill owners' efforts have resulted in the provision of Brazilian, polished rice to the people who were once eating wholesome, unpolished rice of their own production and converted those rice lands into raw material supplies for soap making. Is this 'increased production'? And is this striving to raise the standard of living' of the masses? We can well see that the mill owners have eaten some cake and at the same time the stock of their cake has increased. But what is the state of the common people?

When crops have been shifted deliberately from the production of staple food to raw materials for luxury goods, is it any wonder the country is facing famine after famine? If we really strive for greater production, our endeavours should have, by now, brought us to a more satisfactory supply of our primary needs. But when we look around we find that "the country today is suffering from the acutest shortage of food. It is an irony of fate that India, which is primarily an agricultural country, is now dependent upon imports of food stuffs to feed her population." Should we wonder at this stage? The fact cannot be belied and the deduction that our efforts, such as they have been, have resulted in decreased production, cannot be missed.

STANDARD OF LIVING

In a country suffering from un-employment and under-employment, even the method of production should be such as to solve this great problem. Methods we have adopted so far of increasing production, have invariably led to increased

un-employment. What is known in Western countries as labour saving devices can be better expressed as labour displacing devices, or in other words, devices for creating un-employment. In resorting to these large-scale methods of production, mill owners have adversely affected the standard of living of the masses. Our famines are becoming perennial, even at times when nature's contributions have been generous. Is this not an indication that with all this much talk of increasing the standard of living we are really lowering the standard of existence?

People express the hope that the "industrial progress and the prosperity of the 400 million people are inter-related, and that they would not want any industrial development if the 400 million people are going to be in a bad way," "progress must bring progress to all the people and not to a few chosen ones", we have to think in terms of the masses of this country" etc. We invite their attention to the facts of the case for increased production that have been stated above, and we would like them to consider whether we can increase production of the type they envisage by centralized methods of production in consumption goods. Let them take stock of the increased distress that has come to our land in the wake of our efforts put out in that direction in the past.

We are all one with those who want to advance the cause of the masses and strive for the progress of the country. But we would submit that this must be done scientifically, not merely to satisfy the greed for acquisition of wealth for a few. So far as we have seen, Science has been harnessed, not for production but for destruction. May we hope that with the advent of Swaraj the point of emphasis will shift from material production to the welfare of the people.

VI

SCIENCE AND DESTRUCTION

In spite of the fact that the Western economic organization has been based on mass production on a large scale by centralized method for over hundred years and working at a feverish rate in the most of the European countries and in America, we find that those very countries, which have taken to this method of production, are suffering from a tremendous shortage of consumer goods. Not only the production of Europe itself has not been sufficient to meet the demand, but the four corners of the earth have been scoured to obtain the hoarded material wealth of other countries as well, and even then we are faced with starvation and famine. This phenomenon of a shortage of goods caused by a method of production, aiming at heaping up material wealth, resulting in shortage of goods for the people, would appear to be intensifying as time passes by, and yet the people, entrusted with the future programme of our country, are ardently following the Western countries. It seems to us clear as day light that if we take the same steps as they have done, we shall reach the same destination and hence it is the duty of every citizen to study reasons for this extraordinary phenomenon.

Production, if it is to satisfy the demand, should take into consideration the various forms of demand and if such production is calculated to meet all that demand, then there will be a surplus, but if the demand exceeds the production there will be a short supply. Therefore, the present shortage

of consumer goods in Europe suggests that there is a factor of demand which has been overlooked. If this factor could be dealt with, then only it is possible to meet the full needs of the various countries. It does not require any deep study to discover the fact that this missing factor is *war*. The centralized methods of production have been based on the proposition of the control of sources of raw materials and markets for finished goods. At both these points violence is necessary to enable the manufacturers to lord it over the raw material producers and the consumers. Hence it is that war has become an essential part of this productive machinery. Unfortunately, the powers that be have not taken into consideration the demand of war and, what is produced in peace time in large quantities proves to be absolutely insufficient to meet the demands created during war time. The last two global wars have proved to be voracious consumers. The destruction that has taken place has been much greater than the productive power of the machinery evolved during peace time. Hence, if we aim at an ample supply of consumer goods, we have to switch over to a method in which war does not figure as an integral part of the machinery of production.

The leading materialistic nations of the world are not or do not choose to be cognisant of this fact and they are again leading the people in the wrong direction. An American news item states that great preparations are being made for a possible war in three new dimensions. President Truman's scientific Research Board has reported that "it was pouring out" vast sums for the development of guided missiles, jet and rocket aircraft, atomic weapons, agents of poison and bacteriological warfare and a host of electronic devices. It is stated that among the more significant electronic

developments is the revolutionary Radar fire control system. The Federal Agencies are spending 624 million dollars this year on these various "scientific" projects. More than five sixths of this total is to be spent on war research. The armed forces are now relying heavily upon such research and development as vital to the effective prosecution of their programme. When the best brains of a country are being prostituted into the paths of destruction, can it be any wonder that the world is suffering from a shortage of consumer goods? Until our leaders wake up to the fact and organize the country on a sane basis, eschewing all forms of wanton destruction from their programme, it is not possible to expect palmy days in front of us.

It should seem futile for India to follow the Western economic systems that have produced the results that we see all around us. We have, therefore, to evolve a system which will produce more than our demand. It may not present such glowing pictures to ensnare the population, but it may prove to be, in the long run, a wiser course, bringing in peace and prosperity to the producers themselves and to the people around them.

— Harijan

26-10-47

VII

MORE PROGRESS

We had pointed out in an earlier issue that destruction of nature's supply of food values in our country is an unpardonable crime. In America they destroy potatoes, coffee, etc. to keep up prices. We condemn that and yet we plump for sugar mills which do just the same. White sugar is pure energy? like charcoal. This is obtained after removing all nutritive elements from the cane-juice to provide profits to the sugar millowners.

We understand the Central Government has agreed to the setting up of five new sugar mills in Bengal, each mill to have a daily crushing capacity of 600 tons.

When shall we learn to look at things with human interests instead of seeking financial gains?

11-5-47

—*Harijan*

SCIENCE & PROGRESS

Part II

VIII

FOOD INDUSTRIES

The Government of India has been surveying the possibilities of helping industries connected with food processing. Such industries number about forty. In some agricultural colleges also a great deal of expensive equipment has been installed for carrying out researches on these lines. For instance, to help the bakers and confectioners they have researches carried on in making *maida* out of wheat. They are also helping in the preparation of semi-processed foods, such as cornflakes, pressed rice, puff wheat, etc. These are all food products which are mainly used by the rich. When a country is suffering for lack of food materials and when rationing is the rage of the day, it would seem criminal to prepare *maida* out of whole wheat. Preparation of *maida* is tantamount to destruction of the food values in the cereals. If the Government has the means, time and energy to dabble in these activities, would not such efforts be better concentrated on the ways and means of conserving food, rather than in destroying it, and in helping the starving masses, rather than pandering to the taste of the over-fed city folks, in educating the public in the proper utilization of the materials available rather than in the production of fancy food?

The encouragement given to the Vanaspati Ghee manufacturers is certainly destructive. Vanaspati Ghee has been proved to be indigestible and without any advantage over the common oils produced by *telis*. It certainly is no substitute for *ghee*. To call Vanaspati 'Ghee' is a fraud on the public and the Government has no business to encourage

such profit seekers at the cost of public health. Shifting of the demand from pure ghee to Vanaspati is also dealing a death blow to the dairy industry, which is so essential to a vegetarian people, who require, above all things, certain amount of animal proteins in their diet.

Again, biscuit making raises the availability of food materials from the poor to the rich who are usually the consumers of biscuits. When there is a deficiency in food, biscuit production should also be stopped.

The Government will do well to call a halt to its programme of putting "food processing on the map" and advise the planning panels appointed by the Central Food Department for the development of food industries connected with sugar products, confectionery and the flour milling and biscuit industries, to seek other channels of usefulness to the people.

January, 47

—Gram Udyog Patrika

IX

FOR SALE - A PACIFIER

To satisfy a baby's greed an easy going mother gives it a pacifier to suck. This pacifier gives the child no nutrition but just the satisfaction of appearing to feed. In the same way our Vanaspati "ghee" users have got their desire to use some thing which appears like ghee, and Vanaspati "ghee" makers satisfy such consumers' vanity by giving them something which does not provide the nutriments of ghee and at the same time satisfies their vanity. But while the mother does not charge the child anything for putting the pacifier in its mouth, the Vanaspati "ghee" makers grow fat on the profit they earn out of their consumers. Vanaspati "ghee" is not ghee at all unless it has some equivalent of the vitamin A as is contained in the dairy product. At best Vanaspati can be termed an equivalent of indigestible vegetable oil, if it is hydrogenated to the extent sufficient to make it appear solid like ghee. Hydrogenation confers no special quality on pure vegetable oil other than the fact that such hydrogenated oil forms a convenient adulterant for ghee. What distinguishes ghee from vegetable oil is its animal origin and the vitamin A is more or less exclusively of animal origin. Vanaspati, which claims to be "vitaminous" therefore, can only be vitaminised from animal sources of oil rich in vitamin A-Shark liver oil and Cod liver oil. In a vegetarian country like ours, where many of the consumers have an aversion to animal food other than dairy products, to sell freely Vanas-

pati without disclosing the animal source of its vitamin, is a fraud on the public.

Besides, at the Nutrition Conference held at Hotsprings it was pointed out that the free use of vitamin concentrates is injurious. If therefore, Vanaspati is vitaminized by concentrates taken from Cod liver oil or Shark liver oil, such concentrates will also be injurious. Then again, for hydrogenation a catalytic agent is necessary. The usual catalytic agent that is used is nickel, and traces of nickel have been found in hydrogenated oil, and nickel not being a mineral which the human body needs may, though taken in minute quantities, prove to be poisonous in the long run. Dr. V. N. Patwardhan, Director of the Nutrition Research Institute, Coonoor stated at the Indian Science Congress last month that his researches revealed that Vanaspati adversely affected the growth and reproductive functions of animals.

People in different parts of the country have been used to different kinds of vegetable oils-mustard, til, coconut, etc., and according to Ayurvedic tradition, all oils are not of equal benefit to the human body. The value differs from oil to oil. For instance, almond oil is declared to be a brain tonic and nourishing for the body while groundnut oil, though it may have fat content, is said to be injurious for the brain. Sarson, til and coconut oil are infinitely better from this point of view than groundnut oil. Most of the Vanaspati factories use mainly groundnut oil or cotton-seed oil. These are inferior oils and therefore, even as a substitute fat from ordinary oil, the users of Vanaspati do not get the best of vegetable oils. By legislation, which seeks to guarantee to consumers pure food products, it should be made compulsory on the part of Vanaspati "ghee" makers to declare on their

labels, clearly and unmistakably, the sources from which the product is made, including of course that of the vitamin.

These facts being as they are, it passes our understanding as to why Vanaspati should be prepared unless it be to provide oils in a suitable condition for soap making and other industrial purposes. As things are, vegetable oils pressed by ghanis are superior to Vanaspati in their digestibility and purity, while there is no comparison with the natural dairy ghee; and yet capitalists are investing Rs. 4 to 5 lakhs on machinery imported from abroad, for exploiting the susceptibility to vanity of a small section of our population mainly urban.

We understand about 27 new factories have been allowed by the Central Government to be started, most of them in Madrass and Bombay. Is this the understanding and solicitude the Central Government has for the exploiters, irrespective of the welfare of the population or is it their enthusiasm for rapid industrialization that is carrying them beyond their depth or is it a carry over of the British "Fleece India" policy, as establishing these 27 factories will mean to Great Britain a business of over a crore?

We would suggest that a government that seeks the welfare of the people would not stop short of banning this type of exploitation at the cost of health and sentiments of the people. In the name of industrialization the country should not be ruined, especially the constitution of a people who are already victims of malnutrition. Public opinion should be educated to deal with Vanaspati "ghee" producers as traitors to the land and if the government reflects the popular mind we should soon have no such fraud practised on the people.

—Gram Udyog Patrika

X

NAKALI GHEE

Our articles on Vanaspati "Ghee" brought in a sheaf of letters—of approbation from the public and of approbrium from the manufacturers—naturally. A valued friend has coined "Nakali (imitation) Ghee" as the name for this product and we hope this will receive legal sanction as "margarine" has in Europe. An alternative name can be "Devitalized Vegetable Oil".

The burden of the battle cry of the manufacturers is stated below with our reactions :

One of the "Scientific" minions of the manufacturers writes :

"If one compares Vanaspati with cow's ghee, then it is definitely inferior in its *food value*. However when Vanaspati is compared with the oil from which it is made, then it is definitely a *better food article* because (1) it has a more palatable taste, (2) it has better keeping qualities."

This statement is typical of half truths and suppression of facts on which the manufacturers' case is built up. In dealing with Ghee they admit the inferiority of Vanaspati in "food value."

While dealing with the oil the comparison is not on the nutritive value but is shifted to its keeping qualities and taste only, while to the reader "better food article" will convey the idea of nutrition.

Again the comparison is with cotton seed oil or groundnut oil and not with coconut, til or mustard oils which are the commonly used edible oils.

Further the comparison is between the mill pressed oil and not with the cold pressed ghani oil. These statements are evidently calculated to mislead the unwary reader.

The manufacturers have launched out on a widespread, expensive advertising programme, by which they hope to confuse the public. They compare Vanaspati to Margarine. This comparison is not valid. While Vanaspati is prepared from mill-pressed cotton-seed or groundnut oil, Margarine is not necessarily prepared from such inferior hydrogenated vegetable oils. Its history of manufacture dates back before hydrogenated oils came to be known. Generally it is made from softer animal fats or from a mixture of animal fats and vegetable oils churned with milk and chilled with ice to give it an appearance of a milk product. Because this animal-fat-based margarine is used widely in Europe and America and "eminent research workers agree unanimously that such are both wholesome and nutritious", it does not follow, by any stretch of imagination, that Vanaspati, manufactured from hot processed inferior vegetable oils, is also equally nutritious. Why not push the same illogical argument one step further and say "because Ghee is nutritious therefore Vanaspati ghee is also nutritious"?

They proceed to compare the price of Vanaspati with the price of dairy ghee, and claim it is one third. A true comparison will be with the price of mill pressed groundnut oil. It would then be seen to be about fifty per cent more expensive. We are entitled to ask what additional or propor-

tionate benefit have the manufacturers conferred to impose this heavy tax on the unsuspecting public?

One would think that these manufacturers are liable to be prosecuted for such misleading advertisements under the Defence (Sale of Goods) Regulations and by the consumers for damages. In Great Britain cold pressed olive oil is held in high esteem. In any case cold pressed oils are better than mill oils. We should have expected the Vanaspati manufacturers to prove their claims of superiority over cold pressed coconut, til or mustard oils. Then alone they will have a leg to stand on. If at any time cold pressed oil goes rancid it is not the process that is at fault but the carelessness of the oilmen

The manufacturers claim that they are meeting the "tremendous shortage in fats in the country". Have they increased the fat content in any way? All they have done is to transform good, existing material into a bad and expensive product which will "taste better and keep better".

There are two ways of meeting this shortage, one is by increasing milk production and the other is to increase the production of cold pressed oils both by stopping export of edible oil seeds and increasing the cultivation of oil seeds.

The Chairman of the Vanaspati Manufacturers' Association of India in his letter refers to the apprehension that traces of nickel found in Vanaspati may "prove poisonous in the long run" and assures us that "they would do no harm, as it has been found that human beings can absorb and excrete relatively large quantities of nickel without any ill effects resulting therefrom" and that "vegetables such as carrots, onions, tomatoes, lettuce etc., which people consume, contain much larger quantities of nickel than is ever likely

to be found in Vanaspati." He seems to be innocent of the fact that the nickel in the vegetables is in combination while that in Vanaspati is definitely a foreign matter. This will make a world of difference in the capacity of the human body to deal with such matter. The one may be excreted while the other may act as a poison.

Again, the Chairman makes light of Col. Sokheys "speculation" based on "two month old experiments on rats." We are not here to put up a defence on behalf of Sir S. S. Sokhey. He is quite capable of taking care of himself. But when the Chairman goes on to state "To condemn Vanaspati on inconclusive evidence, while the case is officially *Sub Judice* is to do a disservice to the country in general and to an important food industry in particular and calls upon us to withhold criticism until the Expert Committee publishes its findings. We feel he is applying the safety valve in the wrong place. If I am walking through the jungle with a child, and the child is picking wild berries and two villagers passing by express differing opinions on the poisonousness of the berries, would I suggest that the child go on eating the berries while the question of their poisonous nature is *Sub Judice*? The prudent course will be to stop the child eating the berries pending satisfactory proof that the berries are wholesome. Similarly, if the Chairman feels the matter is *Sub Judice* we submit that the proper course for manufacturers, on whom the onus of proof would lie, is to immediately stop producing Vanaspati until conclusive evidence, that it is not harmful, is forthcoming. We trust this reasonable course will now be adopted by the Vanaspati Manufacturers without a legal injunction.

—Gram Udyog Patrika

XI

BLINDNESS AT A PRICE

We had already written about the evil effects of *Vanaspati ghee*. Sir S. S. Sokhey, Director of the Haffkine Institute, Bombay, states that experiments conducted in the Haffkine Institute on the nutritive values of hydrogenated oil show that

- (1) the consumption of hydrogenated oils resulted in inferior growth;
- (2) their consumption interfered with the absorption of calcium in the body and
- (3) their consumption resulted in a change in the fat composition of the body.

Recently, in the Council of State, Dr. Rajendra Prasad stated that the Research Institute at Izzatnagar had reported that the use of *Vanaspati* was bad for health and affected the eyesight. Experiments conducted on rats show that the third generation of them become blind. In the light of these scientific experiments one would have thought that Government, with the welfare of the people in their mind, would have banned *Vanaspati* out of the country and locked up the *Vanaspati* manufacturers as anti-social beings. But India is tolerant even to the extent of hugging its evil-doers.

We understand that the Government is contemplating provision for the detection of adulteration of *ghee* with *Vanas-*

pati by adding 5% basic oil and colour in it. We fear that this will be absolutely of no use. *Vanaspati* is generally made of groundnut oil or cotton-seed oil. The addition of these oils in a small proportion will be of no avail for detection. Scientists are of opinion that at least 10% of sesame oil (*til* oil) is the least amount that can be effective, and no other oils would be useful. Besides, the colouring can be removed at a very small cost. One wonders why there should be the need for all this circumventing of the issue.

It is clear that the expenditures incurred by these manufacturers are of no avail to the nation as a whole. They add nothing to the existing fat of the country. If anything, they decrease their assimilability by hydrogenation and to the extent they are destructive of the fat stock of the land. The fresh oils that are produced at comparatively low rates are acquired by these factories and at a cost which is often double the original cost; they destroy the natural food values and make the nation subject to various deficiency diseases, and for this disservice the nation has to pay in the utilization of its manpower, capital and human effort. We are amazed at our action when we sit down calmly and think over the *pros* and *cons* in regard to this question,

In so far as adulteration of dairy *ghee* is the main objective of this industry it is a direct hit on the dairy industry. In a country which is largely vegetarian, reduction of *ghee* consumption, however caused, will undermine the health of the people. The argument that Western nations use Margarine will not hold in our country. Margarine is used like butter over slices of bread and in a temperate climate the hydrogenation needs to be carried out to a very little extent. In our country such a treatment will still leave the product in a liquid state. Besides Europeans obtain animal fats from

various other sources, as they are meat eaters and their cooking is done mainly with lard (animal fat). Hence, any comparison with other countries is fallacious.

India's is a cow-centered economy. We need cows for the plough, for transport, for carriage and for yielding milk. Hence, any measure that adversely affects the maintenance of the cow will also adversely affect our national economy. A correct view of the affairs in the proper perspective would make *Vanaspati* production equivalent to cow slaughter, and we hope at least those who venerate the cow, will look at this aspect of the question conscientiously and refrain from an industry which is based on pure avarice, ignoring all considerations of national welfare.

From the economic point of view the *Vanaspati* mills, in so far as they enter the market for vegetable oils, tend to put up the prices of ordinary oils. So the poorer consumers of vegetable oil have to pay a higher price for the only source of fat that is available to them. The well-to-do classes, who use this hydrogenated oil, pay a still higher price for materials which may prove even harmful to them and perhaps obtaining nothing in return even by way of fat, if the digestibility is impaired by hydrogenation. Apart from the raising of the price of oils even under controlled rates, because of the advent of capitalists in the market, the tendency is towards black-marketing which again has an injurious effect on the budget of the poorer consumers.

We are amazed at the recommendation of the Advisory Planning Board which has suggested the raising of the target of production of this article from 82,000 tons in 1941 to 400,000 in 1950. Are we thinking of industries as a means of making wealth for a few, or should our industries be the

means of supplying the needed articles to satisfy human need ?
Are there no moral considerations to guide us in this matter ?
Is our industrial policy to be devoid of all humanity ? If so
we are heading for the jungle. We trust that no time will
be lost in calling a halt as far as this industry is concerned.

6-4-47

—Harijan

XII

SAVE US

Amongst the many letters from consumers of *Vanaspati* the ones from women carry special weight. Here is one from a leading woman of the South :—

"I agree with your views and I do feel that the production of *Vanaspati* should be prohibited until conclusive evidence that it is not harmful is available. I know that this opinion is held by many women who have good reasons to believe that the health of some of the members of their families was seriously affected by the use of *Dalda*. On the advice of their family physicians they gave up using *Dalda* and the health of these persons improved steadily and is now normal. There are several companies newly started for the manufacture of *Vanaspati* and if and when these factories actually begin to function, the market will have large supplies of *Vanaspati* and oil will be scarce. Do you not think that it is imperative that the Food Department of the Central Government should give their earnest and immediate attention to this matter? There is great urgency about it as the newly floated companies are ordering machinery from Europe".

XIII

BUSINESS *Vs.* FOOD

While shortage of food promises famine, available food is being destroyed by industries, and government influence, power and resources are being directed towards this. Elsewhere we have shown how the wholesome gur industry is being ousted by the Sugar Mills which destroy nutritive values out of cane juice. For this disservice the public has been made to contribute, in the form of protective duties, sums amounting to over 72 crores; similarly the tea-planters' interests are being advanced by an expenditure of over half a crore every year in the form of Tea Cess.

The Vanaspati Oil Mills add nothing to the existing food supply. They only process the available oil, and that too uselessly from the nutritive point of view and raise the price by about 80%. So it is purely a business proposition of obtaining money from those who pay for a fanciful article. This business locks up over 50 crores of the available funds and diverts over 50 lakhs of acres of cultivable land to growing raw materials for the mills.

The question before the Government is which is to have priority-business or food?

Harijan

XIV

THE HAVES HAVE IT

The Food Minister, addressing a meeting of the Indian Central Sugar-cane committee, stated that it has been calculated that the people have paid about Rs. 70 crores, in the form of Protective Duty, to establish the sugar industry. Apart from these protective duties, crores have been spent to develop cane varieties which will yield higher per cent of sugar and which will ripen at different periods of the year to keep the mills working all the year round. Sugar is inferior nutritionally to gur. Sugar-cane requires intensive cultivation on the best irrigated lands which can produce rice and other food crops. Bihar, which was a surplus province in rice, is now dependent on imports to feed its people owing to the shifting of crops from rice to sugar-cane. All this has been done in the interests of mill-owners at terrific loss to the people-financially and nutritionally.

Vested interests are never tired of pointing out that village industries cannot stand on their legs and cannot compete with the mills. Under such odds and handicaps it is a surprise that the village industries even exist to tell the tale. How much has the Government spent to further the gur industry especially the palm gur variety?

The development of palm gur makes no inroads on cultivable land as the palm-especially date, palmyra, etc.—grow in waste lands. It is an industry which forms a good complement to the prohibition programme in utilizing to good productive purpose the skill of the displaced tappers.

SCIENCE & PROGRESS

Part III

We are told that the Government of Bombay, intend to levy a cess of six annas per Bengal maund of sugar-cane going into sugar factories in the province, This is calculated to yield about a crore, which will be earmarked for the further development of this industry. Is there no end to this spoonfeeding of these hefty mills at the cost of the public? Now that they have been placed on their feet at public cost, they should be made to bear the expense of further expansion and may even be taxed heavily for the benefit of the public.

As a measure of combating inflation the Government of India are contemplating reducing the price of sugar but lest it should tell on the fat profits of mills they are considering whether this reduction should not be made on the price of sugar-cane so that the burden may fall on the back of the farmer. The Government policy seems to be "from him who hath not, even the little he hath shall be taken away and given to him who hath".

November, 48

Gram Udyog Patrika

XV

SOIL FOOD *Vs.* DRUG

In human nutrition people recognize the difference between staple food and drugs. Usually the staple food is eaten in large quantities and it contains all the elements necessary for the human body in the right proportions or nearly in the right proportions. Milk for instance will contain fat, proteins, calcium and vitamin *A* besides other similar ingredients. But if for any reason the body of a patient needs more vitamin *A* than is found in milk because of some diseased state of the body, then to meet this need vitamin *A* may be administered in the form of some liver products, such as shark liver oil or cod liver oil. We recognize, therefore, that an ordinary wholesome food differs from medicines. The medicines are administered in small doses according to the needs of the particular patient and his condition. An old man may take a different dose of medicine from that of a middle-aged one, the latter would need a different dose from that of a child.

Again, certain drugs are used as stimulants when individuals want to go beyond their energy provided by nature by indulging in dances at night clubs. Such individuals stimulate their bodies to meet the extra demand of energy by taking injections of morphia and such other drugs. For the moment they appear to be full of vitality and energy, but a time comes when they suffer from the reaction of the stimulants. Therefore all persons desiring to lead a normal life, without overstraining the nervous or muscular system, will content themselves with a healthy use of energy produced by the normal food.

Medicines are indicated in the case of the existence of pathological conditions, while stimulants are harmful to the body as they overtax the system. Thus the staple food, medicine and the drug, each has its own place and cannot be substituted one for the other. Food for the normal person, medicine for the sick person and the drug for the overindulgent.

Similarly in plant life too, we have these three stages. Plants like animals need food. They draw this food from the air and soil through the medium of water. If the normal food that the plants require is deficient in a particular aspect that deficiency may be made good by a proper diagnosis and prescription. Also, plants can be stimulated like human beings with drugs too. But that is an unnatural situation. In nature much of the mineral substances needed by plant life is provided in some assimilable form by micro-organisms in the soil. These micro-organisms take organic matter and present it in an assimilable form fit for the plants. In the normal way the animals feed on vegetation and after assimilating that which is needed for the energy and growth, they pass out the rest back to the earth and these micro-organisms in the soil convert such material back into plant food, and so goes on the cycle in nature. Any interference in this by men can only be justified by the circumstances.

The natural staple food of all plants is farm yard-manure and other organic matter. Such manures have in them certain elements termed auxins which help better assimilation of the food, just as vitamins in human food help in the biochemical process. The auxins are indispensable for plant life just as vitamins are indispensable for human being; and farm yard manure and other organic matter are rich in these auxins.

Where the mineral contents of the soil may be deficient owing to flooding and washing away of certain mineral salts,

it may be necessary to supply that deficiency by introducing certain chemicals. But this is a process which is analogous to medicine to the human body. Just as medicines can only be administered by a qualified doctor after a careful diagnosis with a prescription suited to the particular conditions of the patient, similarly this method of adding chemical fertilizers to the soil, should only be adopted after a careful analysis of the soil and the requirements of plant life to be raised on that soil. Without such proper prescriptions given by a soil chemist to freely use chemical fertilizers would be as foolish as a layman administering medicine to a patient, and it may be equally tragic in its results. Artificial fertilizers, therefore, are not plant food but they are medicines to the soil.

Just as the human system can be stimulated beyond its normal performance by drugs such as morphia, similarly plants also can be subjected to an unhealthy enhancement of their growth and production by the use of drugs. Chemical fertilizers can produce this effect; but it is an unhealthy, short-sighted and unnatural state of affairs.

If our agricultural food production is to supply the normal requirements of the human body, the plants from which we draw that food, must also be healthy, normal and well-fed. Any artificial stimulant or artificial feeding will naturally affect our food as we depend upon, specially in our country, so largely on plant life as food. Hence it becomes imperative that we should watch the food given to these, the medicines administered and the drugs supplied. If there is any undue dose at any stage it will ultimately tell on the health conditions of the human being.

New Zealand grows most of its food supply on soils manured by chemical fertilizers and it was found that the

people of New Zealand were subject to catarrh, influenza, septic tonsils and dental caries. Therefore, Dr. Chapman of the Physical and Mental Welfare Society of New Zealand carried out some experiments in Mount Albert Grammar School Hostel and subjected over 60 boys, teachers and staff to experimental feeding. The food was changed from the "chemically grown" fruits, salads and vegetables to articles produced on farm yard manure; and he reports: "There is a marked physical growth and freedom from other common ailments, and their dental conditions have improved". It may be noted here that during the last war, when young men were examined for recruiting, over 40% of the New Zealanders were found to be unfit because of defective teeth. This experiment gives the warning that if the health of the people of India is to be what it should be, we must beware of chemical fertilizers. This is purely from the point of view of our food.

Looking at it from the needs of the soil, chemical fertilizers increase the acidity of the soil. Parts of Bengal and Bihar have already suffered from this. To make the fertilizer effective, it is necessary to apply it at a suitable depth and not as a top-dressing. Application of manures at some depth involves deep ploughing and copious irrigation. In our country, where the major portion of the land is subject to the vagaries of the monsoon, it would be a pure gamble to plough deep and manure the land with expensive manures only to find at the end of the season that the rains have failed. Our farmers are not financially well off enough to take the risks of this type of land treatment.

As we have already indicated earlier, before artificial fertilizers can be used on any plot of ground, a very careful analysis of the soil has got to be made and its requirements

have to be ascertained. This involves a wide spread, well trained expert staff of agricultural chemists who could function as 'soil doctors'. Before we have such a personnel available at every plot of cultivable land, it will be sheer folly to put artificial fertilizers in the hands of the farmers. It will be like handing in poisons—drugs like opium, morphia, etc.—into the hands of ignorant patients without any control as to their use. Therefore, even if we wish to introduce fertilizers as medicine, the condition precedent to such course will be the introduction of agricultural chemists in large numbers. In the country we have not got physicians even for human beings in sufficient numbers. Where are we to find soil physicians in greater numbers !

With these facts before us we regret to notice that our ill advised Government is pushing on with the promotion and extension of artificial fertilizer factories. In Bihar at Sindhri, a scheme for artificial fertilizer factories, involving foreign machinery to the extent of Rs. 12 crores and other buildings and equipment running into a further 10 crores, are being pushed forward. We hope better counsels will prevail and the suicidal schemes will yield place to carrying on researches on more healthy lines which will provide a considerable amount of the organic matter that is going to waste today, as suitable manures to our fields. Only such a course will provide us with health-giving food and save us from the unscrupulous exploiters who, regardless of the harm they are causing the people, consider accumulation of wealth the one and only objective in life.

LIVING SOIL ASSOCIATIONS

While India is building fertilizer factories, Australia is forming Living Soil Associations to restore the fertility of soils that have been drained of humus and to educate the public to appreciate the value of humus in soil conservation.

Plants grown with compost manure are said to be more disease resistant and animals fed on them show considerable immunity to common ills, and human food drawn from such sources is conducive to health and confers immunity to sickness.

—Harijan

20-1-47

XVII

MANURE AND FOOD

Few people realise that the quality of the health, growth and reproduction of plants, animals and human beings depends a great deal on the quality of manures that are fed to the soil. When we put manure into the soil we are feeding the soil; and to the extent the soils are fed, the produce of the soil will also be nutritive, and the products of the soil are usually the basis of the requirements of animals and men. The cycle is not complete here. If the soil produces good food for animals and men, that food, when digested and returned back to the soil again is also, a better soil food. Thus the circle of goodness goes round and round rising in a spiral for the benefit of plants, animals and human beings. There is an old saying "who feeds well manures well". We may put in a complement of this, "who manures well feeds well" thus completing the whole process.

With the deterioration of our soil technique the farmers also have deteriorated in their health; and with the deterioration of their health they have not the energy nor the staying power to cultivate well. They have not been as manure-conscious or selected-seed-conscious as they should be for decades, with the result that our whole agricultural produce has gone down in quality and quantity. We have to resuscitate our agriculture. Many have thought it fit to solve this problem by the introduction of mineral or chemical fertilizers.

A STIMULANT

Mineral fertilizers do not feed the land. They merely excite it to a certain extent like a stimulant and thereby they apparently increase production without proportionate increase in the nutritive values, with the result that mineral fertilizers progressively deteriorate the health of animals and men as the food products on fertilizers are not products of soil that has been fed but one that has been merely stimulated. This effect has been brought out by many experiments which have led to the following conclusion:—

1. Animals fed with wheat grown on land fertilized by farmyard manures were notably stronger, though their weight may be less, than those nourished with grains grown on lands fertilized by chemical manures.

2. Hens brought upon feeds grown on farmyard manures laid more eggs than those brought upon feeds from minerally fertilized lands. Though the latter were heavier, yet the larger number of the former were more than made up in quantity as well. The birds brought up in the former way stayed out of their penn longer than the birds brought up on the latter feed, thus bearing witness to their greater vitality. Even the vitality of the eggs of the hens fed on grains from farmyard manure was greater in that larger percentage of such eggs were hatched and few of them were spoiled by keeping.

3 The manure produced from the refuse of poultry fed from grains raised on farmyard manure also was effective compared with the manure of birds fed on grains raised on fertilizer lands, showing that the quality of the manure itself is influenced and improves new growth in the form of seed and feed. In this way the farmyard

manure promotes a cycle which leads to a constant improvement from generation to generation.

Apart from these experiments it was also noticed that when animals are given a chance of choosing between feed that is grown on artificial fertilizers and the feed grown on farmyard manure, they instinctively prefer the latter.

A DANGER

In our country scientific fertilizing of our land by mineral fertilizers is an impossibility as we have not got sufficient soil chemists who can analyse samples of soils sufficiently extensively to be able to feed the soil accurately, even if artificial manure is to be resorted to. Any excess feeding of the soil with such minerals creates diseases of all kinds. Many experiments have been carried out which show the danger of an excessive mineral content in the soil. The data obtained by Prof. Rost of Mannheim, demonstrates that an excess of potassium in the land is likely to lead to diseases such as thrombosis (coagulation or curdling of the blood) as well as to gangrenes. He observes, "In connection with the potassium nitrate fed animals, they showed a tendency, a pronounced inclination in successive generations, towards thrombosis". He also states that in recent years thrombosis has increased in human beings to about four times its earlier prevalence.

DISEASE RESISTANCE

The many experiments that have been carried out show that the seeds, and better still the leaves of plants fertilized with stable-manure, increase the capacity for disease resistance when fed to animals as compared with seeds and leaves of minerally fertilized plants; thus showing that the manures not only improve the soil structure but the consequences of

manuring project far into the animal kingdom, reaching themselves out to man himself. Therefore it behoves everyone of us to take care that such food as we eat is grown on land fertilized with farmyard manure and not with chemical fertilizers especially where there is a danger in our land of unscientific application of fertilizers for lack of soil analysis. It is not only the farmer who is interested in the manure, but perhaps to a larger extent, the consumer should be made conscious of this, as it is he who is likely to suffer by food raised on artificial fertilizers.

MEDICAL USE

Taking advantage of this effect, dieticians are now treating their patients on food which is grown on farmyard manures which are generally called "Biodynamic Produce". Such feeds are said to affect the functioning of the stomach and intestines favourably. A German dietician writes, "I have recommended these products to patients with main stomach trouble and sluggish intestinal activity and they have been fortunate enough to get over these ailments without any medical treatment". "My wide experience, as a dietician with patients, has convinced me that especially with raw-food diet the biodynamically treated products are preferable in every way to those which have been manured with chemical fertilizers".

Gheimrat Abderhalden, the famous physiologist, states, "In connection with various illnesses of man and animal it has frequently been desirable to trace them back to the method used in fertilizing food plants". Though we may not be able to say anything very definitely yet in regard to these matters it is clear that soil bacteria do play an important part in relation to our health. We have, therefore, to

consider whether it is worthwhile to disturb the interplay of soil organism by bringing in nitrogen in the form of potassium nitrate and by using lime and phosphoric acid, as these disturb and hinder the working of the soil bacteria".

The Government of India is spending over 20 crores of rupees in a fertilizer factory in Bihar and in Travancore also a large fertilizer factory has been established. It is time that the Food Department takes up the case on behalf of the consumer. Already our people are emaciated by diseases of malnutrition. Need we worsen the health of our people by introducing chemical fertilizers ? This is a grave responsibility. We hope the Health Department also will combine with the Food Department and set things right in the Agricultural Department.

March 1948

—Gram Udyog Patrika

XVIII

PUTTING THE CLOCK BACK!

The following A. P. I. message on the use of chemical fertilizers appeared in the Press on June 8th :

" A warning against modern methods of agriculture was given to the people of India by Prof. Einstein in an interview with Dr. Amarnath Jha, the Vice Chancellor of the Benares Hindu University, who returned from Quebec recently after attending the International Rotary Assembly there. Prof. Einstein said that though with the use of huge tractors, machinery and chemical fertilizers the people could force up production for a time, the eventual result was likely to be complete loss of the fertility of the soil, causing incalculable and irreparable injury to the country ".

Great many experts before Prof. Einstein have advised Western farmers against the use of these instruments of a short-sighted policy. Our country is always about a century behind. What has been discarded by Western scientists our experts cling to as the last word in progress ! It would not matter much if our scientists were left to hold their antiquated views in their laboratories; but the tragedy of it is that our vested interests have used them for propaganda purpose and have induced our Government to squander crores of public money on importing tractors and establishing fertilizer factories.

As it is, the pressure on land is such that it is not able to provide adequate food for the people. What we need is a programme of rational use of land combined with provision

of ample fuel resources to release farmyard manure for the fields. Instead, we are faced with converting, what is today, a reasonably fertile soil, into desert land by greed for quick returns. No doubt the use of fertilizers will stimulate the soil into yielding more for a time, but soon, like the energy of the drunkard, it will disappear, making the second state worse than the first. Shall we be guilty of killing the goose that lays the golden eggs?

If it was merely Prof. Einstein's personal view, it may be dismissed lightly. This opinion is the result of extensive use of fertilizers and tractors under very favourable conditions both in the U. S. A. and Australia.

We may remind our readers that not long ago Mr. Collin Grant Clerk, the Australian economist invited to advise our Government, said that he would develop India on the basis of cottage industries regarding the factory as a necessary evil. Surely, these men cannot be accused of being fanatical Gandhites trying to put the clock back? Shall we heed the call of wisdom based on experience or go our own way to destruction?

The impact of the West disintegrated our industrial set up. Is it left to national Government to convert our fields into deserts? May God forbid.

July, 1948

—Gram Udyog Patrika

XIX

TRAIN BEARERS *Or* TORCH BEARERS?

In the West, the bride wears a wedding robe which has a long train—a superfluous flow of garment sweeping the floor. This wholly unnecessary and cumbersome appendage is carried by little boys, 'Pages' - "the train bearers". Our country is fast becoming a "train bearer" of outmoded methods of Western Countries.

The Government of India is going ahead with the putting up of artificial fertilizer factories and sending out young men to be initiated into the "secrets" of this industry. Agricultural countries like Australia and the United States of America have found, from experience, that stimulating the soil by chemical manures produced seemingly good crops, but that these products were deficient both in mineral and vitamin content and that the plants themselves were weak in disease resistance, to pests and parasites that attack them. While these chemical fertilizers helped in using up the humus already present in the soil, they did not help in replacing the needed humus for the next crop, thus helping merely in the rapid exhaustion of the soil. With this experience they are now turning towards ways and means of feeding the soil by following the technique of organic farming.

To this end their scientists are hard at work to discover methods of feeding the soil rather than merely stimulating it. It is reported that J. W. Frazer and Eric Eweson have developed a method of composting organic waste of cities. In

their plant in Pennsylvania they use factory waste and sewage matter. They claim that soil already exhausted can be refertilized in two years by the use of such compost manure.

Is it not high time that the Agricultural Research Department turned to such up-to-date methods and be torch bearers of progress rather than run after the discarded chemical fertilizers?

May, 49

Gram Udyog Patrika

XX

WORM - MINDEDNESS

India is made to waste crores of rupees in building artificial fertilizer factories. Without an army of soil analysts all this effort may even turn against us in this land where we have an annual gamble with the monsoon. All this in the name of Science.

The more progressive agriculturists elsewhere are turning to nature for help. In Australia they have discovered the enormous dependence of man on worms, so much so that worm-rearing is becoming an industry like bee-keeping.

Earthworms live on the humus in the soil and convert it into assimilable manure. They bore their way into the soil which gets loosened and aerated by this process and water also percolates through these holes. These worms cannot live on chemicals. They need farm-yard manures or compost. Artificial fertilizers kill these friends of man.

Harold Karp of Randwick, Sydney, has registered a business concern "Earthworm Enterprise" and has built up a "Stud" of half a million worms. He says "if home gardens used more worms they would get better flowers and vegetables. With a box of 250 worms as breeding stock any garden can be started on the way to high fertility". He hopes to sell his worms at about £1 per box.

We hope our agriculturists will also become worm-minded

XXI

A TIMELY ADVICE

It has been stated that the fertilizer factory to be situated in Sindri (Behar) will be built up soon. Seeing that the question of using artificial fertilizers without widespread organization for careful soil analysis may prove a danger to the maintenance of the fertility of the soil, as has already been demonstrated in the experiments in Gujarat, is it wise to go ahead with this ill-conceived project? It may be best at the present time to retrace our steps and utilize such materials as have been ordered in the many irrigation projects and other undertakings that the Government of India may plan for the better cultivation of food crops. Instead of sinking twenty crores in an undertaking of doubtful benefit it would appear wisest, even at some loss, to change our mind now and proceed with schemes that will serve a definite purpose.

THE ALL-INDIA VILLAGE INDUSTRIES ASSOCIATION

MAGANVADI, WARDHA C. P.

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