

OUR FOOD PROBLEM

by

S. K. KELAVKAR, B. A., LL. B. (Cantab)

Barrister-at-Law

Ex-Judicial Minister, Kolhapur State.

With a foreword by

Hon. G. V. MAVALANKAR,

B. A., LL.B.

President, Central Legislative Assembly, New Delhi.

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FOREWORD

Mr. Kelavkar's booklet on the question of "Food Problem" is opportune in view of the present food situation in the country or even in the world. It evinces both industry and thought devoted to the subject by him.

The chief merit of his theme is to my mind not merely in the information about the quality or the supplies or the kinds of food necessary for our national needs, but the new perspective in which the problem and its solution are presented to us.

As he has rightly pointed out, the problem has always been treated as one of poverty and never been considered to be one of shortage. He has hit the nail on the head in pointing out this fundamental misconception about the food problem in India, which was unfortunately treated at all times as famine of money and not of food.

With the establishment of the British power in India and improvement in the speed of communications in the world, the social economy has moved in the direction of centralisation. In other words, the centre of gravity has shifted from the village to the city, and consequently the emphasis is shifted from rural to urban industrialisation. Even Agriculture has become in America and other lands a large scale and centralised industry. The individual agriculturist has now lost the initiative in every matter, such as production, transport, land improvement and water-supply, etc.

While in other countries Governments being national, concern themselves with all problems from the people's point

of view, in India the Government merely concerns itself with revenue collections and administration. The old village community, which was self-sufficient in all respects, and attended to its problems, which were mainly agricultural, has practically disappeared with the result that agriculture, which was once considered to be the best profession in society, is now considered the lowest.

Mr. Kelavkar has described the main directions in which the urbanisation tendency has led to the deterioration of agriculture, and he has rightly made very revealing observations both with reference to the Indian society and the Government. He says :—

“ Our present leisured and monied classes have learnt to live a life apart from the masses and except for their own selfish self-indulgence have ceased to bother about what is happening to their poorer countrymen.”

While complaining about the Government administration, he rightly observes :—

“ Our Government has so far been manned by ‘ job-seekers ’ who pass examinations and get started. They have often no stake in the country or in the agriculturist; their work is a job for money and not a task undertaken for love.”

He further says :—

“ Our Government Departments must cease to be mere ruling departments collecting revenue and administering rules efficiently. They must also become live and active departments devoted to wholehearted and unstinted service of the people.”

There are many other strong points which Mr. Kelavkar makes out and he concludes by saying "that merely following a vigorous policy of begging other nations for their surpluses will not carry us far."

Who will deny what Mr. Kelavkar so forcefully says? He has shown how closely the problem of food is connected with the problem of the establishment of a truly national and democratic government. The book is thought-provoking and presents the food problem in a correct and true perspective.

Ahmedabad,

G. V. Mavalankar.

Bhadra, the 7th July, 1946

ERRATA

The author craves the indulgence of the reader for the numerous spelling errors that have crept in the book. The reader's attention is however particularly drawn to the following corrections:—

- P. 4. Line 15: In place of "good idea of what really is" please read "good idea of what the position really is."
- P. 11. Line 6 and 7: In place of "its primary need is fuel" please read "its primary need is fuel in the form of carbo-hydrates."
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OUR FOOD PROBLEM

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INTRODUCTION

This little booklet is not an attempt to write an authoritative and statistical exposition on the present food position in India. It is only an effort to bring home to the average man, in popular language and without too many technicalities, the seriousness of his own position as to his basic elementary requirements, which if unfulfilled will destroy his very existence.

The author being an optimist, believes that with ordinary understanding and effort, this should never happen. He is fully confident that an awakened and properly organised India will not only be capable of feeding properly her present, so called overpopulation of 400 million, but a far larger number.

All what is needed is that we must all become conscious that food-sufficient and proper food--is the birthright of every human being and we must all work for it.

The author has endeavoured to show, in the following few pages how this can be done.

S. K. Kelavkar.

OUR FOOD PROBLEM

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I. WORLD SITUATION.

The problem that is causing more anxiety than any other to almost every Administration in the world at present, is the problem of food. Owing to six and a half years of a protracted and destructive war, which steadily ravaged some of the finest food producing areas in the world, the world food situation gradually worsened till it now has finally reached a stage when it threatens to be a major disaster such as the world has never experienced before. The situation is further aggravated by insufficiency of transport, by the difficulties of coordinating effort in conquered countries administered under different controlling authorities, by the time that under the best of circumstances devastated areas must take to become resuscitated, and so on. Only very vigorous and forceful action on the part of the United Nations of the World, working in Co-operation, with the fullest possible knowledge, sympathy, understanding, accord and coordination could avert this impending disaster. Let us hope and pray that the United Nations put both their best efforts and that their efforts bear happy fruit.

2. FROM PLENTY TO POVERTY.

A Chronic State:—The problem in India is a vastly more complicated one. With us insufficiency of food is not a transient problem caused by misfortunes such as war, droughts, floods, etc., and therefore one that would automatically disappear when these fortuitous circumstances disappeared and things reverted to normal. With us the problem of food has become an eternal one. For generations past now, vast numbers of people in India have been living on the verge of starvation, suffering therefrom untold misery, degradation and degeneration. Our high mortality index and our low life-expectancy figure bear eloquent testimony to the ravages of under nourishment, malnutrition and starvation in this unhappy country of ours. At the same time it has to be regretfully observed that the problem of enough and satisfactory food for the people has so far received but scant attention, in the right quarters. It is only when the situation becomes unbearable by aggravating causes and people start dying like rats round every corner, that we begin to take notice and to stir ourselves. Even then we call it "the usual occasional and periodical famine" and content ourselves by blaming the Gods for the droughts or floods that seem to have brought it on and the fecundity of man that appears to aggravate it.

Shortage Or Poverty:—No proper and systematic attempt seems to have ever been made to study and understand our real position as to food supply, the causes that have brought it about and to evolve a permanent remedy for our existing unhappy state. Matters in fact were so little understood that we had the strange phenomenon in this country that even in so-called famine

years foodgrains continued to be serenely exported from this country. The reason is not very difficult to understand: The problem was never considered really to be one of shortage but of poverty. For those that could afford to pay the price, there was always ample food, even in the worst famine stricken districts. Fortunately for the underdog the War has compulsorily brought about a more socialistic outlook on life and the rich and poor alike are made to realise what it means to have to share what little there is with others.

Starvation and Degradation:—Matters have now reached such a stage that we can afford to dally with the problem of food no longer. All the nation's resources and energies must be forthwith concentrated on it. The problem of sufficient and satisfactory food for every one must be successfully and permanently solved without any further delay. The physical, moral, and spiritual well-being of a nation is vitally dependent on its satisfactory food supply. No Nation can rise to any heights of moral or intellectual greatness when stomachs are hungry all around. With her great asset of a wonderful spiritual past, the contribution that a happy contented India can make towards universal peace and happiness will be unique. But this will never be till the spectre of continuous empty stomachs is permanently driven away from our midst. On the other hand a half starved hungry India will ever be a potent potential danger to the peace, prosperity and happiness of the world.

Statistics:—Statistics about the requirements of our people and our total available resources have always been vague and unsatisfactory. In spite of very active and determined efforts in the last few years, the situation continues to remain almost as indefinite as ever. Therefore, it is difficult to formulate an

exact picture of the country's food position. One can only vaguely guess, from the darkness growing around one, that the situation is getting worse daily and has now become so grave as to be deeply alarming. So long as the present system of handling the food situation (including controls, procurements and distribution and collecting information) continues, I am afraid, however much we try, however much we grumble, and however earnest our efforts at obtaining the most exact statistics be, the figures obtained by us will continue to remain as inaccurate as ever and the picture of the actual position existing will continue to remain vague and indefinite. The best we can do is to apply to this blurred picture our own touches which our sympathy and observation prompt. It is then only that we can read between the lines and thus form a pretty good idea of what really is. Had we learnt to read between the lines Bengal would not have been the charnel house it did.

What The Cultivator Thinks:—In a country where there always has been insufficiency of foodgrains, where the Government, in many cases under its schemes of procurements, often ignores the basic fact that the cultivator must expect to live and he who grows a thing feels that he has a first right to it, where the schemes of procurements thwart the cultivators normal needs for himself, his family and dependants, and where after depriving the cultivator forcibly of his own produce at a price far below what he could obtain for it otherwise you expect him later to buy his own requirements from you at a price far above that at which he himself parted with his grain to you for and that too provided the grain be available with you or else in the black market, if he must live, it is but natural that the cultivator in his heart of hearts hates all your schemes of statistics and procurements, however anxious or

desirous he may be that his other Indian brothers do not starve and is willing to suffer for them. At present he does every thing possible to non-cooperate. The figures that he supplies may be all wrong and if he can manage the revenue underlings, the procurement also may be as far away from what it should be as is possible.

Correct Statistics:— The only time when correct statistics will be available and full co-operation be forthcoming from the cultivator will be when,

- (1) The cultivator has the fullest confidence in the Government that it is his own Government working for his good.
- (2) When he is left enough for his own and his dependants' normal average needs.
- (3) And when further he realises that he must unstintingly put all what he can at the disposal of his fellow country men as a matter of honourable duty and service to his fellowmen.

Yields of crops vary greatly. I have myself seen from the same plot of land an yield of sixteen maunds one year and six maunds the next, when the monsoon conditions were not very different. There are so many factors that come into operation such as cultivation, time of sowing, time and kind of manuring, kind and quality of seed, weeding, etc. "Average" may give a general guidance as to yield, but they do not help specifically in every case. It is only the fullest co-operation of the cultivator that can really help us.

There Never Is Enough:— However, whatever the official statistics may be there is no doubt in the minds of those

that know their India, that India has, for a long time past, ceased to grow enough food for her own people. On the other hand, there is no doubt that this was not so all the time and that this was the land of abundance once. Things have been steadily going from bad to worse so much so that the two-million or so tons of rice that was being imported, from Burma, Indo-China, etc., before the war, was only a fraction of our proper requirements and thousands and thousands of people went hungry in the country.

How Much Shortage:—What our present proper requirements are it is really difficult to calculate. Requirements of food can be such an elastic proposition and the effects of miscalculations can be only realised when the worst is all over, as we have already seen in the case of Bengal, when almost a tenth and perhaps even a larger proportion of the people were simply wiped out almost before you could wake up to the fact of what was happening. We know people have lived in this world without food, for 77 days and on the other hand the shock and the toximia of starvation have killed others within a few days. Mr. M. R. Masani in his very charmingly written book "YOUR FOOD" has collated various essential and fundamental facts and set them out very attractively, to impress their importance on our minds. Mr. Masani estimates that the total food stuffs (Grains, oilseeds, sugar, meat and milk, vegetables, fruits, eggs, etc.) normally produced in India are such as can provide 2,000 calories per head of population per day. Mr. Masani further calculates that the per capita deficit of calories in the indigenous supply of food-stuffs is 800 per day on the basis of a normal average requirement per capita of 2,800 calories.

Are we going to be wiped out?:—If we translate

Mr. Masani's figures of total average shortage in calories (400 million \times 800 \times 365) into grain, the richest of which has only 1600 calories to the lb., we arrive at the stupendous figures of 33 million tons as India's annual normal prewar shortage in grain. What then should our present requirements be when the world War has exhausted our reserves and when crops have failed over wide areas? The target figure of six million tons which the Government of India has set its heart upon and only a fraction of which seems likely to materialise, seems only like a flash in the pan. Is it to be taken as a matter of course that at least a quarter of the population may be wiped out?

Matters Growing Worse Daily:—The situation is no doubt bad and there is bound to be serious starvation and suffering, (Allah alone knows to what extent. Time will alone show us) even though Government succeeds in its endeavour to import its full target of 6 million tons. If anyone thinks that once our present crisis is passed the matter will end there, he will be seriously mistaken. Even with the best of crops under the present conditions, our plight must grow worse every year. The unseen factors that have been helping us so far in partly relieving us of our troubles for the time being like carryovers of reserves, secret hoards, eating away of premature crops etc., are bound to be less and less effective as time goes on. Secret hoards do not last for ever and the eating of crops prematurely is bound to make the shortages even more acute, on the other hand the demand for more food is steadily on the increase all the time.

Catastrophe Threatens:— I think, however, that the deficit in our normal indigenous food supply is not, as yet, as huge as to represent an amount of 33 million tons of grain or 300 calories per head per day. On the other hand I also think

that Mr. Masani's calculations that our total indigenous production is such as could give us an average 2,000 calories per day per head, are over optimistic and the actual normal figure is probably a deficit of somewhere between 200 to 400 calories per head per day i. e. roughly 8 to 16 million tons of grain. It is, however not necessary for the purpose of this analysis to exactly assess what our per capita production and per capita requirement is so that we can arrive at the exact shortage we are suffering from (in fact this is wellnigh an impossible task). Suffice it for us to know that a serious shortage, one such as permanently enforces thousands and thousands of unfortunates in this country to go without proper or sufficient food and often live on wild berries, roots and leaves has now become a chronic affair with us. It has already done us incalculable and irreparable harm and damage, and now matters have gone to such a stage that a catastrophe threatens us.

Reasons And Causes:—The causes of our present heart rending state are easy too see. They can be briefly summed up as:—

(1) The continuous and steady increase of population (at present estimated at 5 million per year) without a corresponding increase in the supply of foodstuffs.

(2) Deterioration in the quality of cultivation which has reduced the yield. The physique of the cultivator as well as that of his cattle has gone down owing to the growing ill nourishment they have had to undergo. They have in fact become incapable of putting out the necessary labour, through constant underfeeding. Then again till recently agricultural labour was so illpaid that it did not pay an agriculturist to put

all his labour in the land. He had to try and earn something additional elsewhere, even for his meagre living.

(3) Deterioration of seed. Lack of selected seed of quality has probably had more effect on production than is realised. Most cultivators lack staying power. With the growing multiplicity of small holdings, few of them grow enough food for themselves, with the result that they often eat away what had been kept for seed and then plant whatever they can get hold of.

(4) The growing infertility of the land, due to continuous deprivation and lack of replenishment (in other words manures). Dung is the best natural manure and is the land's natural due. Huge cities with their flushing systems deprive land of a great part of its due from the night soil source. On the other hand the scarcity of fuel compels the farmer to use his cattle dung as fuel. In Europe artificial manures make up for what is taken out of the land. In India artificial manures are not only far too expensive but even scarce at that.

I need not go into the details as to the immediate causes that have further aggravated our basic bad position. Suffice it to say that war extravagance, dislocation of our normal sources of outside supply, continuous bad harvests and indiscriminate exports have all their share in adding to our troubles.

A Neglected Problem:—One is constrained reluctantly to remark that our Government does not seem ever to have made a proper, sufficient and effective effort to tackle this problem of food. Otherwise why should not the present position have been anticipated and prepared against? Did not the

Government know that even in normal years our indigenous food supply was insufficient; that the unseen or secret reserves in the Country were being completely exhausted and that heavy imports of food were necessary, even with good crops, if the people were to be spared from the evils of starvation? Or did our savants expect that all would be well with a good bumper crop? Did they need the shock of a bad monsoon to wake them into an activity which should have been long theirs?

No doubt that in India, we have our Government Departments. There are the Revenue and the Agricultural Departments and now there is even a special Department of Food. What have they been able to achieve so far in the matter of making India self sufficient in the primary need of man—food? I am afraid that with the limitations they suffer, from their very nature and composition, the scope of their work has been limited and their achievements so far, comparatively speaking, have been insignificant. Unless there is a radical overhaul they will always remain so.

But we need not despair:—India is now at the bottom of the world's agricultural industry. Production in every kind of agricultural produce is about the lowest in the world. In most cases it is far less than 50% and often it is below even 33% of the average of other countries.

It does not take a great deal of figuring to realise that with her agricultural economy properly adjusted India can, *even without any increase in her present acreage under food grains*, not only provide for her present population but can probably support a far larger population.

3. PERTINENT FACTS

Our Basic Need:—In considering the problem of the food requirements of a country we will have to keep before us constantly certain well established basic facts concerning the normal needs of the human body, so that it may function as it is meant to do. The human body being primarily an engine for the production of energy (i. e. heat) its primary need is "fuel." Just as every mechanical engine also needs besides the mere "fuel," for its motive power, supplies of such articles as lubricants, materials for the renovation of worn out parts, materials for the repairs of broken down parts and so on; so also does the human body need, for its proper functioning, such supplementary matter to the mere fuel, i. e. heat producing food, as proteins, fats, minerals and vitamins.

The effect of the want of a proper supply of the basic essential requirements of the human body is its deterioration, leading to its ultimate destruction—the time for destruction varying according to the amount of short supplies and kind of short supplies involved.

Essential Conditions that our food must satisfy:—Our food, in order that our bodies may function properly must satisfy certain essential conditions:—

1. It must be of sufficient heat value in order that it may supply to the body the energy necessary.
2. The food must be of a type the body can avail itself of.
3. It must have, apart from its heat producing quality, protective material such as proteins, fats, mineral salts and vitamins, in necessary quantities.

Standards:—In order to measure the fuel requirements of the human body, dieticians have adopted the same indicator unit, as has been adopted by physicists viz. the calory, a calory being that quantity of heat, that is required to raise the temperature of one kilogram (2'2 lbs) of water, through one degree centigrade.

Similarly also, units have been adopted for the more subtle requirements of the human body, such as Vitamines.

Quantity First:—The purpose of this article is not to enter into a detailed discussion about dietetics, but to look at the question from the broad point of view of the average normal total requirements of the country so that we may know at least roughly, what we have, what we need, how we could get it and so on. The finer problems of food such as Balance, Palatability, Variety, etc. can be taken up after the initial question of absolute basic requirement of quantity has been successfully solved. The question of " quality " will then naturally follow.

Macarisson and Aykroyd:—In studying the effects of food on the human body Macarisson started the ball rolling by making experiments on rats, giving them various types of diet such as the British, French, Punjabees, Marathas, Madrassis, etc, have. Dr. W. R. Aykroyd and his able assistants at the Coonoor Nutrition Research Laboratories (See—Government of India Health Bulletin No. 23) have carried the work further by bringing to light numerous facts and details about the basic food requirements of an Indian, and also the food values of innumerable food articles available in India. Both Macarisson and Aykroyd deserve our most grateful thanks for the knowledge they have made available to

us, regarding our food. Their work should receive our deepest study.

Our Calory Requirements:—Dr. Aykroyd's conclusions, based on the presumption, that because of climatic conditions, stature etc, the average Indian needs ten percent less calories than the average European, (As per figures drawn up by an expert commission of the League of Nations, appointed for that purpose in 1936), are that the average caloric requirements in India are as follows:—

Infants			Children.		
Age	Calories		Age	Calories	
1st. Week	200 per day		4 to 5 years	1000 per day	
1st. Month	350 " "		6 to 7 " "	1300 " "	
2nd. " "	400 " "		8 to 9 " "	1600 " "	
3rd. " "	450 " "		10 to 11 " "	1800 " "	
5th. " "	600 " "		12 to 13 " "	2100 " "	
8th. " "	700 " "		Female of 14		
12th. " "	800 " "		and over.	2100 " "	

Males 14 years and upwards:— 2600 Calories per day per head.

The amount of calories for the normal adult (every male of 14 and upwards) are based on the supposition that he is "*engaged in ordinary easy going agricultural work, or coolie work.*" In the case of people doing strenuous work, pregnant and nursing women etc, the calories required will be more, according to the extra consumption in each case. The German ration for the army was, it appears, based on a caloric content of 4400. The Indian Army scale, I believe exceeded 4,000 and in the case of one unit, where raw semi-starved

bony recruits were being built into fine, well-muscled, stalwart men, 4200 was found to be not too much.

A Balanced Diet:— Even the comparatively well-off Indian's diet, although it may have sufficiency of calories and fats may be lacking in necessary proteins and vitamins and be thus not a balanced diet due to deficiency of protective material.

On the basis of a calory requirement of 2600, Dr. Aykroyd has worked out that in order that a diet may be what is called a well balanced one it should contain:—

Proteins	73	Grams
Fats	74	„
Carbohydrates	408	„
	———Total calories 1590	
Calcium	1.02	Grams
Phosphorous	1.47	„
Iron	44	Milligrams

Vitamine A over 7000 International units.

Vitamine B1 „ 400 „ „

Vitamine C about 170.0 Milligrams.

Balance in Diet and Effect of Shortages:— The question then that naturally arises is "What happens when the food we eat is not as per requirements?" This is not a question that could be lightly brushed aside. The Nation's whole well-being and future depend on a successful solution of the Food Problem, to achieve which, a proper understanding of our requirements is essential.

If the food is sufficient in calories, but is deficient in the other requirements that a "complete" food must satisfy, good

health will not be maintained. The subject receiving the diet will not be able to assimilate his food and utilise his calories. He will suffer from wasting, lethargy, inactivity, increase of susceptibility to disease, etc. But the defects so far as salts and vitamins are concerned can be made good by means of "pills."

If the food is insufficient in calories we may consider two types of cases—the supply may be such as is not enough to meet his "normal minimum existence" demand, or may be such as is in excess of his "minimum existence" demand but below his "normal activity" demand. Every living being requires a minimum number of calories, just to keep life going. This for convenience I have termed "minimum existence demand." In the case of an adult Indian it is calculated to be from 1800 to 2000 calories. For any physical activity he indulges in, he requires more calories and we have already seen that in the case of an adult engaged in ordinary easy going agricultural or cooly work the number of calories required is 2,600. This I have called his "normal activity demand." In the first case i. e. where he does not even get his minimum existence demand, he shall start drawing on his body reserves straight away. In other words he will start what may be termed "eating himself." In the second case where he gets more than his "minimum existence demand" and less than his "normal activity demand" the process of his eating himself will depend on the extra amount of calories available to him for physical exertion—those over 2000 in fact—and the amount of actual calories used up by him. If he leads a sedentary life—if of course he can afford to do so—he need not necessarily draw on his body reserves, but this too must tell ultimately on his physique as the body must be

worked properly in order that it may be kept in sound condition. It will seem clear therefore that under conditions of short supplies the process of a person eating himself i.e. wasting away must start some time and as this process cannot go on indefinitely, the person must in the end succumb, unless of course disease intervenes to accelerate the end, to relieve him of his burden of existence.

We in India have already seen enough of the ill effects of malnutrition, illnutrition and under-nutrition. Lethargic, illshaped, inert humanity, with the greatest death rate and the shortest life expectancy in the world, has been our privilege. The situation in deficit areas has become more aggravated than ever in recent years and now matters have reached such a stage that we are on the brink of a disaster, which, if not averted, would pale the recent events in Bengal into insignificance.

Shortage and Pills:—The most important fact that we must therefore keep before us prominently in planning the food supplies of a people is their requirements in calories. If the calories are there a lot of the illeffects of an unbalanced diet could be corrected by medicinal pills, but it does not require any great wisdom to see that no amount of calcium, phosphate, iron or vitamins can make up the need for calories. The human engine must primarily have its necessary fuel.

4. NEED AND CHOICE

Articles of Diet and Values:—Every country has its own special choice of articles of diet. Human food comprises a wide range of articles from roots and wild berries to hothouse grapes, pate-de-foi-gras and caviar. In India too the

choice is vast and varied, but generally cereals form the staple article and the other articles, comparatively speaking, play a minor part in our diet.

Now let us look at the various common articles of food available in the country from their calory-contents point of view.

Foodgrains range from 1500 to 1600 calories per lb., Bajra is 1600, wheat and rice about 1570 and barley about 1500.

Amongst pulses the soya bean stands on its own with a calorific value of 1960 units per lb. Chana varies roundabout 1600 according to variety and the pea is the lowest with 1430. Pulses however have a special value of their own, as they are rich in proteins. The average percentage of proteins in cereals varies from 6 to 7% in rice, to 13.6 percent in oatmeal, whereas the poorest lentil, the pea, has 19 percent and the soya contains 43.2 percent, a quantity almost double that in lean beef, the meat richest in proteins. In nuts and oils almonds take pride of place, being very rich in fats, proteins and calories, and that is why perhaps our wrestling gentry used to lay such a store by them. However the almond is not common food, but then all nuts and oilseeds are rich in fats, proteins and calories and are a necessary part of the vegetarian's diet. The common ground nut contains 26.7 percent proteins, over 40 percent oil and has over 2500 calories per lb. With the extraction of most of its oil, which in itself is a very valuable and essential food, the ground nut cake forms a rich source of calories and proteins, the protein percentage being almost the same as that in the soyabean (almost double that in the richest meat—lean beef). If made with care, after proper

cleaning and hand picking, so that no shells or bad rancid kernels go in, the cake becomes quite palatable. Ground nut cake has in fact enormous possibilities. Thousands and thousands of tons of ground nut cake are at present used as manure, whereas the same could serve a far more important purpose, that of feeding humanity. More of this anon.

In vegetables, root vegetables vary greatly in their calory content, from a modest 250 to the quite substantial 750. Leafy vegetables may have as little as 150 or even 450 according to variety. Fruits have the widest variation. Melons have 85, whereas dry Karwandas (a very common wild berry in the western ghauts) equal Bajra (1600) in their calory contents.

From the point of calory supply fish with its high moisture content of over 75 percent is rather poor, being only about 450, but it has its own special food value as it is rich in proteins (over 20 percent) and is a valuable source of supply of phosphorous. Eggs contain about 800 calories, cow's milk about 300, buffalo milk about 500 and goat's milk is in between the two. Meats vary from about 520 for beefsteak and pork to 880 for mutton (moisture contents 70 to 77 percent). Jaggery (Gul) is rich with 1740 calories per lb.

A modest simple balanced Diet:—So much about the calory contents of the common types of foodstuffs one comes across in India. (Those who wish to have more details may refer to the extremely useful Government publication, Health Bulletin No. 23 and other literature available), I need not reiterate that however valuable and necessary calories are to us for our existence, they alone do not determine the value of an article as human food. It is not necessary for the purpose of

this article to enter deeply in the subject of the other basic requirements of food. It will be sufficient for our purpose if we refer briefly to Dr. Aykroyd's conclusions in this respect again, which have already been mentioned on page 14. It is apparent that given a long enough purse one could command almost an infinite number and variety of 'menus' from the foodstuffs available to us in India, which will satisfy the minimum requirements laid down by Dr. Aykroyd. But for the common purse we must find a suitable combination. Dr. Aykroyd has worked out one such average diet suitable to the needs of the vegetarian labourer, when rice could be available:-

Rice	10 Ozs.	} about 2600 calories.
Millets or wheat.	5 Ozs.	
Milk.	8 Ozs.	
Pulses.	3 Ozs.	
Non leafy vegetables.	6 Ozs.	
Green leafy vegetables.	4 Ozs.	
Fats and oils.	2 Ozs.	
Fruits.	2 Ozs.	

Total quantity. 2½ Lbs.

But Even that beyond us:—It will however be seen that even Dr. Aykroyd's modest diet is beyond the dreams of the average Indian at present. Even if he can manage to find the cereals (not all rice necessarily, but say roughly a lb. of any available grain) pulses and fats, there are not enough vegetables or milk in the country to ensure to his share the quantities laid down in the above diet. On a rough estimate the total available supply of milk in India at present does not average even 4 ozs. per head of population, and the vegetable supply is barely sufficient to allow an allround distribution of 4 ozs. per head. Then too a larger part of this meagre supply is only available in the north (particularly the Punjab

and Sind) and for practical purposes is of no value to Bombay Deccan or Madras.

A Minimum Diet for an Adult:—We do not know when the Golden day will dawn, when every one in India will have at his disposal at least the modest diet suggested by Dr. Aykroyd, but in order to tide over the present situation let us reduce our primary needs to as simple a fare as possible. This to consist of:—

Foodgrains (whatever variety available) to make up about	1500	calories
Pulses 3 ozs. to make up „	300	„
Fats and oils 2 ozs., with such milk as is available and leafy and non leafy vegetables to make up in all:—	800	calories
	<hr/>	
	Total	2600 calories

This is absolutely the simplest sort of diet that we can work on. And in the case of such a diet it is likely that there may be deficiency trouble particularly of vitamins. But this could be made up by ' pills ', a fact the Government of India seems to be fully conscious of.

So far we have looked at the question of our food requirements from the standpoint of the mere adult. Those that are responsible for feeding the people will have to look at the question as a whole and the needs not only of the adults but of young and old, of women and children, of those who are ailing and those who are invalids, of people working normally and people engaged in heavy manual labour etc., will all have to be specially studied and catered for.

Our Minimum Average Need:—In order however to obtain some guidance we can roughly calculate that out of the 400 million people in India $\frac{3}{5}$ ths i. e. 240 million are people of an age of 14 years and over and the rest 160 million are under 14 years of age. We may further modestly estimate that the average per capita requirement in calories of the 240 million is 2400 calories per day and the average per capita daily requirement in calories of the 160 million under fourteen is 1400 per day. This gives us a rough and ready average of 2000 calories per head per day, as the requirement per person per day, irrespective of sex, age, condition, occupation etc. Probably this figure is rather on the low side. Actual experience and careful statistics will alone show us how far out we may be, but under the present stringent circumstances we will be fairly safe in basing our calculations on this very modest figure. (Mr. Hoover as I see from his broadcast, estimates this to be 2200, probably a figure more near the actual).

This means therefore that India must have such a food supply at her disposal as will ensure an average ration per head per day—irrespective of sex or age—containing a minimum 2000 calories, if she is going to be saved from the evils of starvation.

5. RATION AND REALITY

3/4 lbs per Adult Is it enough ?—At present the proposed ration of the major food grains (wheat, rice, jowār or bajra) is 3/4 lbs per adult, with a modification of half in the case of children and nothing to infants. The average must therefore workout at less than 3/4 lb that is to say less than 1200 calories per head per day. Conceding for a moment that the major food grain allotment is made on the basis of head of population only, irrespective of age or sex etc, this means that the population of India will have to find the balance of calories necessary for their normal existence, viz 800 calories, from the other food stuffs available to them, such as meat, milk, fish, poultry, eggs, pulses, oil, sugar, fruits, vegetables etc., With the wildest stretch of imagination we cannot conceive that the present indigenous supply in India can make up this huge proportion of the minimum requirement, (For detailed figures see Mr. Masani's book). This means that unless the basic ration of food grains is at least 1 lb per head, there will be a substantial per capita shortage (anywhere from 200 to 400 per capita) allround even with our modest figure of 2000 calories per head per day. What will actually happen is that when we shall have run through the stocks of our non-major foodgrain foodstocks, (the rich collaring as much of them as possible), and when we have also run through our secret hoards if there be any, there will be deaths by starvation all round, unless the Government is, atleast by that time, able to secure sufficient grain and food stuffs from outside to increase the basic ration to the necessary figures. Crops will be eaten before they are ripe, seed will be eaten out of hand and even with a good monsoon the next year's position will be still worse.

We are in fact standing on the brink of a precipice, down which we will be hurled unless Government succeeds in pouring foodstuffs in the country, and *also in getting the indigenous production of foodstuffs materially accelerated.*

Some Facts as to Bombay:—Some of our friends in Bombay will quote actual figures of grain consumed per head in Bombay city (from offtake figures) and will assert that the average requirements are no where near the one lb per head suggested by me above, as the minimum average requirement irrespective of sex, age or condition under our present supplies of other food articles. When one talks of Bombay one must never forget certain special features of the place which do not pertain to the rural areas of India. Bombay is, comparatively speaking a rich city and the average per capita income of the resident of Bombay is many times that (statisticians can work out the exact figure) of the average Indian living in the moffusil. Therefore, the Bombay citizen can afford to pay a price for his foodstuffs which the moffusil Indian cannot afford to pay, with the result that all the few good things that the country has, such as meat, eggs, milk, vegetables, fruit, etc. rush to Bombay and even the producer himself gets very little of them. Being a coastal town, with the fish supply better organised than elsewhere, Bombay has also a large supply of fish and at more reasonable prices than in the hinterland. Then Bombay has a larger allotment of sugar, and probably there has been also some carryover of unaccounted choice food grains from the previous years. *Bombay figures cannot be a guidance for the district.*

Some Facts as to the Districts:—The agriculturist and the labourers in the Bombay Province cannot even afford to buy lentils and oils in sufficient quantities, leave aside other food

articles. His standard meal consists of Kanda Bhakarī (Bread and onions) in the Deshrans and rice and tamarind water in the Konkan. Occasionally there are additions of dry fish in the Konkan and Dal and cheap leafy vegetables in the Desh. He must perforce obtain his calories principally from the cereal he eats. Also his normal requirements in many cases must be far more than 2600 calories. A joke which used to be made—people have forgotten those days now—about a hefty man's eating capacities is in point. " He requires one seer's bhakarīes every day " (Old one seer equalled almost 3 lbs.).

All that has been said so far boils down to this:—That we are terribly short of food stuffs at present and if enormous quantities of foodstuffs are not poured in forthwith, India will suffer from such a devastation by starvation as she has not yet experienced. Further, not only must every effort be made to import as much of food as possible, but the fullest concentration made on increasing the indogenous production of food also. That although War and other fortuitous circumstances have added to our troubles, our food shortage trouble has become a chronic disease and we must consider the extermination of this disease as the first item of importance in the matter of national reconstruction. *We must so readjust our basic agricultural economy that we become independent not only of foreign imports of food but even of fortuitous misfortunes such as droughts and floods.*

We must become foodminded: An Optimist's faith:— It is my humble opinion that not only is this possible but it is not such a Herculean task as may be imagined. With the right understanding and the right effort this should be a matter of a few years. But for that everyone of us must become foodminded—not food minded in the sense that we all become

when we feel hungry, *but food minded in the sense that the growth of more food must become an obsession with all of us.* It must be our foremost problem and uppermost thought. Putting up posters or telling the cultivator to grow more food is not enough. We must all work for it. We must all be prepared to undergo the sacrifices and labour that may be involved in achieving our ideal of *shortage for none and sufficiency for all.*

6. FROM SHORTNESS TO SUFFICIENCY.

We must produce more of every type of food:—
 How must we set about in a practical way to achieve our ideal of shortage for none and sufficiency for all? We must see that irrespective of the fact whether we are vegetarians or not the increase in the production of every type of food must be achieved. We must have more of everything, of meat, milk, fish, poultry, eggs grains, lentils, oilseeds, vegetables fruits etc.

Let us take these one by one beginning with the most important:— cereals.

Cereals:—India's staple food is cereals, rice in one part, wheat in another, jowar in a third, bajra in a fourth and so on, but it is always one of our four major foodgrains. Now if we look at a comparative statement showing the average yield per acre in India of any foodgrain against the same in any other country in the world we must hang down our heads in very shame, our yield is so disparagingly low; and yet there seems no doubt that at one time this country led the world even in this branch of life's principal activities. The degeneration has been great, and noticeable even if we look back a few generations.

Graham's Statistical Report:—In a book written by one Major D. C. Graham in 1854 called the "Statistical report of the Principality of Kolhapur"—a most laboriously and painstakingly written book—Graham mentions by name 19 different varieties of rice and 13 different varieties of jowar that were grown, say a hundred years ago, even in the small principality of Kolhapur. He gives the average yield of jowar

per Kolhapur Bigba of 3800 sq. yards in the then Kolhapur Maunds of 64 seers of approximately 120 Tolas each as:—

Abundant harvest.	Medium harvest.	Bad harvest.
20 Maunds.	10 Mds.	3 Mds.

converted to our present measures of acres of 4840 sq. yards and maunds of 40 seers of 80 tolas, this becomes:—

Abundant harvest.	Medium harvest.	Bad harvest.
60 Maunds,	30 Mds.	9 Mds.

If you will tell the Kolhapur cultivator—a pretty industrious fellow that his forefathers got as much as 60 mds from the very acre of land from which he is now exultant to get 30, he will probably stare at you and whisper very inaudibly under his breath ‘liar’ and yet Graham was a careful man.

Our Generation:—Our modern Kolhapur cultivator no longer knows the 13 different varieties of jowar or even the 19 different varieties of paddy mentioned by Graham. Can any one make us believe that all these different and distinct varieties of paddy for instance, which in its wild state was only a weed growing in swampy areas, came into existence without a highly developed agriculture. Why—we have even seen a degeneration and degradation in our own lives. Take the case for instance of the once famous Kali Gajeli paddy of Ajra—a paddy that at one time took a gold medal for excellence—where is the quality now? The quality and the yield have gone down beyond conception.

The degeneration is in all directions and the cumulative effect of it is that we are getting less and less every year from our land and that too of an inferior quality. To begin with the land is not worked properly, secondly it does not get enough

manures; thirdly the seed is of a poor quality—and is getting poorer every year—and fourthly cultivation of the crop while it is growing (such as weeding etc.) is becoming more and more haphazard and indifferent. Weeds, diseases, insect pests take an enormous toll of the production. The crop losses, due to these alone, in India every year, are appalling.

And we are still going down:—To me it seems clear that our agricultural industry is steadily on a downward path. It also seems to me that our present society as well as our present government are by their very nature structure and constitution so handicapped that they can, as long as they continue to be what they are, never give much effective assistance in checking this downward slide. The question therefore of putting back our agriculture to where it belongs would be a far away cry.

The impulse to Progress:—The reasons are not difficult to see. The impulse to all progress and improvement usually comes from the top, from those that have the power, the means, and the leisure to devote themselves for the advancement and good of everybody. With us the top, as a rule, is self centred, ignorant and indifferent. It lives in a world of its own, far removed from the actualities of the life of the average common man, the underdog. On the other hand the poor underdog can only go on in his own way, being deeply engrossed in the struggle for existence and having neither the time, nor the facilities, nor the means, for advancement. No one that really matters bothers to live his life, see through his eyes and realise his handicaps and his disabilities. Take a simple thing like the use of cattle dung for fuel. It is easy to say that the cultivator is foolish in using

his cattle dung as fuel and not as manure and work out figures on paper to show this. But has ever any one shown the cultivator how to secure fuel essential for his cooking at prices which he can pay, so that he can spare his cattle dung for manure?

Our Aristocracy:—Aristocracy of the European type which has played such a prominent part in the social, political and economical advancement of their country has become rare in India for long past now and our present leisured and monied classes have learnt to live a life apart from the masses and except for their selfish self-indulgence have ceased to bother about what is happening to their poorer countrymen.

Our Governmental machine designed for ruling:—On the other hand our Governments to whom the decadance of the country should be a matter of very grave concern are, it is unfortunate to have to remark, by their very nature, unable to be very effective in checking the decadance. Our Government has so far been manned by 'job-seekers' who pass examinations and get started. They have often no stake in the country or in the agriculturist, their work is a job for money and not a task undertaken for love. They are sure of advancement in their offices, irrespective of the fact whether they give any material return to the country that pays them. They continue to advance in the scales and grades of their pay provided they do not tread on the toes of anyone that matters. Is it a wonder then that our present Government machine turns out fine rulers who can administer the 'rule' but not servants out to serve the people?

Let Service and not Domination be the predominant motive:—Our aristocracy, and our leisured and

monied classes must realise that their future is intertwined with the future of their country and therefore at least the needs of their country must have a first claim on their leisure and their means. The well being of their fellow countrymen must become their first thought and they must work for it and sacrifice for it.

Our Government Departments must cease to be mere ruling departments collecting revenue and administering rules efficiently. They must also become live and active departments devoted to wholehearted and unstinted service of the people. They must be fired with the zeal of putting forth their best for the real good of the country they serve. Our Government services contain some of the best brains in the country. If full and proper use is made of them we can hope for very substantial results.

An alteration in the Structure essential:—But to achieve this the whole system of drafting men in service and promoting them afterwards will have to be overhauled. Our Government departments must cease to be manned by mere job-seekers—however intelligent they may be in passing exams. They must be manned by only such people that take up their work as a labour of love and not as a job that brings in a stipend. "*Advancement ought to depend upon achievement*" and not on mere length of service or seniority.

They must be valued according to their contributions to the general welfare and those that have failed to show their worthiness must be made to make way for others. In fact they must become the leaders and the guides of progress and advancement.

Research and Experimental Stations-Visiting Experts-Machinery and Collective Farms Manures:—

Reverting to the need of the agriculturist, Research and Experimental stations must be multiplied and staff that understand the country found or trained to man them. Experts must not only work in their own laboratories or experimental fields but must also work and move about in the people to carry to them their message of expert knowledge and experience. Big seed farms must be opened at suitable sights and in sufficient number and the finest type of seed in sufficient quantities made readily available to the cultivator. Conditions under which the industry is carried out everywhere must be carefully watched and nursed by expert eyes, and required help freely given so that the best possible results are obtained in each case. More and more machinery will have to be brought in to improve the cultivation and lower the costs. A system of collective farming, suitable to each area, to eliminate the small uneconomical holding and to facilitate use of machinery, will have to be devised and introduced. Every cultivator must be made to realise that Land is no longer a mere private asset to do with what the so called owner pleases. The whole nation's claim is on it for what it will produce and therefore individual whims have to be made subservient to national needs. The question of enough and proper manures will have to be tackled but this very ticklish problem is bound to take time and trouble to solve. There is no doubt that a great deal could be achieved in the matter of increased yields by way of better cultivation, better seed and better conservation of the soil, by means of damming, bunding etc.

Vagaries of Rainfall Hydro Electric works and

Irrigation, Cheap Fuel:—Irregularity and uncertainty of rainfall and occasional serious failures are a regular feature of our agricultural life, and in spite of our best efforts in other directions successful crop production always remains an uncertain thing, almost to the time when the crop is reaped. A great deal however can be done in the direction of offsetting the effects of short and irregular rains by artificial subsidiary irrigation systems. Even in the worst of years the total quantities of water that the monsoons pour on the tops of our high hinterland, if conserved and used as required, will be more than ample for all our agricultural needs. At present this water rushes away every season to the seas carrying away with it very valuable silt. If it can be all collected and utilised not only can we increase our yield of food by bringing in a lot of our dry areas under wet cultivation but we can make further substantial additions to it by making our dry cultivation independent of the vagaries of the monsoon. At the same time the collected water can be a source of generating considerable Hydro Electric Power,

Fortunately for us the attention of the Government is now fully centred on the possibilities in this direction and a number of Hydro Electric Schemes are under consideration. We do hope that the schemes are pushed with such a vigour that the whole country is covered with a net work of canals and electric grids so that cheap electricity for light, fuel and power and ample good water become available to even the smallest of our villages, incidentally solving our fuel question which is becoming more and more acute every day. With no large coal output, with a very small and limited firewood supply, with practically no oil or gas, our plight in the matter of fuel for cooking and oil for lighting is getting worse every year.

Cheap Hydro Electric power seems the only solution. We are no doubt fortunately situated in this respect. With fuel available in the way of cheap electricity for cooking, the rush on cowdung for fuel will cease and this very valuable manure will be returned to the soil where it belongs.

Contour bunding, damming and conservation of rain water:—I should also suggest that surveys should be immediately carried out and water banded and stored wherever possible. In this we should earnestly copy our old fort builders who took the greatest possible trouble to conserve all the water that fell within the forts they built. This will be patent to any one who carefully studies our Deccan forts. In Mysore state they have tried to follow the same plan; Let not a drop of water slip out. It must at least seep in the soil and add itself to the subterranean supply.

The possibilities of what may be achieved by a proper reorganisation of our agricultural industry are staggering. We may double or even trebble our output. Would we be starving them?

B. LENTILS AND OIL SEEDS

Apart from our cereals we have our subsidiary crops of Lentils and Oil seeds.

India lacks large pasture lands on which ample meat and milk could be produced to supply the necessary proteins and fats for us. But there is no doubt that we are singularly fortunate in our indigenous supply of a variety of lentils as well as oilseeds, such as no other country in the world has. They are all very palatable and between them form the largest and most important source of supply of the essential proteins and fats necessary for us. Many scientists believe that they

form a healthier source of supply of these ingredients than meat or fish. However that may be, there is no doubt that situated as we are, lentils and oilseeds must form the mainstay of our protein and fat supplies. Unfortunately our poverty has been so dire that we could not even avail ourselves of what was there in the country, in front of our very noses. Figures available are vague and inexact but it seems, from what little one can gather, that properly conserved and utilised India's production of lentils and oil seeds (including copra), eked out with the available supplies of meat, milk, eggs, poultry and fish should, without very great difficulty, enable us to meet most of our present minimum requirements of proteins and fats.

Conserve all Oilseeds and Lentils:—With improved conditions of agriculture the total production will materially increase in these grains also, thereby giving us a still more satisfactory supply. All the same, in order to safeguard ourselves, one can see no other way than to enforce a rigid prohibition of the export of all lentils and all edible oils and the seeds from which edible oil can be made. Very valuable quantities of oil seeds, which are not only useful for edible purposes but are also necessary for industrial purposes and of which there is a shortage all over the world, have been consistently allowed to slip out of the country when our own need of them has been so great. Let us wake up at least now and see that there will be no export of lentils or any oil seeds which can yield edible oil, till such time when our own needs for proteins and fats can be amply met. Incidentally we have to see that middlemen profiteers are not able to take advantage of the position that may result on a stoppage of exports by forcing down prices in the season which will take away the incentive to the cultivator to grow more. All lentils

and oil seeds should be taken over, just like foodgrains, at sufficiently remunerative prices to be rationed out along with other food stuffs. If there is going to be rationing, let the ideal be, that we all share equally of what little there is. *Either we all live together or die together.*

The Groundnut and its possibilities:—Particular care will have to be taken of the groundnut. This is an oil seed that is easy to cultivate, grows on a variety of soils and under a variety of climatic conditions and one that does not demand rich heavy soils. It does not exhaust the soil and in fact is said to improve the soil. It is also one of those rare things of which every part is useful. Cattle can eat the vines and the shells, the seeds can be eaten as they are or roasted — or could be milled into an oil, when both the extracted oil and the remnant of cake could form valuable foods. The oil has an excellent flavour, is easily digested and if put through a refining process, almost rivals olive oil, the choicest of edible oils. The oil cake has twice the amount of protein that the richest meat has, has a high calorific value has a substantial fat content (varying with the milling), and if properly made, is palatable. Mixed in suitable proportion with other grain flours, ground nut cake powder can make almost a complete food-material out of which suitable biscuits, shortbread etc could be turned out.

Possibilities of groundnut cake:—There is no doubt that there is a public prejudice against ground nut cake. The usual groundnut cake is made from nuts with shells on (the expellers do not work so well on shelled kernels). The nuts go in as they come from the field, without a satisfactory process of cleaning, elimination of rotten or rancid seed, etc., with the result that the cake turned out is an unsavoury mass, which is only fit to be used as manure.

Once the people are taught of the value of this article as food and realise its palatability, a demand for it will spring up. Research must be taken up immediately on the groundnut cake as an article of diet and suitable factories put up to manufacture suitable biscuits, shortbread etc. Enormous quantities of ground nut cake can be made available for food purposes from the lot that now goes as manure. It should be made incumbent on every mill owner to turn out edible oil and edible cake only and the offtake of all his cake at reasonable prices should be guaranteed.

The growing of groundnuts must be sedulously encouraged and research undertaken in the direction of still further improving the existing varieties. Factories, at suitable sights, will have to be put up to extract the oil and make edible oil cake. The oil may be refined or hydrogenated but must go towards food only at present, (till we have enough fats), and the oil-cake must be utilised to add to our protein supplies.

Other oil seeds:—Besides the groundnut we have a variety of other useful seeds such as gingelly, rape, sesame etc. The field for research and improvement in each of these is immense.

Cotton seed:—I might also refer to one seed which seems to have possibilities but which does not seem to have been fully exploited yet. I refer to the Cotton seed. Some of us may still remember the late Mr. Sutaria and his Cotton Seed Oil Co. which flourished for a time during the 1st World War but which was badly hit when the after war depression came. There is no doubt that an excellent edible oil can be manufactured from cotton seeds. Enormous quantities of cotton seeds are available in the country. Properly utilised,

they ought to contribute a substantial quota to our edible oil supplies. The field for research here again is vast.

C. SUGAR CANE

The Sugar Industry.—Another important type of produce we get out of land, which forms a valuable contribution to our food and calory supplies is the sugar cane, which is crushed and boiled down into either Sugar or Gul (Jaggery). Because of the very hard fight it had to make for its existence, the careful nursing and protection it received, and because of its being a highly technical industry that must be carried on a large scale and one that must and could afford to employ technical experts, our Sugar Industry is fortunately quite in line technically with the sugar industries in other parts of the world. But on the other hand, there seems no doubt at all that our basic costs of production of sugarcane generally are so high, compared to other great producing centres in the world, (which for the time being are out of competitive action), that it seems doubtful whether our Sugar Industry could successfully outstand open competition from more favoured sugar producing centres of the world, when things return to normal.

War and Control.—Under the special conditions created by the war our Sugar Industry which before had been in a precarious way began to prosper. One would have expected that under the basic unsound position of the industry Government would have allowed this important industry to build itself into a well fortified position. It is regrettable however to have to observe that the effect of the various orders passed by the Government with regard to the control of sugar have not been such as to allow the Sugar Industry full scope to build itself into such a position that when the bad times do come it

could easily outstand outside competition. At the same time the poor sugar cane cultivator in factory areas, having had to sell his sugarcane to factories at controlled prices, has been badly put down and made to work more for the benefit of others than himself.

Effect of low pricing:—There is no doubt that the control of prices and distribution of sugar were very necessary, specially after the fall of Burma, when practically the whole brunt of supplying sugar for the Middle East as well as the Eastern Command fell solely on India's shoulders. But this happened as regards many other articles also, both raw as well as manufactured. But why sugar alone was singled out to be priced at comparatively speaking much lower prices than the general rise in other vital articles would have justified has always been difficult to understand. Grain for instance rose to over 400 percent of its pre-war price in open markets (and often higher). Iron and Steel, building material, cloth, etc. all got their substantial advances; but sugar was kept down artificially at a level much below that of the others, (Statisticians can work out a comparative statement), so much so that at one time the official price of sugar was often less than the open market price of grain in many places. No doubt sugar being factory manufactured and the product of a large scale industry the initial price of it could be easily controlled. Also quite accurate statistics could be had of the actual day today cost of production. The argument was:— Does not the sugar manufacturer still pay a substantial dividend? This certainly was true. Most of the sugar factories growing sugarcane owned their own land or held prewar leases of land at low rentals. The machinery was prewar, priced at prewar prices and the carry over of necessary stores and even of manures (in

several cases) purchased at prewar low prices was substantial. The basis of the price fixed should have been the cost under the new circumstances just as if a factory were being put up new. Of course high gains for the factory and the cultivator would have been inevitable, as has been the case in every other industry. Some of our industries even made profits amounting to several times their total capital in a year (This has been the case with most industries). Cotton mills in fact made profits in crores where they used to make them in lakhs before. Although a lot of these profits have gone to the State by way of income tax, super tax and excess profits tax, there is no doubt that most of our industries have by now built themselves up into substantially fortified positions. When the depression comes, as it is bound to do some time, all these industries will have to go through the mill, but the sugar manufacturers will be the least fortified to withstand it. It was the large reserves that Java built during the last war that enabled her to dump her production in India and successfully sell sugar here, in spite of the disadvantages of transport costs and duty which almost amounted to 100%.

Poor cultivators suffer most.—But there is another very sad and depressing side to the effect of the Government policy about sugar prices. It all has been ultimately at the cost of the sugar cane grower in "Factory areas." With a price fixed for his cane to suit the sugar manufacturer, in turn to suit the price fixed for sugar, he has been, being often helpless to grow any other crop, or do anything else with his cane, getting a far lower return from his land than other growers. There is no doubt that with the rise in price of grain, cotton, tobacco and Gul, the cultivators generally (some more than others) have done well for themselves. Many of them still

remembering the lesson of the last war, when they foolishly squandered away their temporary prosperity, have built themselves in solid positions. Agricultural indebtedness has been very largely wiped out and probably for the first time in the long history of the agriculturist in India the cultivator is no longer under the crushing heels of the Sawkar. But all these good things could not come to the poor cultivator of cane in 'Factory areas' who must sell his cane to the sugar factory at fixed prices.

Middlemen happy.— It is not that the benefit of this low price has gone to the public at large. Except in regard to the sugar which has actually been rationed out or the sugar that has been consumed by our Army, the actual price paid by the consumer has never been any where near controlled price and enormous profits have gone to swell the pockets of the fortunate middlemen, who were able to command supplies for distribution in unrationed areas or for manufacture of sweets etc.

Damper on increase of production.— The result of this comparative low price has also had another effect. There has not been the impetus to turn out as much sugar as possible on the part of manufactures and also the cultivators themselves have been most unwilling to increase their sale of cane to the factories. On the other hand the official low price of sugar made it the cheapest available food for which the normal demand has also increased owing to the shortage of food-stuffs, and the enormous increase in the buying power of the average man owing to war prosperity. The available supplies being limited the pressure on sugar increased so much that the prices in the black market rocketed to the great glee of those that were lucky to get hold of stocks. We constantly heard

of sugar being almost openly sold in blackmarkets at even four times its controlled price.

Soaring of prices of Gul:— But the quantity of 'sweetening' being insufficient for the needs of the people, there was a resulting back pressure on Gul and the prices of Gul rocketed. Gul in some places reached four and five times its pre-war price. But this rise, being an open one and going mostly to the benefit of the cultivator, gave an impetus to cane growing for Gul and the production of Gul increased substantially in many places. The increase in production naturally acted as a check on the inflated prices.

The Gul grower has done well:— Fortunately for the Gul grower for a time no one thought of interfering with him and he was able, except when handicapped by movement due to war transport, substantially to benefit himself. Nothing more than the normal middleman's profit or the advantages of a rise in prices due to supply not meeting demand went to the merchant shopkeeper. But one fine morning the Government of India introduced their Gul control order and interference started with the free trading and movement of Gul with what results has already been seen.

Beware of ineffective controls:— For a time however wiser counsels prevailed and as very little interference as was possible was made with the previous established courses of trade; but now attempts are again being made to control the distribution, movement and prices of Gul. It is fairly easy to control the prices in the larger primary markets so that the cultivator gets only the selling prices fixed at the most and the merchant secures the Gul at controlled prices. But what happens if the quantity of Gul available is not enough

to meet the demand for it? Can you effectually enforce controlled selling prices throughout the lakhs and lakhs of shops that sell Gul? Is Government going to ration out Gul to every one in India so that every consumer gets his share and at the fixed price? The cultivator will naturally have to part with his Gul at the official rate but what happens afterwards? What about the innumerable different qualities? We already know that in some primary markets, inspite of the price of Gul being officially controlled, the buyers on behalf of exporters (agents of distributors to consumers in importing areas) because of the excessive demand now existing have to "unofficially" pay a substantial 'premium' over the so called controlled price. It is needless to add that in most cases this 'unearned increment' goes entirely to the benefit of the middlemen, who sell on behalf of cultivators. Is Government desirous that the Gul middlemen should also have substantial profits as in the case of the privileged middlemen of cloth (by their absurdly high commissions, such as would never have been got by them under open competition). Official interference in the normal course of trade by way of requisitions, control of prices, controlled distribution etc. appears very attractive in times of stress and shortage but it is as a matter of fact a highly dangerous and double edged weapon which may rebound back with a devastating effect. At a cursory look it may appear to be a panacea for all the evils of capitalism with its dominating factor of human greed. But in this case one feels constrained again to utter the warning that was given to the cat "*You have seen the ghee but not the stick.*"

Controls—Whole or nothing:—There is no doubt that in times of emergency, stress and strain, "controls" may become

useful weapons. But there are several requisite "ifs" for their successful working. When a Government is strong and single minded, fully prepared to treat every one alike, where it has a staff of honest, loyal, devoted, incorruptible officers and men and where the Government is determined to "go the whole hog" and to make no half-hearted tries or compromises, there is nothing better than completely bringing under "control" all the production and distribution of such articles as are considered essential and insufficient. If Government itself cannot carry on with the production, the production will have to be carried on through the same agencies as before but care must be taken to see that the costs of production do not go unnecessarily high and at the same time the incentive to accelerated production by the producer continues to be strong.

Effect of Mixed Measures.—The trouble starts when we start mixing up half heartedly the new socialistic ideas of controlling human affairs with the old capitalistic ones of leaving things to the competition of men and to their good sense. If the capitalistic system has to work at its best it must function fully freely without any interference in the impulses, checks and counterchecks that go towards its success. There is for instance the law of the survival of the fittest (it often becomes the survival of the richest—those who have grabbed most of the worldly things!) checked and counterbalanced by the weak correctives of human conscience and public opinion. Then again there are the impulse of personal gain or glory and the law of demand and supply. It has been found however that the capitalistic system although it may work fairly satisfactorily in normal times of abundance and plenty, fails miserably in times of emergencies such as war, pestilences, floods, famines etc. when the scope for the rapacious

unscrupulous and predatory humans to prey on their fellow beings increases and the checks of demand and supply, human conscience and public opinions grow weaker. In fact continuation of the old methods of pricing and distribution may cause such hardship as may affect the whole wellbeing of the nation. But if you must introduce control and suspend the ordinary methods of pricing and distribution, you must not do things half heartedly. You must go the whole hog. All the stocks and all the production and all the distribution must be entirely controlled. Attempts just to issue control rates in consumable articles without any physical control over the distribution are bound to lead to a very unsatisfactory state. While the law of demand and supply is suspended in the case of the producers it is left practically unfettered in the case of the distributors, giving full scope to the vile urge of personal profit, drowning the calls of conscience and public duty, the only possible checks. A very successful black market results, wherein only the rich and unscrupulous can secure things to their heart's content, whereas the poor, lawabiding and scrupulous have to go without them, however greater their need may be. The middleman in the mean time thrives in a way he never did before.

Should we stop growing Gul:—There has been, I understand, some attempt on the part of Government to control the area under Sugar cane which has materially increased because of the greater profit resulting through manufacture of Gul. The main argument is that so much land is shut out from foodgrains. I regret to observe that this very remark shows how little the problem of India's food supply is understood. It must have been, by now, realised that in food requirements India's primary shortage is in calories. Now let

us compare Gul with grain produced from the same plot of land from their food i. e. calories supply point of view. An acre of land normally produces 8 to 20 mds. of grain. This means that if the land is used for cultivation of grain, it may give us 12800 to 32000 calories, on the other hand an acre of land under sugar cane will give us a crop of 25 to 60 tons of cane resulting in an yield of 65 to 160 Mds. of Gul of calories ranging from 113750 to 280,000. The worst sugarcane crop will give us at least four times as many calories as the best grain crop. As a matter of fact the actual proportionate yield is far higher. One may say "Thou shalt not live by jaggery (Gul) alone." Perfectly true. We can have a diet mainly of grain but we cannot keep on a diet of mere Gul. Gul being almost purely a carbohydrate, as already explained, it cannot form a whole food. As a matter of fact, we cannot hygienically exceed the percentage of Gul in our diet at the cost of proteins and fats. But have we reached the maximum percentage of sugar in our daily diet? I believe in prewar days Britain the sweetest toothed country in the world ate as much as 84 lbs. of sugar per head per annum, whereas India, one of the poorest supplied, had hardly 25 to 27 lbs. per head per annum. (including Gul) i. e. almost a third of the amount consumed by the British. Is it not common experience among our poor people that Gul and Groundnuts form a very palatable and healthy diet of which a little goes a long way? Do we not know that when a patient has high fever and cannot take nourishment doctors dose him with Glucose, so that the furnace working overtime inside the man should have ample fuel and should not have to draw upon his body. And what is Gul but mostly glucose and sucrose i. e. potential glucose (the sucrose gets converted to glucose in the body.)

Then again every plot of land that is favoured to grow

sugar cane, with availability of water, suitability of soil etc. can grow grain. But can any plot of land that grows grain grow sugar cane? One can just see how shortsighted and mistaken the policy of compulsorily diverting areas under sugar cane to the growing of grain is. I should say at present:—
 “Grow all the sugar cane you can and flood our markets with Gul. We cannot have enough of it.”

D. VEGETABLES AND FRUITS

A very backward industry. The greedy Middleman:—The next item of importance that we may consider is vegetables and fruits. There is no doubt that the war has given a great impetus to the growing of vegetables and fruit in this country, as the demand for these has gone up, with the improved buying capacity of the average man and with the increased demand for supply purposes. This branch of our agriculture fared sadly indeed at one time, as the return obtained by the cultivator was poor. The lion's share of the price obtained went into the pockets of the greedy middleman. As a result very little was being done in the matter of better production and better marketing of our vegetables. We have an infinite variety of indigenous vegetables but they are almost where they were ages ago and practically nothing has been done towards improving their qualities and yield, and the evolving of new types. In the matter of nonindigenous types of vegetables we have been absolutely dependant on imported seed designed and developed for conditions in the country of their origin. It is only recently that some uncoordinated, spasmodic efforts are being made to produce seeds of foreign vegetables in Kashmir, Baluchistan and other suitable areas in India. The question of seed is an important one, and all efforts must be

put forth without delay to make India independent of imports of seed for her vegetables. We must also have experimental stations solely devoted to improving and increasing the indigenous vegetables supply.

Villages-Propaganda and active assistance-Use the Village officer.—Big propaganda will have to be carried out, from house to house, so that every one having some land tries to grow something on it as a hobby. Even the average agriculturist knows practically nothing about vegetable culture. He has not developed the habit of growing odds and ends with his waste water in his spare spots, especially during the monsoons when every bit of land could be made to yield something which could be eaten either by man or his animals. At one time our cultivator would not have bothered to go into such things because it was not worth his while, but circumstances have altered now and he is in the mood to learn and even to experiment. His handicaps are, firstly his ignorance as to what and how to grow and secondly want of facilities for obtaining seeds. He will have to be helped with guidance and seeds. I should suggest that every village officer should be put through a course which will befit him to give ordinary guidance in all agricultural matters to his village flock. When the problems are difficult and complicated the agricultural experts will come in to help. Every village can have a small communal farm where they grow vegetables under the control of the village officers. The vegetables can either be consumed locally or be sent to cities and may add something to the village common funds as well as supply most of the seed to the village. Here the villager can learn by actual observation and participation. A spirit of competition to show the best results could be aroused between the different villages and

prizes to the best would naturally follow. Needless to say the whole work would be carried on under the active fostering guidance of the Department of Agriculture.

The village Patil and Talathi must cease to be merely collectors of revenue and keepers of order but they must become the real leaders of the village in its path of progress. Among other things they must be responsible for its economic development.

Government Farms:—It is absolutely essential that at suitable spots studded all over the country there should be Government agricultural farms with a staff of experts carrying on the work of research, experimenting, growing seeds, advising actively and so on. Each farm should be so situated that it is within easy walking distance of any spot in the area to which it is supposed to tend. The agricultural officer will have to actively watch and guide his area as to its agricultural activities and get the best out of it.

Collective Farms:—Uneconomical small holdings must be done away with and collective farming universally introduced. The smallest individual farm should have a minimum area and any smaller holder should by law be compelled to merge in with others. It is likely that there will be strong opposition from the cultivators but they will have to be educated into it. Once the ice is broken and equitable plans worked out there will be cooperation on the part of the land owners especially now when labour is so scarce and expensive.

INDIRECT SUPPLIES OF FOOD FROM LAND.

MEAT, MILK, EGGS Etc.

So far we have considered the types of food stuffs that we get out of land directly, such as cereals pulses, vegetables

etc. But there is also another important source of food that our mother Earth gives us indirectly that is by way of animals and consists of meat, milk, eggs etc.

Arable Land:—It is not every bit of land on the Earth that could be used for the purpose of growing produce. Some of the Earth's land has to be left out as "Forest land" with a definite part to play in the economy of life. Some land may be so barren that it cannot even grow weeds. Some may have to be used for other necessary purposes such as mines, dwellings, factories, railways, aerodromes etc. etc. The land at the disposal of man for his food growing purposes is the land remaining. But of this again it is not every bit that could be utilised directly for the growth of food. A lot of it may be capable of bearing some sort of plant life but not suited for foodgrains economically. It is mostly from such lands (pastures) supplemented by some of the produce from the lands under foodgrains that we obtain our secondary supply of food stuffs.

Our poor Pastures—The prejudice against Animal Food:—Compared with some other countries India is very poor in her secondary type of food production although this forms a very important part of the diet of man. In India a large extent of our land surface is occupied by absolutely unfertile land and out of the land that is arable and available to us we have tried to devote as much as is possible to the production of foodgrains. This was natural in a country where a large proportion of the people have become pure vegetarians and meat eating is looked down upon. At the same time there is no doubt that even in the past we have always neglected to bother about the secondary kinds of supply that we could have out of the lands that were not under grain. This was natural in a

country which owing to the Buddhist influence became vegetarian minded and came to look down upon the killing of an animal for food as something against the laws of God and therefore sinful. With the waning of the Buddhist influence vegetarianism did lose its strong universal hold but in a country where there was abundant and varied food to eat without having to slaughter animals for food, the culture of animals for food did not receive the attention it has done elsewhere, with the result that this branch of food production is in a very neglected and backward condition.

More Meatarians:— Modern influences and force of circumstances are now tending to break the prejudice against animal food more and more every day and the proportion of meatarians is growing daily. But even then this branch of our lives' activities is receiving but scant attention. As a matter of fact the whole supply of calories from animal sources including milk and eggs is estimated to be under 400 calories per head per man per day in India.

E. MILK

Milk:— I have included milk and eggs in the secondary supply of food from land as we get these through the medium of animals who live on the produce of land. However a distinction has been made between milk and the other animal food materials as no taking of life is involved in its procurement. It is therefore that no vegetarian in India has eschewed milk as being an animal product. Milk in fact is really a very important food in the diet of the vegetarian but unfortunately in India he does not get enough of it, if he does get any at all. The milk supply of India is now notoriously low. Dr. Aykroyd in his standard diet for the working man has put down the

amount of milk necessary for him as 8 ozs. daily. It is estimated that if the whole of the milk produced in India is collected in one pot and distributed equally among her 400 million and odd of population, the share of each individual will barely amount to 4 ozs. If we notice further that most of this milk is concentrated in the North, particularly in Punjab and Sindh one can just imagine what the actual average of milk consumed per head in the Southern parts of India must be. Does it even come to an oz per head?

of milk per head per day of each animal in the world.

Largest number of Cattle and Smallest Yield of Milk:—And yet we have the curious paradox of having in the country the largest proportion of cattle per head in the world, one between every two persons, as the total number of cattle is supposed to be over 200 million. The reason is that the Indian cow gives an average of 2 lbs. milk per day only against 20.5 lbs. given by the cow in Holland and 15 lbs. in England.

At the same time the Indian cow does not require very many less 'Calories', to keep her going than the Dutch or the English cow. She in fact eats away valuable fodder but gives a poor return for it.

The reasons are not very difficult to see. The average Indian cow (or the buffalo) is now a degenerate and has ceased to be man's milk supplier—she was supposed to be. And yet this in a country which evolved such breeds as the Rajsthani, the Kathi, the Sindhi, the Khillari and innumerable others, long before even the name of the Hereford cow was heard. It is India that tamed the wild amphibious buffalo and turned it into one of the finest milk producing animals in the world, such as the Jafarabadi. But with poverty and ignorance, combined with foolish unpractical religious and

sentimental dogma the degeneration has come fast upon us even in our milk supplies.

Be hard and practical and weed out the bad ones. At present India is loaded with decrepit, useless, ill-bred and ill-nourished animals. These must be weeded out with a firm hand. Not only do they not give an economical return for what they consume but they eat away valuable fodder which would be available to others who will give a better return for it. Our Veterinary departments must be set afire to take up the work of improving the breed of our cattle and buffaloes.

Improvement of Breeds:—Mere holding of cattle fairs and exhibitions does very little. There ought to be work done from door to door. Breeding except from regularly authorised stock must be discouraged and if necessary even made penal. If enough number of bulls cannot be provided, artificial insemination must be vigorously introduced. The cultivator will soon find the benefits of the improvements suggested and will cooperate. There must be a definite plan extending over a stated period, at the end of which the aim should be that every bullock in the country is a vigorous powerful brute capable of giving back a proper return for his feed and every cow and she—buffalo of a minimum milk giving capacity. The number of animals will have to be restricted so that there is sufficient fodder, and feed for each animal. *The aim must be quality first quantity afterwards but enough feed for all.*

The Deccan Grass and Fodder:—The Deccan grass and fodder are notoriously poor. Except the Kala grass which grows in a few favoured spots the rest of the grass is so poor that most of it can almost said to be fit only to be burnt,

The cultivator ekes out his grass supply with stalks of Jowar, rice hay, sugar cane tops when in season and available and occasionally with oil cake and cow lentils. But the supply of these latterly has also been very poor. The animals get green food only in the Monsoon and have to go through the dry months on poor fodder drawing on the reserves they have succeeded in building up during the monsoon. No one has published a statistical report on the average life of the cow in the country, but I am sure that both the death rate and the life expectancy of the cow in India keep in sympathy with those of her masters. With the advent of wide spread irrigation it would be reasonable to expect that our cattle too would be better off as regards their feed, particularly in supply of more green and nitrogenous food, of which their present need is great. At the same time, organised research will have to be carried out in improving our grasses and eliminating the undersirable ones which monopolise large tracts of land and serve no useful purpose. The subject is a vast one and for a deeper study I refer my readers to that valuable publication "The Cow in India," by Satish. C. Dasgupta, (Khadi Pratisthan, 15 college square, Calcutta).

Goats:—Attention of the public has now been fully drawn to the value of the she-goat as an yielder of milk, specially suited for human consumption. We seem to have some valuable breeds which, for their size and consumption of fodder, yield substantial quantities of milk. At present goat-keeping is even a more haphazard human activity in India than cow-keeping and the field for improvement seems to be immense. Needless to say that whatever has been said above about the cow (and buffalo) applies mutatis mutandis to the goat also.

F. MEAT

Development of meat producing animals:—Along with the development of the milch and draft cattle, buffaloes and goats there ought to be development of the meat producing breeds also. Cultivators must also be encouraged to keep different types of animals including pigs and even rabbits who will turn all their garbage to good account by turning it into edible meat. My vegetarian Hindoo friends will shudder at this suggestion but a little thought will show them that although they may neither 'grow' nor 'consume' such food themselves, more of such food for those that can avail themselves of it will release a relative quantity of the vegetarian food in the country for themselves.

G. POULTRY AND EGGS

Poultry-Fowl Epidemics:—*Poultry* (Chicken, Guinea fowls, Ducks, Turkeys etc.) and eggs can also form a valuable contribution to our food supply. If Government and the public take this branch of food production more seriously we will see a very useful and substantial increase in the matter of this very valuable food supply. India never has had a poultry industry as such. Even some of the meat eating people tabooed chicken meat or eggs, very likely because the chicken is a bit of a scavenger in its own way. Chicken keeping was therefore a sort of haphazard affair and the local chicken was a semi-wild sort of bird which although a poor layer could live on the food it could scrob for itself. From long acclimatization the chicken had become practically immune to illnesses due to inclemency of climate chicken epidemics were mostly unknown. When it was realised that chicken keeping may turn out an attractive financial proposition, some-

private individuals and agricultural departments here and there began to interest themselves in poultry keeping. It was natural after that, that some of the highly developed cultivated types of the Western fowl such as Leghons, Wyandots, Rhode Islands etc. should be imported and introduced in to our fowl world. Here again it was a case of "seeing the ghee and not the stick." Probably no quarantine precautions were taken or the dire germs of dread chicken diseases were lying low to find suitable opportunities. With the introduction of the Western breeds various chicken diseases have now become rampant. On a new soil and with suitable climate these chicken epidemics have become such a scourge that they often destroy flocks of birds, not only birds with foreign blood in them but even pure indigenously bred birds, thus seriously discouraging even private enthusiasts who would like to go in for chicken keeping as a hobby. One would have thought that serious notice would have been taken by our veterinary and agricultural experts of this dire threat to our poultry industry but I do not think much is being done even to disseminate a knowledge as to preventive measures to minimise loss through attacks. It seems highly essential that intensive research work, in the causes, prevention and cure of the various types of fowl epidemics now current, is started at once and attempts made to evolve a type which combines the qualities of good laying and immunity from disease and which is suitable to the conditions it will have to exist in. (In the United States they have only recently evolved such a type. And in Australia they have evolved a bird that lays almost every day in the year)

Poultry keeping must become a common cottage industry—Itinerant Experts:—Poultry keeping must become a common cottage industry in this country. Poultry experts

must be appointed to travel all over the country, give practical instructions, and [guidance and make the villagers poultry-minded. Just like seed farms, suitable poultry farms to stock the country with suitable types of poultry must be started. To my mind the scope for an immediate increase of food supplies in this branch is immense.

Government Policy:— Apart from the appalling destruction through disease and epidemics which the poultry keeper has to face, the present policy of Government has been any thing but encouraging to him. At present Government only controls prices and walks away. Is any thing being done to see that the poultry keeper can produce and supply his eggs at the control price and have the incentive for going more and more in the business, of experimenting and taking risks? As a matter of fact the supply of eggs on the whole has been steadily going down and it is probably only the 'black' market that keeps this industry going. Along with chickens it is needless to add, that there will be some scope for other similar animal-keeping (such as Guinea fowls, ducks, turkeys, etc). Rabbit keeping may be also worth going in for.

H. BEE KEEPING AND HONEY

Bee Keeping and Honey:—Biologically honey has a high food value and there is no doubt that there is some scope for this cottage industry in the Konkan and the Ghatmatha area, which abound in trees with suitable blossoms. I have seen very promising and interesting experiments by a private individual in taming and developing a variety of local bee which responds very well to artificial keeping. The technical knowledge necessary is not very great and the initial cost of

starting the hives is also not prohibitive. All our jungles should be studded with the artificial hives which, once they are put up and started, need only periodical attention and collection. Why not train our forest rangers in the art of bee-keeping and honey-gathering? They can easily do this as a side line to their meanderings through the forests on other duties. The income can go towards bonuses to the gatherers of the honey. (For a detailed study of the subject I refer the reader to Khadi Pratisthan's latest publication:—"Romance of Bee Keeping").

I. FISH

The Fishing Industry and its enormous possibilities:—There is yet another source of food supply available to us which is capable of giving to us vastly enhanced quantities, if only we stretch our hands to it; and that is our sea fish. At present a few Kolis (i. e. fishermen) in coastal places carry on with their age old profession of fishing. Our Kolis are a valiant, hard working, industrious race of stalwarts but the scope of their work has been limited by the very nature of the industry. They barely needed to scratch the surface of the seas and that too within a short distance of the coast to normally meet the demand from the markets available to them. Circumstances had conspired even to make this demand poor as a large proportion of the sparse coastal population was vegetarian and non-fish-eating. Fish could not be sold in the large hinterland towns as the means of transport were slow and fish decomposes rapidly once it is pulled out of water. In fact, in times of glut, vast quantities of fish which were sometimes obtained even with the crude elementary methods of the Kolis had to be often cast away. A fraction of it may be used for

being turned into dry fish but the rest of it could only lie and-rot, at the best to be used as manure.

Our Fishing Industry:—In the result, our coastal fishing industry, having had no impetus to grow, has remained where it was centuries ago. The kolis go out a few miles in the sea, in their age old country crafts, fit only for cruising along the coast, and obtain their hauls by skimming a few feet of the ocean surface, with their crude hand drawn nets. In fact it is surprising to see some of the hauls they make inspite of their elementary methods and implements. They led a miserable existence, some how making two ends meet. It is only recently that with the existing shortage of food grains, the demand on their wares has become accentuated and they are enjoying a long due and much deserved prosperity. But here again the usual human shark of a middleman has stepped in and the cream has gone to him. Incidentally one may draw the attention of the reader to the numerous pernicious manipulations that are at present being resorted to, by capitalist vested interests, to keep up prices at a high level, by limiting the fish made available to the public, even in times when the fishermen secure scrumptious hauls, as these hauls would glut the market and could not be cleared except by a material reduction to a price such as the average man can afford. The capitalist middlemen would much rather withhold valuable food-material from a populace already short of food, than be exposed to a reduction of the gigantic profits they have got into the habit of making. It is needless to say that such public enemies have to be put down with a stern hand.

There is plenty of fish in our Seas:—Investigations made by experts show that our seas abound in many types of good edible fish and a lot could be further learnt by careful

observation and intensive study. It seems however quite clear that with our fishing industry properly organised, not only to scour the coastal areas but the deeper parts further out, we could multiply our present fish supply many many fold. What we need is a large fleet of ocean going trawlers equipped with proper machinery for deep sea trawling. These are the days of quick transport, refrigeration, preserving and tinning. Full use must be made of the advance in scientific knowledge and achievements and not a pound of fish pulled out of the sea need be wasted. Every fishing centre must have its fish clearing house equipped with modern implements for refrerating, smoking and drying and for tinning fish. A fleet of motor trolleys, equipped with cold chambers, must ply between the coast and the hinterland, for supplying fish to the populace throughout the hinterland. Every possible oz of fish must be pulled out of the seas and all such fish as cannot be disposed off fresh, preserved for use as food.

Give us more fish:—I should suggest that Government secure without delay a line of fishing trawlers (some of them may even be converted cargo ships or mine sweepers) get them fitted out with suitable trawling and refrigerating machinery, engage suitable crews and technicians from wherever they are available, and launch on a huge campaign of obtaining fish from the seas and distributing it over as wide an area as possible.

We do hear of some efforts to develop deep sea fishing on modern lines. A small trawler has been launched in Bombay and another in Karachi but this is an iota of what is needed. We must have, not one or two, but hundreds of trawlers scouring the seas for us for our much needed food (see what Norway has done). There is no doubt that the cost of getting up such a fishing fleet in a hurry would appear to be far in

excess of what it would be if the enterprise was gradually developed. The steamers, the equipment, the technical staff, all would require more but this cannot be helped. *In view of the fact that thousands of precious lives could be saved, costs will have to be given a secondary importance and time made the primary consideration.*

Most of the technical staff will have to be secured from outside but as once started this will be a permanently continuing business, many of our "new" young men will come out to "learn the trade" and could be taken up for training to be put in charge when the necessary training and experience is obtained. Our coastal population, particularly the Kolis and also men demobbed from the R. I. N. should have first refusal. There is no doubt that when fully developed this industry will give employment to a substantial number of our people.

And give it cheap:—Running the industry on a large scale on scientific lines and with no wastage to add to costs it ought to be easily possible to market the fish at attractively low prices. At present fish is being retailed at such extravagant prices that it is often listed at ten and twelve times the price of grain in hinterland towns like Poona. The aim should be to make fish as common a diet as possible to ease the pressure on grain and add to the commoner's supplies of proteins and phosphorous—instead of making it an article only available to the rich few.

If fresh fish is available at reasonable prices a large section of the non-vegetarian masses will take to it as ducks take to water. This will mean immediately a relief of the pressure on food grains.

Even enterprising businessmen could float a large company to take up this business. Apart from the supply of fresh, dried, smoked and canned fish there are the subsidiary industries of manufacture of fishoils, gelatine, tanned skins and so on. One can be doing charity as well as money making. The field is immense and as yet practically untapped.

Fisheries—a Major Department—Fisheries ought to be made a major department of state and coordinated with the Agricultural and Veterinary departments. The supply of enough and sufficient food for all should be the primary responsibility of these departments.

7. AND LASTLY.

From what has been said so far, it will be realised that although our problem of food is a grave one and will lead us into disaster if not tackled properly and without delay it is yet, favoured as we are with nature's bountiful gifts only awaiting to be availed of, not one that is beyond our own capacities. *India can very easily be, with proper and right effort, amply self sufficient in the matter of her food requirements and absolutely independent of food supplies from outside.*

We need wholehearted extravagant action:— What in fact is needed is vigour and foresight. *Every aspect of our food problem requires careful study and dynamic action so that the indigenous production of foodstuffs is accelerated and keeps on growing.* Just merely following a vigorous policy of begging other nations for their surpluses will not carry us far. *Our situation is going to grow worse and worse every year unless either we pull up our basic position or the basic position becomes balanced by the extermination of thousands of us.* No doubt our immediate need is great and has become aggravated by causes beyond our control and we have not prepared ourselves for it *and therefore beg we will have to, to enable us to tide ourselves over our needs till we set our house in order. But let us at least wake up now and look at the question not only from the point of view of our immediate needs but from the long view of permanent need from want.* Ours at present is a chronic disease and the real remedy is in not merely alleviating the apparent symptoms but erradicating the root causes of the disease itself. Just putting up posters of "Grow more food," will not help. Actions like turning over a few acres of

flower gardens into vegetables and grain patches may be good and necessary gestures but are only an iota of what is needed. What we need is large scale, whole hearted, extravagant action. *Just as in war one does not reckon the expense when the enemy must be beaten at all costs, here also we have to beat an enemy who if we do not beat him, will beat us and destroy us.*
