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Cottage and Small-Scale Industries

By

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This is a detailed survey of the present position of Cottage and Small-scale Industries in India. Many valuable suggestions for development of the existing industries and possibilities of new ones are discussed.

K I T A B I S T A N

ALLAHABAD

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should, therefore, be to establish only those big industries which cannot be started on a small scale but otherwise giving preference to cottage-scale industries. Let the knowledge, skill and experience be distilled down to the smallest man of the country so that he may be able to contribute in the-well being of the whole nation.

• It is in this spirit that this book is conceived and written. It has taken me long to collect my ideas in a book form and I still believe that mine is simply a small attempt towards the goal. When better and more qualified people of the country think on these lines I shall be amply rewarded in provoking thought on this important subject. Employment of the greatest number is the aim of cottage industries and if I have to some extent succeeded in bringing about this claim I have done my duty.

My thanks are due to all those friends with whom I have discussed the subject and who have helped in formulating my ideas and clarifying the issues. I have freely drawn on the reports, surveys and published treatises and the number being pretty large I have refrained from mentioning their names and acknowledging them individually. I hope the authors will excuse me for not doing so.

I wanted this book to be in the hands of the people long ago but my illness and preoccupations did not allow it to be finished earlier.

MEERUT,
8-4-1946.

MUKHTAR SINGH
Hony. Secretary,
Vigyan Kala Bhawan,
Daurala.

CONTENTS

PART I

CHAP.		PAGE
I.	Cottage and Small-Scale Industry Defined	9
II.	Place of Cottage Industry in National Economy	27
III.	Advantages and Disadvantages of Cottage Industries as against Large-Scale Industries	38
IV.	Difficulties and Handicaps	50
V.	State and Industries	69
VI.	Protection of Cottage Industries	79
VII.	Nationalisation of Cottage Industries	93
VIII.	Organisation	99

PART II

Description of Existing Industries	109
--	-----

PART III

New Industries	212
------------------------	-----

PART I

CHAPTER I

COTTAGE AND SMALL-SCALE INDUSTRY DEFINED

The phrase 'cottage industry' has created a bit of confusion, since it has been defined by different committees differently. Before we proceed further we feel it necessary that the implications of these words be well understood. As far as we are aware cottage industries were first defined by the Industrial Commission "as industries carried on in the homes of workers, where the scale of operation is small, and there is but little organisation, so that they are, as a rule, capable of supplying only local needs." It appears that the Industrial Commission, described the conditions as they then existed, rather than defining the term itself. We do not think the intention of the Industrial Commission was in any way to restrict the scope of cottage industries by the above description. Our purpose in writing this book, on the other hand, is to point out the possibilities of cottage industries, rather than to show what they actually are to-day. Our aim is to show what they should be, and we have not contented ourselves by showing merely what they are. The U.P. Industrial Organisation Committee, while discussing the scope of cottage industries, did not agree with the above definition when they stated that there were a number of cottage industries, which even used power in their working, and further pointed out that some of those industries were very well organised. They explained cottage industries "as those in which work is done. generally speaking, in the homes of artisans

and occasionally in small factories run by small industrialists of the entrepreneur type, power-driven machinery being rarely used." The U.P. Committee, therefore, extended the scope inasmuch as they included those small factories also in which cottage workers were employed as well as those small establishments in which power was used. We entirely agree with both these points, and we visualise that there is no reason why the use of power-driven machinery should be eliminated, nor why cottage industries should not be efficiently organised. We consider that in the post-war reconstruction period, electric power will be available to such an extent that in every village electricity will be utilised not only for ordinary amenities of life like light and fans, but small industries will be carried on with the help of machinery worked by electricity. If the scientific world has found the use of electricity to serve humanity, there seems to be no reason why the cottage worker should be deprived of it.

In Madras, the report on the Survey of Cottage Industries was published in 1929. The writers of this report have discussed the scope of cottage industries. They do not agree with the definition propounded by the Industrial Commission. They have tried to show that the production of cottage industries was never limited to local consumption. While discussing the definition given by the Industrial Commission they pointed out, "The definition is not comprehensive enough as it assumes that the organisation is insufficient and that the market is, as a rule, local. There are cottage industries, the markets for the products of which extend far beyond the locality in which they are established, examples of which are weaving of kalins and woollen pile-carpets, lace and embroidery industries, etc." Further they tried to define the phrase themselves as follows, "An alternative definition was, therefore, suggested by the Department of Industries, Madras, in the following terms :—

Industries carried on in the homes of workers as distinct from those carried on in factories. It was considered and approved by the Board of Industries constituted under the Madras State Aid to Industries Act, but Government held that the term should be taken to refer only to industries carried on exclusively for the benefit of, and by, workers in their homes and not to industries carried on for the benefit of middlemen, though the workers happen to work not in factories, but in their own cottages."

They did not go into the question of the use of power, which was, perhaps, admitted, as there existed a number of cottage industries in which not only power was used, but the Industries Department themselves provided tools worked by power.

The question again came before the Committee constituted in Bombay presided over by the well-known industrialist, Sir Purushottam Das Thakur Das. It was in their report, for the first time, that a distinction was made between cottage and small-scale industries, thereby creating a separate class of small-scale industries by itself.

The report defines Cottage Industries as follows :

"Cottage industries are industries where no power is used and the manufacture is carried on, generally speaking, in the home of the artisan himself and occasionally in small Karkhanas where not more than 9 workers are employed." They also defined small-scale industries in the following words :—

"By small-scale industries we understand industries where power is used and where the number of workers does not exceed 50 and the capital invested is less than Rs. 30,000."

They further remarked, "We are of the opinion that the fundamental characteristics of a cottage industry are (1) the absence of the use of power and (2) the location of the manufacture in the home of the cottage worker. From an ideal point of view a third

characteristic should be the ownership of the instruments of production by the cottage worker himself and a kind of organisation where the industrial worker will either be his own master or will belong to a co-operative organisation."

Unfortunately the definition adopted by this Committee has created a lot of confusion. The definition of the 'Small-Scale Industries' is altogether an arbitrary one. We do not find anywhere any reasons as to why the number of workers be restricted to 50 and capital investment to Rs. 30,000. Similarly we do not see any reason as to why power should not be used in cottage industries.

The definition given by the above Committee creates a lot of difficulty in the way of improvement and development of cottage industries, as also of small-scale industries. The difference between cottage and small-scale industries is more imaginary than real, and is not at all fundamental.

If small Karkhanas, started by capitalists in which workers are employed as labourers, have to be included in cottage industries, provided the number of workmen therein happens to be not more than nine, there seems to be no reason why their development should be limited to 50 persons, and to a capital of Rs. 30,000 only. We entirely agree, however, that cottage industries should be limited as far as possible to workers alone, so that the public may have opportunities to help and patronise such workers. If Karkhanas are included in cottage industries, the incentive of helping the small man would altogether be lost. It is, therefore, a clear mistake to include small Kharkhanas, run by capitalists in cottage industries, as also to differentiate between big and small factories. For these reasons we cannot agree with either the above definition or the distinction drawn between cottage and small-scale industries.

A correct definition of 'Cottage Industries' should

only be based on realities of our economic life. In our view the term Cottage or Home Industry can only refer to such industries as can be carried on in a place where the workman himself lives, by his own labour or the labour of the members of his family, without any outside help. As a matter of fact this was the first conception of all industries in the beginning. Before the introduction of machine and the use of power factories were small establishments and therefore necessarily were cottage or small-scale industries. When the consumption of industrial commodities became greater, and more widespread, there sprang up a number of bigger establishments, where people were employed, and manufacturers started manufacturing goods with the help of hired labour. The whole history of industrial development had three distinct stages: (1) when a family, or a few workers started together under a common master to manufacture articles. This master happened to be a teacher as well as the owner of that establishment. In some countries these establishments were formed into guilds, and laws were promulgated to organise and control these guilds and their apprenticeship. Artisans used to employ labourers, pupils or apprentices. (2) When the requirement of trade went further, small Karkhanas were started by the dealers, who employed skilled labour and exploited that labour for their own ends. This was the beginning of the factory system. If we study the economic history of England, we find that such establishments were opposed at first both by labourers and artisans who were reluctant to leave their own homes or to sell their liberty for a mess of pottage. But this objection soon died out. (3) The third stage begins after this when power was utilised to run the above small factories. We know even then there were many strikes, and people went to the extent of breaking new power machines under the impression that if their unrestricted use was allowed

to function, artisans will not only be deprived of their liberty, but most of them will be thrown out of employment, as the work so far done by hundreds of them would henceforth be done by only a few who need not be skilled labourers.

The first state clearly gives an idea of what cottage industry was like and what it should be. Then there came a time when on the whole continent of Europe and in the United States of America all small workers were ousted, and the work of the artisan was taken away by qualified engineers and chemists, who designed machinery and processes, so that the ordinary labourer could, with little training in the handling of machines or details of processes, be employed to manufacture most complicated articles.

When Japan entered into the markets of the world, she brought about a new orientation of manufacture on a different scale. The Japanese divided the entire scope of industries into two clear-cut divisions. One consisted of those industries which could not be done on a small scale and for which big plants, buildings, and organised labour was needed. In this type of industries can be included sugar, cement, paper, heavy chemicals, fertilisers, manufacture of machinery, mining, etc. The second consisted of those organisations which could be worked on a small scale. They studied the engineering principles adopted in the manufacture of complicated machinery, and tried to make small but effective working models, so that the unit of manufacture may become simple but at the same time it was designed to include all those mechanical developments which were necessary for the success of manufacture and production of articles at a cheap rate. Processes, in many cases of small unit, were cut down so that an article may be finished in different stages, and even at different places. In order to utilise all that ingenuity of organisation, they provided education not only in chemistry and engineering, but also trained workers

cottage work and worker is respected and there is a general feeling that it should be helped and patronised. The articles produced by the worker in his own home by his own labour deserve general support and they should be popularised throughout the land in order to ensure even distribution of wealth and to provide employment for as many people as possible in their own homes. Any industry, which fulfils this ideal, has all the characteristics of a cottage industry and can be deemed as such.

Before trying to formulate a full and comprehensive definition of cottage industries it is necessary to consider a few points connected with industry, its development and organisation and to form our own opinions in respect thereof. We therefore propose to deal with the following points in this connection with a view to getting a clear conception about them to enable us to formulate a logical definition of the phrase 'Cottage Industry'

- (a) Place of starting an industry,
- (b) Number and type of people employed,
- (c) Power, required, i.e., mechanical power or manual power.
- (d) Capital investment,
- (e) Distribution of production,
- (f) Ownership of establishment,
- (g) Inspection and control.

(a) *Place of starting an industry.*—Everybody will agree that oil pressing by bullock power is a profession that has continued till to-day in every village. This is an industry which is followed by oilman in his own home. His wife and children work along with him. Similarly spinning industry, where the ladies of the family ply their spinning wheel, comes in this category. The shoemaker, in his own house, purchasing a small quantity of leather, with his small tools, carries on shoe making, and nobody can call it anything else but a cottage industry. So is the case with the goldsmith, the dyer and many others who follow their professions in their own

homes. The very nature of these industries is such that they can easily be followed within the four corners of their homes. But there are some other industries, which cannot be easily carried on in cottages wherein the worker lives. Take the case of tanning of leather. In even a village, tanning of leather is an offensive trade. It not only affects the health of the person employed on it, but it affects the health of all the neighbours living around. Nobody will like, therefore, to have this industry pursued in one's cottage, and people should object to its working in the village itself. The place assigned for such an offensive trade should be certainly outside the habitation, and at a sufficient distance from it. But locating it at a place outside a cottage will not make it anything but a cottage industry. Similarly, the manufacture of Khandsari sugar, or jaggery, in one's own fields is a desirable location, and nobody will like to call this industry as factory or large-scale industry, simply because it is not followed in a cottage. The dairy industry, comprising of a number of cows, may similarly be located in places where better facilities exist both for fodder and keeping the cattle in open air. Instances of such industries can be multiplied, and it can be shown that the limitation of the industry to the cottage or the house of the worker should not play an important part in the decision of an industry as cottage or otherwise. We may consider a particular industry to be in this category as long as the location is not removed far to another village or a city from where the skilled worker himself resides.

(b) *Number and type of people employed.*—Though the number of people employed should be restricted, but to confine their scope only to the members of the family may not be quite fair. The right of a few workmen combining together and starting their own work, should be recognised as legitimate, and they should not be debarred from this definition simply because there happens to be a combination of more than one

family. If cottage industries have to be organised such co-operative combinations will have to be encouraged. Besides there may be required a few unskilled labourers to assist the cottage worker in his work. Their employment cannot be said to be in any way exploitation of labour. In the country there will always remain a number of people who will have to work as unskilled labourers somewhere or other. Their employment is a necessity specially in the type of agricultural industries, such as jaggery, Khandsari, tobacco curing, starch and the like.

Further in case of organising a Karkhana, wherein cottage workers are employed either to work on daily or monthly wages, or on piece work, or are allowed to work for the Karkhanedars in their own cottages, the position is different. Although we may wish that the organisers of such Karkhanas should not have the same sympathy from the public as the cottage worker himself, as the Karkhanedar exploits the worker for his own purpose, yet by force of circumstances we cannot leave out this type of organisation from the scope of help and encouragement both from the public and the Government. There may be some legislative action necessary to control and organise labour, wages, time of work, payment, etc., but on the whole such Karkhanedars must be considered on a better level, from the point of view of employment, than large-scale industries. Some distinction, however, still seems to be necessary between the work done by a cottage worker himself, and by the Karkhanedar who employs the cottage worker. In order to maintain this distinction, we have decided to keep such Karkhanas as a unit separate from that of cottage industries, and have included them as a small-scale industry. We visualise that there will soon come a time when this distinction will be extended and the place of cottage industries will be far more clearly established than what it is to-day.

(c) *Use of power.*—The question of power is a knotty one. It is legitimate to say that all the knowledge

and facilities evolved by the scientific world, whether they may be of mechanical or chemical nature, must be made available for the development of cottage industries, as well as for large-scale industries. But if we once decide, as the Bombay Report adverted to above has tried to do, that power should not be allowed to be used by cottage industries, we at once debar the cottage worker from making use of power evolved by the scientists for the benefit of all. Certainly the use of power may be a bad thing if it throws a number of workers out of their existing employment; but if it creates a facility of manufacture, or a better product, which could not otherwise be made, power should be welcome to every cottage worker. If everybody concedes that the chemical knowledge, or improvement in processes should be availed of by the cottage worker, and the government should help the artisan with expert knowledge on this point, why then the use of power should be denied. We do not see any reason as to why this should be so. Everybody agrees that the use of better tools is a necessity to improve production and if that is so, new tools or complicated machinery will have to be utilised by the cottage worker, and in most of the cases they may not be worked by manual labour at all. Electricity is a boon to humanity and, when India reaches a stage, where electricity would be easily available at cheap rates in the villages, it should certainly be utilised by the cottage worker as well. The Khandsari industry, for instance, with a small motor and centrifugal, will be far better worked than it is done by manual labour to-day.

It is true that when you allow the use of power in cottages you have to be very careful, either, in making the use of power, as it is done in Japan by reducing the voltage of electricity to 110 instead of 400, or you have to guard against accidents. Both these are things which can easily be managed and if need be, as in Japan, inspection, control and rules for using power may be framed

for a cottage worker also. We have no dispute over that point. But to ask a cottage worker not to take to power is an absurd suggestion, and perhaps seals the fate of future development of their work for all times to come. We do not consider that the writers of the Bombay Report meant it seriously when they made that distinction. But perhaps they thought that since they have propounded the necessity of helping the small-scale industries, there will be no injury done to the cottage worker if he employs power-driven machinery, as the cottage industry will in that case come under the definition of small-scale industries. Indirectly, however, it has unfortunately created a great mischief. As soon as you call any industry, where power is used, a small-scale industry, you at once take away the sympathy of the people, who want to help the artisan working in his own way and producing commodities. There cannot be two opinions on the point that a cottage worker requires help and patronage from every member of the nation. This is the greatest injury that is likely to be done if we distinguish the cottage industry from a small-scale industry on this score. We have, therefore, tried to use both these words as synonyms as long as the restrictions that we have placed in our definition hold good in their case.

(d) *Capital investment*.—The amount of money to be invested in an industry will depend upon the amount needed to carry on the manufacture of an article. If the raw material is costly, if the cost of machinery and equipment is expensive, or if the articles prepared are not likely to be sold out soon, a greater investment will certainly be needed. A petty goldsmith certainly requires much more investment than a carpenter. A jeweller, who cuts precious stones, turns them into artistic ornaments, will have to make more investment than anybody else. So will be the case of a person who produced silverwares. In the case of a person making platinum crucibles the investment may naturally be larger. A silk sari weaver

with gold thread may have to spend a few hundred rupees on one piece of cloth. Thus the readers will see that we cannot restrict the question of investment to a fixed maximum figure.

There has been an attempt practically in every province to organise the cottage workers in a co-operative society, and if this organisation goes on, either as on the basis of limited or unlimited liability, the amount of capital involved will go on increasing, and we cannot put a maximum limit over these concerns against the companies, which are sponsored by share-holders every day.

(e) *Distribution of production.*—Since the times immemorial, very nice articles have been made and exported, even when the use of machinery was unknown. Dacca muslins, for instance, were exported throughout the continent in the 16th and 17th centuries. They were certainly prepared in cottages, and formed the mainstay of cottage industry. Even to-day there are places noted for brasswares, curios, prints, and the like, and their produce is not only distributed throughout the country, but is also exported to foreign countries. All these industries are very well known cottage industries.

Mahatma Gandhi has placed a new orientation of cottage industries, for which he has pointed out the ideal of self-sufficiency. It may be generally correct, but if we make a fetish of self-sufficiency, the ideal may be wrong. The All India Spinners' Association has tackled the work of organising the manufacture of woollen cloth in Kashmir, but most of the goods prepared are sold far beyond the locality. Will that mean that woollen industry is not a cottage industry? To restrict the distribution of produce to a certain locality is not quite correct. It must be admitted that most of the production of the cottage worker, taken as a whole, will generally be consumed round about the centre of production;

but there may be a number of articles which cannot be consumed at the place where they are produced, either because the centre has a special facility for the raw material, or skill has developed for centuries at a certain place for the production of certain articles, or there may be certain other natural advantages in establishing an industry at a certain locality. But the very criterion of confining an industry to a certain locality, as far as the distribution of the finished products is concerned, cannot be considered to be a limiting factor. If we circumscribe our definition to this ideal, we are afraid most of the cottage industries will have to disappear. The art of paper-making cannot be practised everywhere, but paper is transported from one place to another. Jaggery, a well-known cottage industry run in the U.P., finds its sale throughout Gujrat, Punjab and other distant places.

By the phrase 'self-sufficiency' Mahatma Gandhi rightly considers that the exploitation of the consumers as well as that of the labourers must be avoided. As long as labourers or consumers are not exploited, cottage industry can distribute its products not only in India, but outside it. Take the case of gut making. Gut is a commodity which has special advantages for its production in India. If it is exported to foreign countries, where it cannot be cheaply produced, it will certainly be an advantage both to the consumer, as well as to the producer. Similar may be the case of tanned hides and skins.

(f) *Ownership of establishment.*—This is certainly a very important factor in deciding the question of cottage industry. If an establishment is owned by a capitalist, who uses his money for the purpose of exploiting the workers for his own advantages, we would not call it a cottage industry. As long as, on the other hand, the ownership rests in the worker himself, or a combination of them, we shall call it cottage industry. The main criterion will always be whether

a worker has lost his liberty in the establishment or not; whether the benefit of trade goes to the worker ultimately, or it remains in the hands of the middleman who does nothing else but exploits the workers for his own benefit.

(g) *Inspection and control.*—As we have already stated that will depend upon the stage of development of industries themselves. If they are likely to become dangerous to humanity, they have to be controlled. It is in the common interest that even a cottage worker should not endanger himself in his own workshop. The lines upon which these rules will be framed will differ according to the conditions, which will prevail in each of these industries.

—Taking all the above factors into consideration we can now define 'cottage industry' as follows:—

All industries, which are worked by the owners themselves with the help of their dependents (wife, children and relations) with a few labourers, the total number not exceeding nine, are cottage industries, provided they are worked in the home of the cottage worker or in some other place in the same locality. The employment of mechanical power or their organisation on the basis of limited or unlimited liability will not exclude them from this category.

'Small-scale industry' means all Karkhanas which may or may not be factories under the Factories' Act and wherein the artisan and skilled workers are employed by the Karkhanedar for his own benefit. While doing so we have limited the small-scale industry to nine persons, and have excluded all those establishments which fall under the term 'factory' as defined by Factories' Act. This has to be done as we feel that a factory which employs power and 50 men, cannot be said to be a small-scale industry. Those establishments in Japan where more people than nine, but say upto 50, are employed are known as medium-scale industries. and perhaps this is a correct phrase

for such factories. We further do not agree that the limit of Rs. 30,000 should be placed upon such industries. Small-scale as well as medium-scale industries are likely to employ much more capital than Rs. 30,000 in certain cases, while in others this amount may fall short considerably. The question of capital, as we have stated elsewhere, does not seem to be an important factor in classifying a factory as a cottage, small or medium-scale industry.

In the above definition of cottage industry we have certainly included all those industries which employ mechanical power, and we strongly feel that it is unjust not to allow the cottage worker the use of machinery and power. All these inventions are daily increasing and new knowledge and experience is daily being acquired. There is no sense in debarring the cottage worker from utilising these discoveries and inventions. Rather we feel that we must provide the cottage worker both with improved tools and machinery as well as power generated either by electricity or by some other means. It may be admitted that the water-driven flour mills in the hilly parts of the country have always been recognised to be so. Why then people using electricity or a small diesel engine in other industries should be debarred from this advantage. ✕

Co-operative Societies have done very little useful work as we have pointed out elsewhere. But the main drawback to their success has been that the best workers do not want to join as they cannot accept unlimited liability. Co-operative Societies have recognised the principle of limited liability. But unfortunately they have, in very few cases, extended this privilege to the organisation of cottage or small-scale industries. We wish that this principle should be so extended. There may be cases in which the co-operative societies may not be formed or the officers of the department may not think it worth while to do

so. In both the cases the ordinary companies' law should be available to the cottage worker, as it is available to every two persons who care to form themselves into a limited private company. Even now there is no bar for any two cottage workers to combine into a limited private company or take more people with them, and to get themselves recognised as a limited concern under the companies' law. We have purposely included such cases under our definition, as we want to point out that if such a privilege is extended to cottage workers, and they are apprised of its utility, these people will be better organised, and their work will be smoother, and their financial liabilities will be overcome to a very great extent. Further they will have a better status created by such an organisation.

We visualise that all small Karkhanas sooner or later will be absorbed in co-operative organisations and then the objection of exploitation of skilled labour will cease to exist. This is why we have used both the words cottage and small-scale industry as synonyms in this booklet.

CHAPTER II
PLACE OF COTTAGE INDUSTRY IN
NATIONAL ECONOMY

There is a large number of people who seem to believe that if we make improvements in agriculture we can raise the standard of the masses. According to them economic betterment of the people depends entirely on improvement in agriculture. This is the most fallacious argument. It is advanced by those who like to keep us 'hewers of wood and drawers of water' for ever.

In 'Rural India' we have tried to prove the futility of such arguments.

Before we make a fresh attempt to prove that the above argument is fallacious we must state a few fundamentals well known to the economists. The first and the foremost fundamental fact of economics is that agriculture is always the least paying industry. Any country, therefore, whose population mainly depends upon agriculture must always remain poor. Even in the United States of America where holdings are generally over 199 acres, where cash crops are mostly grown and many people live on fruits, vegetable, and dairy farming, the peasant's income is far less than that of the industrialist, not to say of India where holdings are very small, where cash crops are only few and the farmers are generally illiterate.

The second fundamental is that 20 acres is considered to be the smallest area which can keep a farmer in comfortable circumstances. This is the standard fixed by countries where produce per acre is far higher than ours.

The total cultivated area in British India in 1940-41 was 25,94,69,448 acres while the total rural population happens to be 25,82,22,857 which gives only one acre per head. If we take an average of a family of 5 persons the average holding comes to only 5 acres. If we take away big holdings out of the above area, the figure of per capita area will be very much reduced. If we take into consideration the small area which has irrigation facilities, the area which is every year flooded and also the area which has to be cultivated in the hope that something may grow we shall be at once convinced that this area can never be sufficient to give a comfortable living to the people. Add to the above difficulties, the failure of crops due to insect and other climatic causes.

If we look to the figures of the density of population we shall at once be convinced that the cultivated area in the country is so small that it is quite insufficient to keep the body and soul of the people together. Below we give the density of population in different provinces.

<i>Province</i>	<i>Density of Population per sq. mile</i>	<i>Maximum density in the district</i>	<i>Density</i>
Madras	591	Malabar	679
Bombay	72	Surat	571
Bengal	779 *	Bardwan Division	728
		Hoogly	1148
		24 Parganas	957
		Faridpur	1048
		Tippra	1525
		Noakhali	1337
United Provinces ..	518	Meerut Division	619
		Meerut	816
		Benares	1114
		Gorakhpur	876
Punjab	287	Jullundhar	845
		Sialkot	755
Behar	521	Saran	1072
		Muzaffarpur	1072
		Darbhanga	1033
Central Provinces ..	170	Jubbulpur	232
Assam	186	Burma Valley	500
N.-W. F. P. ..	213	Mardan	551
Orissa	271	Cuttack	536
Ajmer Merwara ..	243		
Sindh	94	Larkana	179

In the above table we have avoided to give the densities of districts in which big cities like Calcutta and Bombay may show a far higher density.

With little arrangement for irrigation and practically no protection from floods and climatic vagaries is it at all possible to raise the standard of the people by improving agriculture? Suppose for a moment all the scientific resources are made available and people are made literate to make use of these improvements and all the holdings are consolidated, cultivators become the owner of their holdings and they are absolved from all debts, can any expert promise them a comfortable living from such a small piece of land? We

strongly feel that we cannot support such a huge population on land. Why then labour under a false hope? The only solution is to divert a large number of people from land to some other occupation. Let us face the fact and therein lies the future planning of our country. We do not in any way deprecate efforts for agricultural improvement but the relief given thereby will always be small and limited.

In order to know the economic position of the country we generally consider the cost of cultivation and the income from the produce and if cultivator's income happens to be more than his cost we consider the producer to be prosperous. This is a wrong approach to the problem. The income of the cultivator consists of the sale of the commodities only, and so if the net income is not enough to meet his essential needs, the producer must lead a miserable life howsoever high his profits may seem to be. If the total income from the sale of his produce comes to Rs. 300 a year and his cost happens to be Rs. 200 he appears to make a profit of 50 per cent on his cost, but if Rs. 100 are not enough for meeting the bare necessities of his life he cannot be happy. Considering from this point of view, the *size of the holding* becomes a very important factor to his prosperity. If the holdings are extremely small in area, the holder will never be able to support himself whatever the price of his commodities.

The case of the landless labourer is worse still as he has no definite income and the agricultural work being of a seasonal character he cannot remain employed during the whole of the year. For the days he finds no work he must starve.

The above line of argument explains as to why 30% of the population in India goes without food. Most of the people, especially the officials, did not believe these figures at first but since the time the Government started rationing, the weakness of the

position has become apparent and the Bengal famine, specially wherein above 2 million people died of starvation has confirmed the conclusion. More than 70% of the total population of India is dependent upon agriculture, be they the actual cultivators or labourers. The position of the other 30% may be free from anxiety as they are either engaged in industry or in services. But even amongst this proportion there are many small cottage producers who are struggling against odds to get their living.

We calculate that the total cultivated area in our country can hardly support half the population living on land to-day and therefore 35% of the total population must be provided elsewhere if we want to raise the standard of the common man. A question arises, therefore, as to how to provide this vast population of 13.3 crores. This will be a population more than that of England or even that of United States of America.

It is further suggested that if new big concerns are started we shall be able to provide the masses with sufficient work and shall be able to give them a living wage. The well-known Bombay Planners are the protagonists of big industries and with all their imagination and with all the astronomical figures involved in their calculations they have only been able to say that after 15 years of planning the population will be distributed as follows:—

Occupational Distribution in 1931 and 1962

	1931		1962	
	<i>Millions</i>	<i>%</i>	<i>Millions</i>	<i>%</i>
Agriculture	106.3	72	129.7	58
Industry	22.1	15	57.9	26
Services	19.2	13	34.7	16
Total Working population ..	147.6	100	222.3	100
Total population	338.1	"	494.0	"

It looks very attractive when the Bombay Planners give us the happy news that in 1962 the percentage of population living on land will be reduced from 72% to 58% only while the people living on industry will increase from 15 to 26% but when we reduce the percentages to actual numbers as the planners have themselves done the position at once becomes dismal and disappointing. According to their own calculations there were 10 crores of people living on land in 1931, which will in 1962 increase to 12 crores, i.e., the number of people which according to them will have to be supported by land will increase by 20%. Even assuming an increase in production the cost of producing this increase will also increase under the well-known principle of diminishing returns and thus very little surplus will be really available to raise the standard of the people. The increase in area of course will always remain negligible and we should not be surprised if this area may decrease by giving up those tracts from cultivation which may not be economical to plough any more. The Bombay Planners envisage a minimum wage of labour and if that is assured, the cost of cultivation will go higher and in this way the margin of profit for the producer will be further curtailed. If, on the other hand, agriculturists try to curtail the labour cost by employing less people the number of people thrown out of employment will considerably increase. Add to this another factor which they themselves 'have suggested. If co-operative farming is introduced many small holders will have to leave their job and take to something else. As a matter of fact, the bigger the farms the lesser the number of people employed per acre. In this way though the margin of profit per acre may increase the employment will decrease. The above factors do not seem to have been taken into consideration by the Bombay Planners. If the present number of able-bodied persons cannot be supported by land now how

can 20% more be supported by agriculture twenty years after? This we fail to understand. We, however, want to point out that we are not against improvement in agriculture but we want to warn our readers that this will not solve the problem, and we must find out the solution elsewhere.

We can, therefore, safely conclude that as regards employment the Bombay Planners give hardly any satisfactory reply. Industrialisation, as understood by the Bombay Planners, i.e., the introduction of large-scale industries is not the solution of the problem. It may put more money in the pocket of the industrialists or may support a bit more population by industries but it is not likely to give sufficient relief either to the agriculturists or to the landless labourers.

Perhaps, it may be suggested that dolls may be created for the unemployed. That can only be done for the *bonafide* industrial labour. Wholesale provision for the unemployed as such is never possible for crores of people who will be only partially employed.

Mahatma Gandhi has tried to give a solution of the problem by village economy planning. According to him, if village self-sufficient economy is reverted to everybody may be provided though the standard of living may not be high. We entirely agree both with the sentiments and the arguments expressed in the Gandhian Plan but we are sorry to say that we cannot subscribe to the doctrine of self-sufficiency of the villages. The world is changing fast and in this mechanical age no village can be made self-sufficient. It would have been different when wants were few and the living of the people was simple but to-day the villages do not possess all the raw material needed for the manufacture of articles required to supply the ordinary daily needs of the people. If you want to utilise cars and buses for transport, if you want to use aeroplanes to attend the Congress sessions, you will

have to manufacture all these things in big factories and certainly not in villages. For good or evil big industries have come to stay and some of the articles cannot be manufactured on a small scale. However, we agree that barring those things which cannot be manufactured on a small scale, other articles should be manufactured in cottages and in the smallest economic units possible. When the author of the Gandhian Plan has quoted chapters and verses from different countries, specially from Japan, the author seems to have admitted that our wants will increase and we should not hesitate to take use of the machines and contrivances whereby production may become cheap and varied. The quotation given from Indusco supports the same idea. While we fully agree with the introduction of cottage industries we advocate the use of machines and power and also the distribution of produce over a bigger area than the village itself. In certain cases articles in a province may have to be exported to another province and, mind you, our provinces are, in certain cases, far bigger than some of the countries in Europe. We should not fight shy of the use of the scientific discoveries and machines which have changed the method of production considerably and have revolutionised the village organisation altogether. We have suffered enough for our orthodoxy and we feel the time has come when we should change, adopt and assimilate what is best in scientific methods. The method of production in Japan and now followed, during the war, by China, must be an eye-opener to us. To harp upon everything old will ruin us still further.

We are sorry to say that though the Bombay Planners have recognised the importance of cottage industries and small industries they do not seem to have given their blessings to this very important part of development. They seem to be enamoured of mass production and they have disregarded the salutary

maxim of 'production for the masses and by the masses'. If they would have done so they would have been confronted with the logical method of protection of small industries against big industries which in the fitness of things they could not have advocated.

In the definition of cottage industry we have tried to dispel the idea that cottage industries do not mean only the arts and crafts of ordinary type, but they may include industries in which more capital, power and machinery may be used. That being so we want to point out that the scope of cottage industries will be sufficiently wider. We want to impress upon our readers that even at the existing scale cottage industries are far more important than big industries. The number of people employed in them has been calculated by Dr. V.K.R.V. Rao. According to him the number of all the persons employed in large-scale industries comes to only 14,82,000 while the number of workers employed in cottage industries amounts to 61,41 000 which is more than 4 times that of the former.

According to the Report of the Fact Finding Committee total number of persons depending upon Handloom Industry amounts to 10 millions, out of which 10 lacs are actually employed. Handloom Industry produces 25% to 30% of the total cloth consumed and employs 85% of the total Textile Workers, while the Mill Industry employs only 15% of the total Textile Workers and produces 70% to 75% of the total cloth consumed. It clearly proves that if the Handloom Industry is replaced by Mill Industry only 5% more people will be employed while 80% will be thrown out. On the other hand if the process is reversed and Weaving Department of the Mills be closed down employment for more than 20 million people will be available.

In spite of the fact that cottage industry has to struggle both against big factories and imports from foreign countries, the artisans in villages have

not been replaced. Weavers have doggedly held their own and still their production is not at all a mean figure. Leather tanning, basket making, Khandsaris, oil pressing, basket and mat making etc., are still industries which give living to a very considerable number of people.

We can state without hesitation that in a country whose density of population is large, cottage industries are the only means of giving employment to raise the standard of the people. Mass production in countries like England, Germany and U.S.A., started as they had very small population and the developed export markets. We cannot have an export market at least for a number of years; nor we can afford to find large amounts of capital necessary to establish big factories. We certainly have our own big market but this will not be enough to keep big factories running. In a poor country you cannot sell much. We have a very large population. Our transport is ill-arranged, literacy and skill is wanting and every day the population is increasing. In such a country the only method of employing such a huge population is the introduction of cottage or small-scale industries. We will have to follow the footsteps of Japan in the employment of our people. We have to earmark big factories only for the production of those things which cannot be manufactured on a small scale and without which we cannot supply the need of the country. Cottage industries must be the rule and big industries the exception. Wherever a particular operation is of such a nature that it cannot be done on a small scale, the big industry should only perform that part of the work and no more. To say that cottage industries should be complementary to big industries is an entirely wrong notion. Unless we aim at cottage industries as our first target and big industries as our second target we shall not be able to employ such a huge population.

The Bombay Planners have themselves admitted that the agriculturists have to remain idle for a sufficiently long period of the year. If we cannot find suitable employment for these people during their vacant time, wherefrom their income may be raised, we cannot improve their standard of living. Such a part-time occupation can only be supplied by cottage industries and never by large-scale industries.

We conclude, therefore, with the remark that the salvation of our country lies in the development of cottage and small scale industries and nothing else. This is our only hope and the only solution of our economic ills.

CHAPTER III

ADVANTAGES AND DISADVANTAGES OF COTTAGE INDUSTRIES AS AGAINST LARGE-SCALE INDUSTRIES

There is a general belief that articles produced on a large scale are always cheaper. It is not quite correct. In this chapter we shall try to show the merits and demerits of cottage and small-scale industries so that the readers may themselves decide what type of industry is suited for a certain set of circumstances.

Before we enumerate the advantages of cottage industries we should first make it clear as to what do we mean by cheapness. In considering the price of an article we should always take the price at which it is available to the consumer. The cost of production of an article may be quite low but when it reaches the consumer the article may become very expensive. There are a number of weeds useful in medicine which you can have merely for the asking from a forest or from the fields but if you want to purchase them from some shop you will have to pay very high price for the same. The reason is not far to seek. The seller will have to get it collected at some cost and then will have to stock it safely till the time of sale. Besides this if the article has very little sale it will occupy space unnecessarily and the shopkeeper will have to incur expenses on that score. The lesser the sale of an article, the higher will be its price. If an article is brought for sale from an outside market, the seller will have to incur all the expenses of handling, packing,

transport and octroi or other taxes before the article is available for sale. Sometimes all these factors are not taken into account before an idea is formed of the cheapness of an article. We hope the readers will have all these points before their mind while considering the merits or demerits of articles manufactured on a cottage scale.

We now enumerate the main advantages of the cottage industries :—

(1) *Small capital required*—A cottage industry can be started with a small capital and this, it will be agreed, is the main advantage of the system of production known as cottage industry. To start a factory large amount of capital is needed whether all that amount is invested by one man or is subscribed in the form of shares by many. A cottage worker, on the other hand, requires a small place to start his work, only a set of simple tools and very little raw material and has to keep only a small investment locked up in finished goods. A carpenter, a smith or a weaver can start his job with a small investment while a factory requires a big building and a large machinery and equipment to start with. In days of depression a cottage worker has to lose very little while a factory or big concern has to lose a lot in the form of interest on money invested as well as by way of depreciation of plant and building.

(2) *Variety of designs*—Perhaps one of the greatest advantage in small-scale industries is that the worker can apply his skill to each individual piece and thus can create any number of designs. It costs him nothing extra if every piece he produces has its own design. For a machine it is very difficult to change from one design to another without incurring heavy expense. For example, take the case of prints. If a printer has got some skill he can print his cloth with any number of designs by simply changing his stencil. If he uses a card board for stencil it costs him only a

little labour and time, which he has in plenty. In case of wooden stencil too the price of the new stencil will be very little in comparison to the extra price he can get for his new piece. On the other hand, the cost of a copper plate or copper stencil will be sufficiently high and will not pay the manufacturer unless thousands of yards are printed in that design. This is one of the main reasons why printed cloth made in cottage in India has not only a wide sale in this country but is also in demand in the whole world. If cloth printing had been properly organised, we are sure, it would have become an important cottage industry of the country. The same may be said of the coatings, saris etc., and so with the utensils and other articles. Of course from that point of view the worker should either have an artistic outlook himself or may take the help of an artist.

(3) *Local market*—Generally the cottage worker caters for local needs only and he is, therefore, in a position to know the taste of the consumer and thus cater for his demands. The close contact between the consumer and the producer always pays in business. If a certain article has gone out of fashion he can take to producing another. Under such circumstances the manufacturer has not to rely upon his ingenuity alone but he can easily have a talk with his intelligent consumers face to face. He can prepare articles according to the taste of his consumers and can make necessary improvements in them. Such a manufacturer can easily understand the taste and the requirements of his consumers and can easily comply with them. As regards big factories though the psychology of the consumer is studied by their organisers yet generally the consumer is asked to take to the articles manufactured. It is true that the knowledge and the experience of the organiser of a big industry are far greater than those of the cottage industry worker but the former cannot afford to have a face to face talk with the consumer and thus is

not in a position to know his requirements and likings.

Exporting countries employ travellers who go about and study the taste of different markets but they are poor substitutes for the first-hand information available to the small man. The knowledge of the traveller, in the first instance, takes time to reach the manufacturer and then it again takes time to adjust the manufacturing process. Besides it is not the same thing as direct approach to the consumer. Of course the cottage worker who caters for outside markets has the same disadvantage as the big manufacturer.

(4) *Cost of marketing*—Small man has not to incur the heavy charges of export nor has he to take the risk of damage in transport. He has not to pay insurance charges to cover these risks nor has he to find a chain of dealers in that commodity. (The customs duty and other charges in different localities generally differ and the big manufacturer has to keep a record of different methods in vogue at different places.) Though the cost of producing an article on a small scale may sometimes be high but it is generally compensated by low expenses with which it can be placed in the market.

(5) *Overhead*—The small man is his own labourer and manufacturer while in the case of a big concern an article has to pass into many hands before it finally reaches the consumers. Very expensive staff has to be appointed to look after its organisation. In most cases organisation expenses known as 'overhead' constitute a big percentage of the entire cost of manufacture. If the work is not properly organised a paying business may easily turn into a losing concern.

Small man being his own master looks after his own job. His supervision charges are nil.

(6) *Destruction in case of emergency*—The present War has shown that big establishments can be easily destroyed and the whole economy of a country disturbed by concentrated bombarding of a few localities only. This has become an excellent device to

paralyse the enemy. China has been able to fight against Japan for a number of years before any help reached from outside. This would not have been possible had China depended upon big factories alone. China changed her manufacturing places very quickly and at a very little expense. As a matter of fact China was teaching to its population the organisation and manufacture of small articles even during her war with Japan. Through this very method of production she evolved to supply the necessities of her army and people. To fight a well-equipped enemy, who possessed up-to-date weapons of destruction was a very difficult job but all that has been successfully done because most of the things needed were done on such a small scale that factories could be changed overnight from one place to another.

War is just over and the countries have not yet got enough time to settle down but we are sure, the wonderful resistance of China, which was only possible due to small-scale manufacture, will be calmly studied by the nations and in the light of this experiment many big-scale industries may have to be replaced by small ones. The Indusco arrangement of China has startled the world and has proved the superiority of the economics of small-scale manufacture.

Aeroplane bombing can do very little damage to small-scale industries as it can only damage a small unit. To take industrial factories underground may not be easy, besides its shifting may be very costly. To destroy an industry scattered in small units over a large area is not an easy job, while a big factory concentrated in a small area can be bombed and disabled.

(7) *Resistance against loss*—Though it is generally believed that a penniless man cannot resist the risk of loss against a big organised manufacturer but it is not really so. No article can be sold at a lower price than the cost of raw material from which it is made. The loss is, therefore, what the labour and overhead charges

cost to the manufacture. A small-scale manufacturer can lower his labour charges and thus even in times of difficulty can continue his profession, as he incurs no overhead expenses while the manufacturer on a big scale cannot afford to exhaust his capital and ruin himself. His labour has to be paid and perhaps will have to be paid at the same rate. Factory labour generally prefers to go out of employment than accept a low salary during the period of depression.

Is it not very striking that all the weaving mills together have not been able to wipe off the weaver? He is still in that job and we do not think he will be ousted up to the time he is not offered a more attractive or more paying work. It is true that his earnings have considerably dwindled and his standard of living has gone down but all the same he has doggedly persisted and has succeeded in remaining at his place. He would have fared far better if he would not have depended for his raw material (yarn) on his competitor.

Though no outside help, as is generally given by legislature in the shape of tariff, railway freight, etc., has been accorded to the small man yet he has held his own. If similar help had been given to him, his condition would have been far better.

•(8) *Independence*—Man is not only an economic entity but he is a living organism. He is not governed by money alone. Sentiment also plays quite a big part in his life. Compare the labourer of the factory with the cottage manufacturer. The factory labourer leaves his home, has to come to the factory, works incessantly for eight hours, has to bear the rebukes of his supervisors and has to put in a very hard work of a boring nature. After his work is finished he has to arrange for his scanty food and has to live in a crowded slum. He may get a higher income than the cottage worker but income is not all. The latter is the master of himself, he can work, stop it if he likes, enjoy home life at pleasure and can meet his friends

as and when they come. The word 'independence' has a real meaning for him. The low wage that he earns is really the price of this freedom. Are not a few coppers a low price indeed for one's independence? Many will not sell it and obstinately persist to preserve it. This is one of the main reasons for the survival of cottage workers.

(9) *National life enriched*—It is regretted that the benefit to national character provided for by small-scale industry has altogether been ignored. Very rich and very poor people always exist side by side, similarly idiots and intelligent giants but they are enriched when the standard of small man is raised. A great injury to the national cause has been inflicted by factory system in this respect. What is a labourer—one who carries out the behest of the master or supervisor without thinking for himself. He has no initiative and no imagination. He does not develop his artistic or creative faculties nor he is interested in making any improvement in his task. As a matter of fact he can do nothing as the work is done by machine about which he understands so little. He has to pass through a mill of drudgery which leaves him exhausted and fatigued. After strenuous work of eight hours he tries to find enjoyment outside and without finding any he takes to drink and other such bad habits which makes the nation still poorer. In other countries the evil was realised long ago and continuation schools, culture centres, etc., were started to develop human faculties but it is admitted that these are poor substitutes for the natural aptitude which used to be expressed by the workers through their manufacture. The condition in India is just the same as it was when the machine age started in England. In India in industrial concerns welfare work and cultural development are missing and we recruit labour without caring in the least for the intellectual development of labour. If in foreign countries the welfare works are not con-

sidered up to the mark, conditions in India must be considered to be still worse.

Whatever arrangement be made all such arrangements will remain poor substitutes for the self-attained development that a cottage manufacturer provides for himself during the course of his job.

✓ (10) *No loss in strikes and lockouts*— Strikes and lockouts are of daily occurrence in big factories. Huge losses are suffered thereby and naturally all these losses have to be ultimately paid for by the consumer. In the case of small manufacturer there is hardly any labour employed and so no question of strike arises. The regular struggle for getting better facilities and earning a higher wage are the daily features of the big scale organisations and they have nowhere disappeared in the world. Labour is asserting itself more and more every day and the labour government which is in power in England at present points out the direction in which the wind is blowing. Labourers and their leaders believe in the nationalisation of big industries which simply means that labour should be its own master— a condition which always exists in small-scale industries. With the labour unrest on one side and the atomic bomb on the other the world seems to be reverting to the old days of small industries.

(11) *More work per head*—The enthusiasm, earnestness and interest shown by the small manufacturer in a work which he does entirely for his sole profit cannot be expected from a mercenary soldier of industry— the ordinary labourer. In a big-scale factory labourer is only interested in his wage and not the work itself and therefore the turn out per head will generally be less than that of the worker-owner in a small organisation. While comparing these two means of production it should not be lost sight of that had the small man possessed the same equipment as is available to a worker in a big-scale industry the output must have been many times more.

(12) *Manufacture in small quantities*—It is an advantage when either the article is very costly or it is not much in demand. To give one instance only manufacture of filter paper by a big factory will not be paying as the quantity consumed is very small. It will, however, be a very paying proposition to a cottage worker who cannot only meet the demand but can also guarantee the quality of the same.

(13) *Variation in work*—Though specialised labour is considered to be an advantage in big factories but from individualistic consideration it is one of the main disadvantages. When a labourer works day in and day out on one operation only he feels bored by the monotony of work and naturally seeks enjoyment in either drinking or gambling in some other unhealthy occupation which ruins his life and also that of the society in which he lives. If these undesirable habits are traced their cause will be found in the monotony of work which exhausts the labourer and forces him to take to such evil ways.

(14) *Distribution of industries in different localities*—Government has realised now that industries are being congested in a few big towns with the result that wealth is not evenly distributed and labour is not well provided for. Traffic cannot be properly organised. It seems government will take some step against this irregular growth of industries and will make a scheme by which systematic growth of industries may be possible in different areas. They have realised now that in order to give employment to the inhabitants of all localities it is essential that factories be evenly distributed throughout the land provided raw material and other advantages are available.

(15) *Gives more employment*.—If it is desired to provide employment to all and not to make only a few persons rich, cottage industry is the only solution. Cottage industry gives the largest employment to the people. There are very few industries which cannot be profitably

carried on on a small scale.

There are certainly many disadvantages also under which the small manufacturer suffers. We shall try to enumerate these categorically below:—

(1) *Capital*—A big organisation can command money at a very cheap rate of interest, first on account of the assets it possesses and secondly, it can get accommodation against the finished article. If the condition of industry becomes depressed still advances can be availed of against block capital.

We feel, however, that this state of affairs exists more on account of the combination of factories along with the incorporation of the companies. We in India do not differentiate one from the other as the large-scale factories are not individual concerns but are generally incorporated. If the small man starts with sufficient capital incorporating himself in a limited concern things are bound to improve.

(2) *Expert experience*—The availability of expert knowledge is a great advantage to the mass producer both from technical as well as administrative point of view. He can not only afford to engage an expert for every responsible job but he can also place sufficient money at the disposal of the expert to collect information on a point through which manufacture may improve either in general get-up, in cheapness or in any other form or shape. For an ordinary producer slight variation in a particular process or formula will be very difficult not so much due to his conservatism as to the fact that he can ill afford to make a new experiment in which a deviation is needed. Besides he possesses neither the means nor the capability to find out and adopt up-to-date methods of manufacture.

(3) *Up-to-date machinery*—In the world inventions are progressing fast and the process of manufacture is changing every day mechanically as well as chemically. In the first place a small man cannot

afford to study up-to-date information, even if he does he cannot easily put it to advantage while the literature available to the big organiser gives him a great deal of information and therefore as soon as any new process is worked out anywhere he can at once contact the invention and if the invention is really an improvement on the machinery he is working with he can get it immediately changed and thus brains working at long distances constantly help a big concern which are not available to the small-scale manufacture.

(4) *Marketing*—A producer of large quantities of material can easily afford to advertise, send travellers and appoint agents at different centres and the expenses incurred on all these items when spread over the quantity involved come to a very small percentage. Nobody can exaggerate the value of advertisement nor the value of marketing. The small man knows to his cost difficulty of selling his wares. He is always in the hands of the shopkeeper who often cheats him and plays false with him. While a factory agent may have no other business but represent only a firm and thus may be a whole-time servant and thus is expected to know his job well. He is generally the man who knows his locality and the consumers in that line—an advantage which may prove an asset in the long run.

(5) *Cheap raw material*—A person who purchases in large quantities always purchases cheap. He can easily bargain, he can directly reach the producer and can afford to know the lowest rate at which he may be able to secure goods. He can insist as to the quality of article purchased and can reject the same if it is below the standard. All this a small man is not able to do. He can afford to put one man against the other in tendering the raw material and thus get the benefit of cutting the prices.

(6) *Power of resistance*—Certainly a big man has more power of resistance than the small man. In case of depression he can afford to close down or wait for better

days. He can know the market where still his articles may be in demand and take advantage of it.

(7) *By-products*—The quantity of waste in big factories is very large and if any use is made of them it becomes a source of income. Big factories, therefore, always try to find out new uses for their by-products. In a small industrial concern on the other hand, it is not worth while to spend money on any such investigation. In this way big factories always add to the multiplication of new articles or methods of manufacture. Some factories have found their by-products to be more paying than the original articles they were manufacturing. Coal-tar which used to be a nuisance has now become the raw material for all types of dyes.

(8) *Big industries essential*—In these days of scientific development there are many articles which cannot be made on a small scale and those articles have become necessary and essential for our future development. To give only a few instances, caustic soda cannot be manufactured on a small scale though the article is required in everyday use. Liquification of gases cannot be done in a cottage. The manufacture of boilers steam engines and aeroplanes cannot be done on a small scale.

CHAPTER IV

DIFFICULTIES AND HANDICAPS

There are a number of difficulties and handicaps under which the cottage worker has to work. Some of them are enumerated below:

- (1) Supply of raw material,
- (2) Finance,
- (3) Technical knowledge,
- (4) Efficiency,
- (5) Marketing,
- (6) Other difficulties.

Supply of raw material.—This is one of the chief difficulties of the small worker. He gets supplies which are neither reliable in quality nor adequate in quantity. He has to use bad and unreliable stuff and even that he has to purchase at a higher price. This question of the availability of raw material becomes very important if we seriously mean to develop our cottage industries.

The question can be discussed from the following points of view: (1) An article which is a product of big industries but is a raw material for cottage industry. It may either be a produce of this country or an imported one from abroad; (2) Raw material for the purchase of which big and small industries are rivals whether they use it for the same or different purposes; (3) Others.

We would have very much liked to discuss this question for each cottage industry separately but the space at our disposal being limited we shall try to be as brief as possible.

(1) The most important of all cottage industries is the group relating to the manufacture of Textiles.

All yarn used by cottage workers in weaving cloth is either hand-spun or machine-spun. In the case of hand-spun yarn, it is either supplied through the All-India Spinners' Association or by the spinners themselves. Weavers have, however, no control over the supply of this yarn and we propose to deal with this question when we discuss individual industries and improvements. However, the quantity of this yarn is not much.

The supply of mill-made yarn is, however, very important. Weavers cannot afford to combine and purchase yarn direct from the mills and so they have to depend upon yarn dealers for its supply. During the War, the supply was so drastically cut down that yarn almost disappeared from the market. Black market prices were many times higher than those fixed by the Government and a large number of poor weavers had to remain out of employment. Those who wanted to get yarn had either to pay exorbitant rates or had to work for the dealer who would sell cloth manufactured under his own management. There sprang up thousands of handloom factories or weaving establishments which were nothing else but a method of exploiting the weaver's labour to dealer's advantage. It may be said that this was an emergency. But even in normal times most of the weavers are supplied yarn on the clear understanding that they will have to work for the yarn dealer or cloth merchant. Those who took yarn from the cloth dealers had to pay higher rates for yarn, pay exorbitant rate of interest and had to be contented with the lowest rate of wages. Those who insisted not to work for the shopkeeper had to pay a still higher rate for the yarn and if they had to take it on credit had further to pay a still higher rate of interest. The yarn supplied to the weavers is usually less in weight, less in length, and inferior in quality and sometimes the mills also connive at and assist these methods of the dealers. In the case of coloured yarn, fraud is more prevalent than in the case of undyed yarn.

As a weaver is generally illiterate he is a bad bargainer and his ignorance is exploited to the extreme. Weaving Mills can only sell yarn after satisfying their own demands and generally they first sell their rejections only. Thus the poor weaver does not generally get enough yarn nor of good quality. Besides the profit on yarn, freight, octroi, and fraud has to be paid for by him against his mill competitor who had to pay none of these and in spite of all this he has still to sell at competitive prices of the mills against him. He cannot get adequate quantities nor the correct weight and nor the right type and still has to compete against an organised industry. It is really surprising that he exists. In the case of foreign yarn if he purchases the smallest packet intact the weaver is sure of the quality and weight but of course has to pay a very high price if he happens to purchase on credit which he generally does.

The greatest pity of this is that the mill owners try to justify all these defects. The law on this point is very defective and not at all effective. We cannot expect the weaver to leave his business and go to court and whenever he has gone there he has been made to realise that long purse always wins. From the history of textile trade one is startled to find that in the last war as well as in the present the yardage of cloth prepared in the handlooms has gone down while that of the mills has gone up. This loss has been traced to the restricted supply of the yarn to the weaver by the mills.

The same applies to yarn of silk, artificial silk or the like.

He has also to suffer from shortage of any particular type of yarn, which may not be available at a particular time and in such a case has to change his scheme of manufacture. It is not only his poverty which is exploited but his ignorance is not a little source of his difficulty.

The same difficulty is experienced by the hosiery

man or the rope maker or the like who wants to use yarn as a raw material of his industry.

No better is the case of those who utilise leather as their raw material. The small man is at a disadvantage both in getting a quality article and also in getting it at a proper rate. In the supply of block glass for further blowing of cloth for cap making and of brass for sheet metal working the position is not less difficult. In the case of dyer (रंगरेज) the position is very serious. There are so many types of colours that come in the market and the process of dying always differs both in the use of mordants employed and processing. The dyer cannot afford to purchase a complete closed tin. He has to purchase it in small quantities and is always cheated both in money and material. Poor man! he is confused when he finds that a certain lot has not behaved in the same manner as a similar one behaved on a previous occasion.

A cutlery manufacturer has to be contented with the type of iron or steel as supplied by the dealer. If a right supply of steel for different tools, knives and implements would have been made the small worker would not have allowed the foreign manufacturer to encroach upon this market. A dealer in certain cases may not have to be blamed as his ignorance may be just as colossal as that of the cottage worker but if the shopkeeper cares to help him, he can certainly do so. New articles are daily flooding the market but instead of helping the small man they confuse him more and more and the poor man has but to rely upon his supplier. He cannot but believe the latter.

(2) When two rivals want to purchase a certain commodity, naturally the wealthier will be at an advantage. Compare the case of an oilmill owner with that of the village oilman. The former knows full well that his raw material is a seasonal produce and so he must purchase his stock for the whole year. He knows the cheapest market and the prevailing rates of that commodity. Besides all these advantages he can further fortify him-

self by collecting information as to the oil contents of the new crop from different markets. While purchasing he can insist upon purchasing the driest oil seeds. Against all these advantages compare the position of the small oilman. He cannot afford to purchase his stock for the year and has to purchase every day and even then on credit and naturally he has to go to the shopkeeper who alone can oblige him. The best crop is already purchased by the oil mills and it is only the inferior stock which remains available. Since the price always goes up after the harvest, oil seeds deteriorate and oil contents are affected. The result is that the small man pays high and gets bad article. He not only gets less oil because his *kolhu* is inefficient but he gets also less on account of the bad seed that he is forced to crush.

The same is the case with the small tanner. All good hides are taken away by the factories which can afford to purchase directly from the slaughter houses or from big merchants. The village tanner can hardly purchase a few hides at a time and has to be contented with whatever is available.

Similar is the case of the wool manufacturer. Small man can neither afford to grade his wool nor can he afford to get the best article. He has to remain contented with whatever is left. In most cases he has to purchase the worst material at the highest price.

We can multiply instances but it is quite enough for our purpose. It must be admitted that the small man has to work with inferior raw material and has to pay higher price than his competitor.

Take the case of leather trade barks, myrobalan and other articles required for tanning. They are all sold after adulteration and this adulteration is of many kinds. This being so they do not behave the same way and the quality of tanned leather differs for no fault of the worker. In the manufacture of gold and silver thread, alloys of different proportion have to be used and a guaranteed article is not available with the result that the poor man

has to suffer for the fault of the supplier. In shellac also adulteration with rosin and other articles is very common.

Instances from different industries may be multiplied to show that the small man has not only to pay higher rates for his raw material but he does not get it in unadulterated form. Thus the finished article goes on deteriorating in quality and adding to its cost. Though the expensiveness of the raw material may be traced to his financial weakness but the question of quality requires legislative help. In foreign countries one can be sure of the quality as no adulteration is possible. This is in no way due to the honesty of the dealers as things were as bad there as they are here but the governments of those countries saw that laws were enacted and effectively carried out. In India in the first place laws to protect the poor cannot easily be made and even when they are made they remain ineffective. Government can send to prison political workers with or without trial and can find sufficient staff for this purpose, but they cannot find ways and means to control the dealers who play havoc in destroying the quality of an article. When adulteration in articles which affects the physical condition of the people, is rampant and the government has not cared to stop it in spite of the pronouncements of Royal Commissions it seems to be a dream to expect any help in protecting the small man from the dealer.

In order to make any law against adulteration effective samples have to be taken by thousands, standards of purity have to be fixed and honest executive officers have to be employed. Offenders have not to be let off by simple fines but must be sent to jails to enjoy the hospitality of government; unless this is done things will never improve. Government should take interest in the small man and should protect him from fraud and deceit.

Besides the above there is a general ~~complaint~~

that the Municipal Boards are playing havoc in destroying our industries. They charge octroi duties on raw material and do not allow rebate when the finished articles are sent out. If rules are framed in this connection they are not administered with sympathy. It is a pity that Municipal Boards do not try to help industries which are likely to make them prosperous. We are definitely of opinion that the system of indirect taxation has outlived its utility and must be done away with. If it is allowed to remain for some time more Government should frame special rules for the protection of industries.

(3) Under this category come some other articles of ordinary trade. Here too the small man has to contend against many obstacles. All such material may be divided into two types—one indigenous and the other foreign. As far as indigenous articles are concerned adulteration and high prices are the main defects. In the race for cheapness all type of rubbish is mixed and then adulterated articles are sold to the disadvantage of every body. The worst of it is that the names of these adulterants are not even known, and their behaviour in processing cannot, therefore, be anticipated. An article may give good results in one case and in the other may prove to be quite hopeless. It seems to be desirable, therefore, that steps should be taken to control the supply of the raw material and shopkeepers should be licensed for the sale of different articles and if even then any of them sells adulterated articles his licence should be cancelled and otherwise adequately punished.

Even in cases when the supply originates from a Government or Government-controlled concern itself things are not at all satisfactory. Take the case of minor products collected from forests. The method so far adopted in different provinces is to auction the annual produce to the highest bidders. Articles are collected either under the direct arrangement

of the highest bidder or through such petty contractors. If the contractor happens to be interested in using the article himself it is apparent that he will utilise the best quality himself and only sell the refuse. Again these articles are collected by the labourer who is paid for the quantity he collects and not for the quality of material collected. He, therefore, naturally is interested in the amount of his collection and not at all in its quality. Adulteration in these products, therefore, starts from its very source. Out of the material so collected better quality is again purchased by big firms and the small man is left with the choice of purchasing the worst of the refuse in the market. As the small man can only afford to buy from the nearest market and in the smallest quantity possible, the dealer from whom he buys generally further adulterates the already adulterated article before he sells.

There are a number of articles from the forest areas which come under the above category. Let us take only two things—gums and the tanning material. Different gums have different qualities and one cannot be substituted by the other. A printer of cloth requires a different variety from the one required by the inkmaker, while pasting requires quite a different variety. Bark and other articles used as tanning material have also different properties and when they are adulterated with unknown articles it is clear that their behaviour cannot be what it ought to be. And, therefore, an industry in which these articles are used as chemicals cannot produce standard goods. But if the forest department collects such articles under its own supervision and emphasis is laid on quality small man would be considerably helped.

In case of foreign-made articles things are generally pure if they are sold in original packing. At any rate one brand is likely always to behave in the same way. Since small man cannot afford to purchase in original packing he is generally exploited and

even foreign articles are sold to him in adulterated form. A few chemicals if not properly stored lose their efficiency but a cottage worker cannot make an enquiry into that. Sometimes on account of new discoveries articles themselves are changed and their method of use has to be changed along with it. Manufacturers arrange to explain the new product to big factories at their own expense, for example, they supply free samples for trial and send their own chemists to demonstrate the usefulness of the new article but they do not and cannot do so to the isolated cottage workers, who are left to learn the new process from the ordinary small dealer who himself cannot understand it and therefore cannot afford to give any help to the worker who purchases from him. He can pick up something from the advertisement literature on the subject, but unfortunately he is almost always illiterate and cannot make any use of the available information simply because it is in writing.

Finance—The cottage worker is very poor and he has hardly any assets upon which he can rely to offer as security against credit. He possesses only his labour. He is so poor that he cannot keep his promise. Advances made to him for productive purposes are generally spent on his own daily needs. He gets hopelessly into debt and sheer desperation turns him into a fatalist. He cannot believe that he will ever see better days. His earnings are so low that even by miserliness he cannot be above misery. For want of money he has to purchase his material at a high price. He has no staying power and cannot sell in the best market. He thus loses both ways.

Banks do not give him credit. Philanthropists do not help him. He is, therefore, always driven to take advances from such dealers who besides charging a very high rate of interest supply the raw material at high prices and force him to sell his goods to them at considerably lower than current market rates. Thus

at every step he would like to make some money out of the hopelessness of the poor man. Co-operative societies were the only hope of his liberation but unfortunately they have generally failed.

We are convinced that the outlook on life is the main cause of this hopelessness. If we can once change his outlook things will soon change. This is not the only country where things are bad but even in England there was a time when the artisan was in the same predicament. If we once make him literate and replace his submissive fatalism by a robust outlook on life half of the battle will be won. If we want to organise industries we shall have to provide money to them and at very low rates.

We have elsewhere dealt with the scheme for financing cottage industries, here we would only like to impress that in a less paying industry the rate of interest ought to have been lower but the poor man is fortunate if he gets credit even at 12%. No industry can afford to pay such a high rate of interest much less an industry which has an organised competitor at every step.

Technical knowledge—In these days of scientific discoveries and inventions the process of manufacture daily changes. Besides, fashions and wants are not stable. Such a rapidly changing world, has no place for crude and primitive methods. No worker can afford to go to foreign countries to learn up-to-date methods and to attend vocational schools wherein he should learn improved methods of manufacture. A few schools only have been started so far and even in them the teachers do not generally take a practical view, nor is their knowledge up-to-date, and therefore the workers do not pin their faith in so-called experts. /

As soon as a new substitute for an article is made a large number of workers are thrown out of employment. Whenever a new method of manufacture is evolved, the cottage worker is hit hard. Nature does

not want to keep alive those who do not move forward. Some of our old workers and industries have already disappeared and others are disappearing. Dyers have mostly disappeared. Small glass blowers do not exist. Village art of soap making is being replaced by the machine-made soap. Oilman is living a precarious life. Even in remote villages grinding is done by small power mills. Khandsaris are replaced by sugar factories so on and so forth. It is only perhaps in the textile trade that a good many old workers still survive.

We confess that some of them must disappear under any conditions but if proper guidance and technical knowledge would have been imparted, organised cottage worker would have given a better fight and would have taken to improvements more easily by adjusting himself to new circumstances. In spite of his illiteracy, conservatism and his secretness we are sure a great deal could be done to improve his lot. In arts which require more chemical knowledge than mechanical contrivance, improvement is quite easy. Even in mechanical methods small machines can be contrived to meet his small needs. If some of the old industries have not died out it is only the result of the doggedness of the workers themselves who preferred starvation to taking to other walks of life. It is only in a few cases that any outside help has been rendered to equip the worker, to fight his battle more efficiently.

Scientific discoveries have had far reaching effects on the methods of manufacture. There is no method by which this knowledge is made available to our workmen nor any arrangement by which it can be made use of.

In other countries, clubs, associations and societies of workers are formed where workers talk and discuss their difficulties and try to solve them. But the Panchayats of our workmen meet only to dis-

cuss the outcasting of a person for breaking the unwritten rigid code of conduct of the society. So-called public or Government experts do not generally talk in the language of the worker and therefore are rightly treated as aliens. Their advice is always taken with a pinch of salt. It is but essential to make arrangement for collecting and disseminating scientific information amongst cottage workers. Their conservatism and fatalism will soon disappear if by introducing new methods we better their lot.

Efficiency—The efficiency of a cottage worker in output is daily decreasing not because of his laziness but because his rival has improved his efficiency by using a more effective machine or a new method of manufacture.

The Government tried to provide the weaver with improved tools and looms but we are told that the conservatism of the people did not allow these to be used. It does not seem to be correct. An incident will make it quite clear. In Madras improved looms were provided for the workers with which they could turn out much more cloth per day than they used to prepare on their looms. For some time the introduction was welcomed but by and by the workers found that they had to sell more and this being difficult they could not earn even as much as they had been doing before. They held a Panchayat and burnt all the looms and took to their old method. Though it is an extreme case but it clearly points out that the introduction of a new machine or tool can only be adopted when its consequences are provided for. Piecemeal improvements may not be useful and therefore be resented. We require the best engineers and chemists to help him. Engineers should put their heads together to study principles of up-to-date machines and try to work them on small scale so that an efficient and suitable contrivance which may be within the means of the small worker be evolved. Similarly the chemist

should teach the cottage worker to follow the latest process of manufacture.

Daily wages of the artisans are decreasing and sometimes it pays him to become an ordinary labourer. It is a very bad state of affairs. We are losing skilled labour and losing a class of people who can prove an asset to the nation. We are adding to the number of the unemployed and thus hastening the national crisis. It is a very serious matter and requires the attention of everybody.

Periodical exhibitions and permanent schools for training are good but artisans can only take advantage of them if confidence is first created in them about their utility. The first condition to attain our object is that the gap between the expert and the worker be narrowed and both of them are brought to talk at the same level. The workers must have full confidence in the expert and should place all their difficulties before him. These schools and exhibitions should also be the meeting grounds of the workers, say where new improvements are shown and explained, while their own difficulties are heard, discussed and overcome almost every week.

(5) *Marketing*—This is the most important part of his difficulty. If the article does not sell or sells at a price which is unremunerative the whole organisation fails. The cottage worker desires to have ready cash and cannot afford to sell his goods in the best market. Both the customer and the dealer take advantage of his difficulty. Nobody takes into consideration that if the cottage worker does not get a living wage he will be disturbed. It is in public interest that he should be kept alive. Had we approached the problem from the above point of view things would not have assumed a gloomy picture. We do not feel the problem is insurmountable but it has to be studied, analysed and solved and the sooner it is done the better.

Mahatma Gandhi and the All-India Spinners' Association have given a fillip to *kbaddar* and provided a living wage to many spinners and weavers. Though the number thus provided may not be very large but that clearly shows the way. In Kashmir the whole organisation of wool workers is in the hands of this organisation and they are doing very useful work. We wish that more attention should have been given to the technical side of the question and to advise the workers in their particular craft.

Generally three methods of sale are adopted. The first and foremost is that the cottage worker sells his produce himself by hawking or by taking it to the market or to the penth. Under such circumstances he cannot work for the days he goes out for sale and if the loss in labour is calculated he loses much more than he would have lost if his articles had been sold on commission basis. Certain places may be specified where at an appointed time, artisans may come to sell their wares and thus a regular market is created. Or one man for a dozen artisans may be appointed to sell their produce and thus all of them will not have to lose their time and will get better price and the customer will have a variety to choose from. There are two main things which do not allow them to combine. The first is their lack of faith in each other and the second is that the proceeds of sale may not reach the producer as the seller may appropriate the sales to his own account. Besides a more serious difficulty is that the workman cannot afford to wait. His daily wages do not give him enough and he can only work if his products are daily sold.

His financial weakness has forced him to sell his article to the dealer. The dealer wants to exploit him to the utmost and pays him the least amount under one pretext or another. The workman is a bad calculator and at the same time he happens to be helpless, and hence he loses in the bargain.

The above difficulties have forced the workman to agree to a third method wherein the design and the material is supplied by the dealer and the workman works for the latter. As a matter of fact if the dealer would have taken an interest in the artisan this would have been an ideal method and both the dealer and the artisan would have been gainers. Unfortunately, the dealer looks to his own narrow self-interest and does not take a long view. Instead of giving him a remunerative wage the dealer on every turn wants to cut down labour costs for one thing or another. When the workman finds that the dealer, in mad rush of getting things cheap, goes on to cut his wages he begins to prepare an inferior article which results in further reduction of his wages. The workman getting less again makes a still worse piece and gets lesser still. This vicious circle goes on and kills the goodwill of the industry and brings it to ruin. This method is followed *ad infinitum*. But if the dealer takes a sympathetic view, discusses the details of the manufacture and agrees to provide reasonable wage to the worker things will begin to improve. The present method cannot be said to be satisfactory and does not provide a remunerative wage to the cottage worker. We in India do not realise that only a well-paid and satisfied workman puts forth good work. Some co-operative sales societies have been found to help the artisans but unfortunately they are generally manned by officials who pay more attention to rules and regulations than to the practical running of the business. There are some other members of these co-operative societies who also are not conversant with this work. Spirit of real co-operation is seldom created amongst the members. Unless intelligent workmen themselves become members of the organisation and look after their own affairs the system can never succeed.

However, there are certain inherent defects which are great handicaps in marketing these goods. One

of the most serious defects is that these goods have not been standardised and marked so far.

Mill-made cloths bear numbers and marks by which a certain type can be easily distinguished from others. Unless a customer knows definitely what particular quality he is going to buy he can never be sure about its price. If the goods of the cottage workers are standardised and a mark is assigned there will be little difficulty in marketing the same. This will require an association under which all cottage workers should be made to work and to whom all the pieces should come before they are marketed. If they are below standard, they may not be allowed the mark of efficiency and be sold cheaper as non-standard goods. A certificate from a recognised association as to the quality of goods will go a great way to help marketing. In certain articles we may guarantee the quality by showing on the label the details of raw material used in them. We are told that at Bhingar in Ahmadnagar district every piece is certified by the Panch before it is sent for sale and this has worked very well. We wish that a similar system should be introduced in every trade and be honestly followed. This method will create a language of the market and then the customer will be willing to pay a higher price.

The other defect is that some goods prepared in cottages lack finish found on those produced by factories. Irrespective of packing some will have to be bleached, others may have to be sized and still others may have to be polished, but every workman has not the facilities. A good finish of an inferior article sometimes brings better prices than the prices of a better but ill-finished article. In the case of metal, polish may play a very great part. In the case of woollen goods fulling may be an important process. In certain cases felting may

be necessary. In cases of glasswares annealing may be a very important process but very few blowers can have the arrangement. Bleaching in paper pulp before it is made into paper may make a world of difference in prices of the paper made from it. In leather goods varnishing or polishing or waxing may be an important factor. Workman may not be able to do all these with advantage.

If finishing be done at one common place, the charge will be less and the articles will fetch a better price.

(Generally articles made in cottages are considered to be inferior and people try to pay lower price for them. This mentality must be reversed. Public should know that every article made in cottage means national employment and consequently must be paid a higher price. If this is not done we will be threatened with the menace of unemployment and the public will ultimately have to pay heavily for it. Though we are convinced that if the small and cottage industries are well organised and the necessary protection is granted they will be able to stand on their own legs and we need not be surprised if they successfully compete with articles made in large factories, yet we feel that these articles deserve patronage. When we have seen that cottage industries provide more employment and they are the only escape from starvation to the crores of our countrymen it is time that these industries be patronised by everybody. /

Taxes—The greatest difficulty complained against is the octroi duty levied by the Municipal Boards on the raw material and at times on the finished goods and sometimes on both. It is a pity that the people of urban areas do not want to tax themselves to provide amenities of life and levy indirect taxes and thus ruin local industries. It must be the first concern of the Provincial Governments to examine octroi rules and their schedule and remove all such things which

stand in the way of the development of industries. We wish that octroi duty and all such indirect taxes be abolished but until it is done octroi duty should not make an article expensive and should not cripple the trade for the sake of a few coppers, which are needed to make rich men to lead a luxurious life. To levy duty on the raw material or to charge an export duty on finished goods is wrong in principle. To allow rebate of a few annas is no remedy of the wrong perpetrated. We know the embarrassment and loss of time involved in getting small rebates and mostly the amount involved is not worth claiming it. This is a point which must be gone into very seriously.

Railway Freight—Many industries in the country have been killed by railway freight. It is not the place to go into the details of this controversial question. Need we say that any addition in freight adds to the cost of the article whether the freight is levied on the raw material or on the finished goods. A time has come when special transport rates for raw material and finished goods for different important centres of cottage industries be fixed and thus small and cottage industries be helped. The interest of the industries should not be subordinated to that of the railways as in vogue but railways must run for industries. While Railways reduce their rates for big industries, they should first and foremost do so for cottage industries.

It is a common knowledge that goods-clerks make several times of their salaries by illegal exactions and the higher officers have not been able to stop this practice, but as we know from our own experience sometime they seem to be helpless in the matter. Such practices do not exist in other parts of the world and it is indeed sad that such disgraceful things are allowed in this poor country. Big concerns have to pay large amounts per month, yet the incidence of this illegal gratification works out a small amount per piece or per maṇḍ; but for a small man any amount however

small if added to the cost of manufacture makes the article very expensive. In some cases the addition of freight works out as high as 50%. Such a state of affair is disgraceful and cannot be justified. We wish this practice to stop as soon as possible. The culprits can be safely detained in prison without trial for long periods as they are far more dangerous to the public than political workers. Small industries which do not cater for local needs cannot thrive until the system is done away with.

CHAPTER V

STATE AID TO INDUSTRIES

In the development of industries government of every country has played a very important part. Financing research, providing education, regularising the industries and protecting them from foreign competition are some of the well-known methods employed in other countries. The Government of India did not recognise this duty for a very long time and the dissenting note of Pandit Madan Mohan Malaviya in the Industrial Commission Report brings out in relief the handicaps of industries and the adverse actions taken by the Government from time to time to the detriment of our industrial development. We are glad that the Government now has recognised this duty and is trying, though reluctantly, to move in the matter.

After 1914 the Department of Industries has been created in some provinces and now the development of Industries is a transferred subject. Railways (transport), Control of import and export and levying the duties thereon, exchange and currency are all the subjects under the Government of India. This double control has been the greatest hindrance in the way of Nation Building Departments. There is neither any convention nor any statutory provision by which the Government of India may be made to agree to a certain course of action, if all the provinces agree to introduce a certain measure of protection and help. Though such a thing will not have been of great help inasmuch as the interest of different provinces would have always differed and they would have invariably disagreed to a joint action but in certain cases such a

procedure would have been of some aid in the matter. Government of India has now got their Trade Commissioners in most of the important countries and they could help cottage industries by studying foreign markets, but they seldom work from this point of view. We have not seen any valuable report describing the possibilities of trade with other countries or giving us details of industries which can easily be introduced in this country. Add to these drawbacks the financial difficulties of the provinces who mainly depend upon land revenues and irrigation dues for their expenditure. Below we give the total revenue and the expenditure incurred by different provinces on the Industries Department.

<i>Province</i>	<i>Expenditure on Industries Department (Rs. in 000's)</i>	<i>Total ordinary Revenue (Rs. in 000's)</i>	<i>% of expenditure on Industries Deptt. to total revenue</i>
Punjab	1,770.8	1,19,835	1.48
U. P.	1,368.0	1,23,378	1.11
Bihar	342.4	50,327	1.08
Bengal	1,056.0	1,30,085	0.81
Assam	230.6	27,361	0.92
Orissa	120.4	18,466	0.65
Central Provinces	258.0	45,371	0.57
Madras	866.6	1,60,062	0.54
Bombay	572.8	1,24,381	0.46
Sind	35.0	39,203	0.90

The above expenditure includes the expenditure on big industries too and also the salaries of the staff. Thus the expenditure on cottage industries is very meagre and inadequate. Whenever the question of retrenchment comes, Industries Department has been the first to be axed.

There are many other things which make the department quite ineffective. The main thing is that though the department is a specialised job yet any

officer is considered to be suitable for the post and he too is not allowed to remain there for long. As soon as he gets acquainted with the activities of the department he is transferred and the work is entrusted to another new man. A person brought from executive side loves red-tape and naturally buries himself in the files of routine rather than doing any useful work.

If the Government really wants to do some useful work, non-officials who have established their reputation as good organisers and who have taken interest in the development of industries should be appointed on these jobs so that they may freely mix with the public and utilise their business experience for the good of the people. Unless this is done there seems to be no chance for any appreciable development. Money in sufficient amount should be placed at the disposal of the Director and he must be left free to know the public opinion and respect the same. Business and authority go ill together. As long as the employees in the Department, including the Director himself, consider that they are officials and not public servants, in the real sense of the term, no substantial gain will accrue.

There is another difficulty in the matter. Whenever any difficult position arises the Government takes shelter under one Committee or another and the matter is referred to them *ad infinitum* till the public opinion gets tired. There have been many surveys and committees but very little has come out of them. It is the action that is needed; when we have once started work experience gained will be the best guide.

Industries cannot be an isolated subject. It must have the co-operation of the different departments. Co-operation, agriculture, transport, education, etc., are all connected together. In so many cases work suffers for want of co-ordination. Unnecessary delays retard the work and bring about waste and loss of time

and money. Speedy method of disposal is only possible when the officers think these matters to be of national importance and attend to them with the promptness required.

If there was any hope of placing the cottage industries on their legs it was the Co-operative Department, which could give practical help in their organisation. The same remarks of want of special study and the transfers apply to the Co-operative Registrar. There is no consistent policy and secondly the business experience and skill required to see these things through is wanting. Co-operation and organisation require a study of human psychology. It requires resourcefulness, pluck and tact and also a grasp of the subject. All these qualities can only be acquired by experience and training. But here too the work is entrusted to untrained men who generally prove to be failures. In private service if a man is found to be unsuitable he can be discharged or transferred to another job, but not so in Government Department with the result that the inefficiency is writ large. We seem to give preference to standard of education than to training required to execute a certain job. We seem to forget that in certain cases higher education makes a man bookish and debars the incumbent from doing his duty in a suitable manner.

It is no wonder that most of the schemes adopted from time to time by the co-operative department have failed. Below we give total number of workers in different industries along with the number of members that have joined the co-operative societies from Bengal Review. This shows the meagreness of the work done by the co-operative societies in Bengal. Work in other provinces is in no way better.

<i>Industry</i>	<i>Total number of cottage industry workers engaged in the industry (Approx.)</i>	<i>Number of mem- bers of co-opera- tive production & sale societies 1937</i>
Handloom cotton weaving ..	1,92,000	5,705
Cocoon rearing	7,900	1,158
Brass and bell metal	11,000	231
Blacksmiths and other work- ers in iron	42,000	31
Workers in leather (including shoemakers)	9,000	145
Carpenters	7,000	31
Manufacture of sugar & mo- lasses	4,000	1,036
Pottery & Earthenware ..	46,000	30

The report rightly observes that "the meagreness of the progress hitherto made by co-operative organisations in the marketing of products should appear to be even more pronounced if the value of goods sold through various kinds of co-operative institutions was compared with the values of numerous products purchased by production and sale societies and Industrial Unions (exclusive of milk and paddy unions) were estimated at Rs. 15,138 and Rs. 10,500 respectively; while the sales of the provincial and co-operative society during the same year were estimated at about Rs. 66,000."

To provide training, Government has done something either by opening schools, peripatetic or permanent, or by providing special experts to advise in the improvements of cottage workers. In the first place such an aid has been very meagre in comparison to the vast number of people employed in cottage industries and secondly it is not of the proper kind. The very fact that generally the children of artisans and cottage workers do not join these training centres nor the

adult takes into confidence the so-called Government experts is a clear condemnation of the system. It is not always true that the artisans being too poor cannot afford to send their boys to these institutes. If it is true, we can introduce the system of teaching at times when generally these children have no work to do at home. Further, we may take a few intelligent boys of these artisans and pay them some stipend and send them back home after their training. This has been done in certain cases but students always try to join Government service rather than go back to their profession. This aversion to work in profession shown by trained sons of artisans is a serious matter and must be investigated if we want to popularise these institutes.

To our mind there are two causes of this difficulty. Firstly, the practical atmosphere which ought to prevail in schools does not exist and secondly, schools have not yet become the centres of research and enthusiasm which always counts for success. We require teachers who are not only interested in their salaries but more interested in their work and do not shirk to work with their own hands.

There is no method for increasing the knowledge and experiences of teachers. There must be arrangement to provide up-to-date knowledge of the market wherein articles are sold and so also the trend of fashions. We have written more in this connection elsewhere.

We saw in Japan that whenever a traveller from outside sends his report or new designs and new suggestions or defects in the articles made in Japan such reports are attended to by the highest experts in the country. Attempts are at once made to meet the criticism. New articles are prepared on those lines and when that is done an attempt is made to manufacture new styles and teach them in these schools. Thus the schools do not suffer the defect of primitiveness or inanition but they always get a new life and remain always active and alive. People in business

or those who have made special study of these subjects are asked to lecture from time to time and their experience and knowledge is thus placed at the disposal of the schools. Old boys who are in trade or business consider it to be their privilege to come to these schools and give their experience to the students occasionally. In our case industrial schools are places of no interest as it were and they do not remain alive to the needs of the people.

As regards equipment, machines, chemicals, etc., they are badly wanting in many respects. For research there seems to be no collaboration with research workers. They do not even get the up-to-date knowledge through journals, etc., from different countries or different parts of the country. It is not a place to enter into the details of education, but we can say without hesitation that a lot of improvement has to be made in these schools before they can be of much use. Their number must be increased and they must provide training in all the cottage industries worth the name in that district or province.

There is not sufficient propaganda amongst the artisans for these schools. It is not the lectures or shows that are needed but the best propaganda will be to produce an article more attractive, better finished at a cheap rate. If a few artisans earn more through advice from these schools, confidence will at once be created.

There are only spasmodic attempts made by Government but no success can be achieved till a systematic planning is done in this connection.

The only method that appeals to us is the systematic investigation of the possibilities of development. How this should be done let us explain briefly here. We must make a more detailed study of our imports and find out what articles out of those can be manufactured in the country. Similarly through our Trade Commissioners and travellers we should find

out articles which may be easily exported. Over and above these we should get more details of our internal market. All this will put us in possession of facts about the markets and consumption in the country. Then we should make a study of the raw materials available for manufacture of these articles. A further study be made about the skill, talent, experience and knowledge of our people. Taking the above investigation into consideration we should find out as to how best we can utilise the artisans for the manufacture of these articles. In case where propaganda is needed to improve the quality of efficiency of the worker it should at once be started. If training in certain new or old industries is desired centres for the same be organised. For the manufacture of new articles suitable persons be employed to evolve useful methods of manufacture. In cases where machinery, tools and equipment be available in foreign countries, those must be imported and such sets be multiplied in the country. All this requires large staff and expenditure but the information collected and the work done is bound to bring about suitable reward. Revival of old industries or planting of new industries will then be quite easy and success will be assured.

In order to keep our methods up-to-date we should have large number of travellers, travelling all over the country and abroad, and studying the taste and fashion of the people and also the method of manufacture of different types of articles. They may purchase samples, tools, machines, drawings, books and periodicals and send them to the organisation in the country. They may take photos, discuss things with business men of other countries and send their periodical reports. There should be an organisation working in the country to tabulate, analyse and utilise this material and keep informed the artisans concerned. This organisation may issue pamphlets, periodicals, etc., in the vernaculars of the country to keep the arti-

sans posted up-to-date.

Besides these there may be demonstration parties and training schools to impart education to the people from time to time for bringing their methods of manufacture up-to-date.

Arrangement for the supply of raw material at controlled prices and marketing of goods should also be made. Loans at reasonable rates of interest be available for productive purposes. The work of advertisement should also be done by Government both by opening emporiums and museums and also by publishing advertisements in the papers. Control of production not below a certain standard will have to be maintained. Government should further see that articles required by government departments are only purchased from cottage industries and workmen are always patronised and encouraged.

Suitable rewards to artisans may occasionally be given. Aid or cheap loans may be granted to struggling artisans. It is a pity that money provided under the Reserve Bank Act has not been utilised for the development of industries though a provision for it has long been made.

If all the provinces combine in the above planning duplication may be avoided, resources and experience may be pooled and full use of the existing facilities may be made. Japan and China have already given us a lead in the organisation of cottage and small-scale industries and if we make full use of their contrivances and organisation we can industrialise our country in a very short period. Machines, tools and equipment with advantage may be purchased in the first instance and then their modification and multiplication according to our needs and requirements may not be at all difficult. This will prove to be the quickest way of development.

During the War India made no less sacrifice than any other country and we think we are entitled to

utilise the skill and expert knowledge both of Germany and Japan. Why can't experts from both these countries be brought here to teach us the manufacture of different articles? Similarly there should be no hitch to import suitable tools for the manufacture of different articles.

We hope if the above line of attack is followed we can occupy the same position as Japan did in our internal market before the War.

CHAPTER VI

PROTECTION OF COTTAGE INDUSTRIES

There was a time when England believed in free trade and ridiculed the idea of restricting imports though she herself had built her industries by levying tariffs against foreign imports. We cannot forget the action taken against Indian exports to England. When a country becomes strong and well-organised it is easy to preach the doctrine of equality. But just before the War England herself, let go the principle of free trade, had to adopt the policy of protecting her own industry against other countries. Besides England which was the first to develop in foreign trade, every country of Europe and that of United States of America built her economy on protection and therefore raised high tariff walls against other countries. Though Indian economists and the leaders of public opinion have always favoured protection yet it is only in very few industries that the Indian Government agreed to give relief. Iron, steel and sugar industries can be pointed out as instances which have developed only due to protection. Cloth was also protected against Japanese competition before the present War. During the War the Government announced that they will extend protection to new industries which may be developed during the War and we entertain every hope that the government will keep their promise.

It is a recognised fact that for the development of every new industry protection is a necessity. We do not want to dilate upon this very important question and would like to take it for granted that protection will be provided for wherever it may be necessary.

When big industries like sugar, iron and cloth require protection, cottage industries with extremely limited scope and capital require both nursing and protection. When big industries themselves took advantage of protection and have developed simply on account of it they cannot deny the same principle to be extended to cottage industries. As we have said elsewhere cottage industries are of national importance inasmuch as only through them and them alone we can provide our population with means of employment. It is, therefore, essential that all known methods of help and protection should be allowed to succour cottage industries. Unless this is done cottage industries cannot develop and without them a large part of the population will have to remain poor and starving—a condition which no country of the world can tolerate.

Protection in the cottage industries will take, however, a different shape. They have to be protected from three sides, firstly, against foreign competition, secondly, against big industries and thirdly, against exploitation by capitalists. Let us explain all these types of protection in more detail.

Details of protection from foreign countries are very well known and the government is committed to this principle. We are quite sure that the new government, when it begins to function, will take a still longer view and we hope and believe that it will try to do its utmost to extend this principle to a still greater extent. Secondly, industries developed during the War should not be allowed to die. There are many such industries. But out of them chemical, pharmaceutical and biological industries have developed on a cottage scale and they must be protected. We are sure big industrialists will not try to take these industries away from the domain of the small man to their own arrangement and thus will not deprive him of the means of his livelihood.

We are sure that the entire country will be of one mind so far as protection against foreign imports is concerned be it in favour of big industries or cottage industries. We on our parts expect the big industrialists to fight the battle both of their own and that of the small man.

Protection against big factories is rather a ticklish one. Before we proceed a question may pertinently be asked, viz., Does there exist a competition between the big and small industries? If it is so, is it to the advantage of the country that no further improvement be made? Will it do any good if the entire working be left in the hand of the cottage worker who is not only slow in adopting improvement but is utterly conservative, orthodox and opposed to change his primitive and crude methods? It may be argued and perhaps very plausibly that big industries are nothing but a method of improvement on cottage industries. All industries in the beginning start on a cottage scale but by continuous improvement they become big-scale industries. If we once adopt the principle of protection against big-scale industries we place a premium on inefficiency, backwardness and primitive and crude working. Surely nobody would like his country to continue to follow backward, out-of-date methods without taking full advantage of the latest inventions and discoveries of the world.

Those who believe in Mahatma Gandhi's doctrines about machinery may say that if pre-machinery method of living gave them more happiness, more contentment and better moral outlook of life why should one fight shy of these arguments. Cut down your needs and the exploitation of one country by another will cease. There will be no rush for armaments and everybody will lead a far better life than what it is led to-day. There will be no necessity of wars and the need for the invention of the atomic bomb will never arise. After all wiping away of more

than 2 lacs of people most of whom were not belligerents by a single bomb is not a desirable thing. Such, and, perhaps, still worse, things will happen. Perhaps, the so called scientific world will end itself by its own science. After all, it is a waste of human energy to produce children and then send them away to serve as cannon-fodder. This mad rush for colonies and the enslavement of the people of other countries along with the cry of democracy and condemnation of aggression is nothing else but a fraud and chicanery against humanity. After all, the ideal of humanity cannot be its own destruction. Nor can it be the enslavement or the exploitation of those who are physically or morally weak by the comparatively stronger. One expected better handling of man by man than has been displayed in this War. In the make-up of modern science and discoveries we see nothing else but misery all round and it seems the time is coming when the world will be destroyed by its own inhabitants through atomic bomb or something more destructive. The principle of 'might is right' is an animal instinct and not a human rationale of society. Have few wants, supply them from natural sources as far as possible and be contented and happy. Do not exploit others but do not be exploited either, and if the exploiter does not willingly withdraw, do not resist physically but non-co-operate or by sympathy with your enemy win his heart and cruelty will disappear from the world.

The above argument is a mixture of religious, social and economic ideas blended together. Our province being only economics we can discuss these things purely on an economic plane, and therefore will simply end by saying that there is nothing wrong in a weapon but the mistake may be in wielding the same. A sword may be used to shed the blood of an innocent person as well as of a dacoit and a murderer. But the sword is a far better weapon than a stone and one's own claws. Amenities of life seem desir-

able to every man. There is a natural instinct to desire them. That being so it does not stand to reason that the people of any country who actually use the aeroplanes should not try to manufacture them. After all man was born an animal but he was not satisfied with that life alone and spurred by dissatisfaction he went on progressing till he started to grow wheat and plant fruit and build houses so much so that now nobody can say where he is going to stop. If aeroplane is unnatural, agriculture is also unnatural and so is the bullock cart. If the exploitation of man by another man is bad, why should the exploitation of one animal by another be tolerated? For, after all, man is also an animal.

We take it for granted that most of us or at least the majority of us believe that science can help a great deal to add to the amenities of life. That being so, we take it for granted that we do want to take full advantage of the modern scientific discoveries and inventions.

Then the question will arise as to why we should not adopt the American method of mass production and say good-bye to the cottage industries once for all. If we had a vast country like America with about one fourth the population of what we have in this country we might have differed in the method of the exploitation of other countries and in that of creating huge cartels and monopolies but certainly we would have not objected to mass production. In a sparsely populated country labour saving machinery is welcome and being conducive to the good of the people it should be utilised. But in a country which is very densely populated, where poverty is rampant, where the standard of living is very low and where labour is perhaps at its cheapest, will it not be criminal to utilise heavy machinery and then turn unemployed into the idle ones? After all machinery and inventions are for man, and man is not for them. If we still believe, and we think we

should, that man is higher than machine, then, we shall have to adopt means and methods which will keep the machine as a servant of humanity and not the master of it. If we once agree to this argument all what has been said against cottage industries will be overruled. After all such a huge population which remains unemployed and whose number will increase rather than decrease by the introduction of big industries, cannot be supported by charity or by dolls nor it is desirable to create a moral defeatism which is the natural consequence of charity. People do not want charity and most of them would prefer starving to begging. They want work and it is the nation's task to provide them with it. Government is nothing else but an instrument of the nation's will. That being so there is no royal road to be followed by all the countries of the world. Every country will have to evolve its own method. This is why we have dealt with this point at great length in a previous chapter.

Let us examine a bit more definitely whether by adopting cottage industries as our ideal we really put the hands of scientific clock back. When we start big industries we have only a few dozen persons at the top while we employ working labour by thousands. They repeat the same process day in and day out without using their intelligence or common sense. After the work is over they get so exhausted that they do not desire to take to any cultural activities. Even if some of them are left with some energy there are no occasions for them to divert it usefully. Besides this we create a class of people who if deprived of factory employment cannot but seek the same again. From human point of view we really kill the initiative in the labourer. Suppose we provide the people with bread, but, does a man live by bread alone? No. It is indeed a sad spectacle to see a labourer in big factories where he is nothing more than a part of the machinery itself. He works and behaves like a machine. If intelligence or

common sense is used it will invariably spoil the trick and the factory will suffer. A manager will not like that idea at all. If readers take the trouble of studying the history of factory development in England and other countries they will at once be convinced of the above arguments. For years the labourers would not leave their own homes and would not go to the factories. They would not work in them as their liberty was destroyed and therefore they preferred smaller income than they could get in factories. It was only gradually that they succumbed to the temptation. In the case of cottage industry we take the scientific discovery and invention to the ordinary man. We widen the horizon of his intellect. We make him self-reliant, liberty-loving and house-enjoying. We make him more cultured and master of his own affairs. Common sense of the people is more developed and modern knowledge is made more easily available to the average man through cottage industries, for we thus create an inquisitiveness amongst the ordinary people. The children of the nation have a better and wider outlook as they see all round new arts and crafts run on the most modern scale. If everybody would have taken to big industries, a weaver would have become an ordinary labourer performing a certain monotonous duty unthinkingly and thus would have lost all his initiative.

If you once allow that a cottage weaver should take full advantage of the chemical and mechanical principles and processes all objections raised above will disappear. Had we advocated cottage industries of the type of handicrafts only it would have been otherwise. But we believe in employing all the scientific knowledge employed in running big industries minus the enormous amount of capital and huge machinery. We wish to bring the highest chemical and mechanical principles to the aid of the ordinary man which the big industrialists in India do not even care to understand. So far the big industrialist has only been investing his

capital in importing big machinery and starting new ventures with the help of the foreign manufacturer and thus there is very little knowledge that comes through big industries. In spite of the fact that for more than fifty years he has been using textile machinery he never risked his money to manufacture it in India. Though the sugar machinery is full of very crude and huge parts which can easily be manufactured yet he has always been trying to import them from abroad. Ordinarily big industrialist unfortunately believes in making his money and does not believe in enterprises where research, discovery or invention is needed. He has not cared to spend money on research or improving his method of manufacture. It does not mean that we condemn all the people down-right but a majority of the people believes in easy methods of making money and does not care in the spread of knowledge. There are certainly very many exceptions. States have certainly done a lot in research and during the War they have shown what can be done in the way of manufacturing new types of articles. There are some others also. But in such a big country their number is very small and not worth consideration. Readers will, therefore, agree that it does not lie in their mouth to place the above argument against cottage industry.

We have advocated the Japanese method of cottage industry where the principles, applicable to the highest machinery have been introduced to small industry. *y*-will have even been improved upon by eliminating the sp parts. Wherever it had not been possible to do so thious, divided a process into two or more stages so that or Our could be worked on a big scale and other on a cottagese scale. But where it had been found to be absolutely im-ve possible to work on a small scale, wholly or partially, they ng did it on a big scale. In doing so we take the most modern & scientific knowledge to every cottage worker and since small machines come to be demanded in large numbers we introduce a class of people who manufacture small machines and thus cultivate a high standard of intelli-

gence. This being so we cannot be accused of destroying the class of intelligent worker employed in the crude or primitive method of manufacture.

Now the main argument being disposed of we have to establish that there exists an unfair competition between big and small industries. Avoiding marshalling facts on this point let us quote from the well-known "Report of the Bombay Economic and Industrial Survey Committees of 1938-40" presided over by one of the biggest industrialists and business men of India, Sir Purshottam Das Thakur Das Kt. Fortunately he is one of the signatories to the Bombay Plan and his moderate and sympathetic views are well known. We have the privilege of personal acquaintance with him and we know that everybody in the country holds him in high esteem so far as industrial questions are concerned. We attach very great importance to this Committee's views as Bombay is the most industrially advanced province in India, and therefore the readers will excuse us if we quote this report rather in extenso. Here is the relevant portion of the report:—

*"Cottage industries and large-scale industries—*One of the questions referred to us was the relation of cottage industries to large-scale industries. There is no doubt that several large-scale industries do compete with several cottage industries and many cottage workers resent this competition. The handloom weaver complains of the mill, the cartmaker and cart-driver complain of the bus, the potter complains of the aluminium factory and the brass and copper worker complains of the factory-made brass and copper utensils. But the existence of this competition should not make us forget that there still are, even in the case of articles where there is competition, special markets of cottage products where the latter can easily hold their own. Then there are commodities in the production of which the cottage industries are especially suited such as gold and silver-ware, lacquered ware, embroidery, cane work of various

kinds, sandal wood and ivory carvings, production of fancy articles from fibre and a number of art crafts; the cottage worker who is engaged in the production of these commodities has no quarrel with large-scale industries. Finally there are some cottage industries which not only compete with large-scale industries, but are actually dependent on the existence of the latter. Some examples of such industries are tape making, bobbin making, motor cushion making, manufacture of leather articles required by calico printing on mill cloth. There are also a number of services which have followed in the wake of large-scale industries particularly those of repairs which give whole-time employment to a number of what may be described as cottage workers. It will appear, therefore, that there need not be any fundamental conflict of interest between large-scale industry as such and cottage industry and the prosperity, the latter would not necessarily mean the decline of the former. It will be the business of the Industries Departments to explore all the possibilities for the establishments and expansion within the province of those cottage industries which do not compete with large-scale industries. It is also possible to combine large-scale methods and manufacture with some cottage processes such as factory-made splints and veneers accompanied by match making as a cottage industry as in the Madras Presidency. Possibilities of this kind also be investigated by the Industries Departments. When all this has been done, however, there is no doubt that there shall still remain a large industrial field where there is short competition between the product of cottage industries and those of large-scale industries. This is particularly true of the textile industry. Representatives of the Bombay and Ahmadabad Mill-owners Associations attempted to prove by reference to statistics of mill production, imports and the estimated handloom production, etc., that the organised cotton textile industry was mainly competing with the products of similarly organised foreign textile industries

and not with those of the local handloom weavers. *We are unable to accept this contention in toto. There is no doubt that the mill product, whether imported or indigenous has been steadily encroaching on what used to be the handloom weavers preserve and the most recent example of such penetration is the field of women's clothing.* It may be true that the mills are not making saris and khans exactly of the kind which the handlooms make, but they are certainly making saris and bodice cloth which women for various reasons take to wearing in preference to the handloom variety. The representatives of the various handloom weavers' associations such as those of Maharashtra Weavers' Association, Karnatak Weavers' Association, the Industrial Co-operative Association, Ahmadnagar. The Industrial Co-operative Association, Hubli, etc., bitterly complained of this competition and some of them suggested the imposition of a duty on mill cloth while others pleaded for a statutory division of the textile market between the mill industry and handloom weaving industry. We are unable to consider the suggestions in detail and make our recommendations thereon, because we are convinced that unless power is obtained to control import effectively any such action may result in benefit to neither the local handloom weaving industry nor the local mill industry. Moreover the organised mill industry is not confined only in this province and any action taken by the provincial government may only result in loss to the local mill industry without any advantage to the handloom weavers. Finally, all such actions restrictive, in some measure or other, of the activity of large-scale industry inevitably raise inter-provincial and inter-state questions which cannot be solved by the unilateral action of the single provincial government. In our opinion the question of regulating the activities of large-scale industries particularly the textile industry which compete with cottage industry is a subject which cannot be decided upon by the Bombay Government alone and we recommend

that this question be referred by the Bombay Government to a special conference of the representatives of the Government of India and other Provinces and State Governments in the country and the Provincial action should follow the lines of an agreed policy that such a conference may adopt. We would like at the same time to record our opinion that in case powers are obtained to control imports as suggested above and an agreement is obtained from the other provincial and state governments on the matter of the regulation of large-scale industry competing with cottage industry, some regulation of the kind referred to above particularly a division of the market accompanied by a duty, if necessary, to prevent the encroachment of the mill market into the handloom market offers a possible solution. We think, however, that the whole question should be examined in all its various aspects by the conference the convening of which by the Bombay Government we have recommended above."

Italics should be marked. (The italics in the above are ours.) Let us first make it clear that we do not agree as to what has been said about the legitimate scope of big and cottage-scale industries. Cottage industry has been in existence for a very long time and the big industries have only recently usurped their functions and, therefore, it is but necessary that the big-scale industry should show their justification. In India there is scope for cottage industries to exist ^{and} will there is far higher scope for the big industries to establish themselves in manufactures of articles ^{produced} by cottage industries. But if they want to encroach upon the market which is rightly the domain of cottage industry they cannot be looked upon with favour. The sympathy of the public will always be with the worker and he should always be protected against the capitalist.

However, it has been admitted that encroachment does exist and some action in that connection is called for.

The biggest industry is that of the textiles and it is there that the encroachment is being made. It is necessary to provide two separate markets for both, and the big factories should be prohibited to make goods produced by the cottage workers. There should be a simple and cheap law to register designs with the Collector of the district and if once registered such a design should not be allowed to be copied by mills. It is true that the prohibition of manufacturing certain goods by big factories can only be effectively carried out by the Centre and we have proposed at another place that there must be a department of the central government directing and protecting cottage industry. Things which are made by cottage industry should not be allowed to be made by big factories. Since the government has already decided to control the location of big factories there we presume some sort of licensing will be introduced on behalf of the central government. If it is so intended it will not at all be difficult to restrain big industries from encroaching upon the field of cottage workers. They can be refused permission if they do not agree. India is not a country which may be said to be well industrialised. There are thousands of articles which are not made in the country, let the big industrialists invest their money in the production of these articles rather than encroach upon the domain of the cottage worker.

Waste

or limiting covered.

There are two other types of organisations against which the cottage worker must be protected. From shopkeepers who provide raw material and purchase finished articles and secondly those who employ the artisans as workers either on wages or pay them on the basis of the amount of work done. Generally the latter method is adopted. From investigation it has been found that the first method is more dangerous than the other. In their interim report on marketing of cottage industry products (September 1939) the committee found that the shopkeeper by advancing raw material and get-

ting back finished article makes a profit of 30% on his investment. It is a very high rate of profit and does not include the interest that he charges over and above this profit. In the second case the wages are so meagre that the worker has to work late hours which adversely affects both the quality of the product and the health and efficiency of the people employed. Cottage worker must be protected from both types of exploitation.

In the case of the shopkeepers who sell raw material to the cottage workers and purchase the finished goods from them licensing of dealers may be introduced and the licence holders should be asked to maintain all their transactions in writing. Daily rates of raw material and the price at which a finished article is purchased and sold may be exhibited. This will lessen the abuse to some extent. Inspectors may be appointed to protect workers engaged on wages and rules may be made for improving their condition. But all these methods will only be palliatives and cannot remedy the evil.

We have given separately the method of avoiding the above abuses and therefore need not repeat the same over again here.

CHAPTER VII

NATIONALISATION OF COTTAGE INDUSTRIES

No Government in modern times is worth the name which does not make provision for unemployment. In every country funds for the purpose of giving dole to those who do not find work are created. Insurance against unemployment is introduced. But so far nothing has been done by the Government in this country. Perhaps the Government considers itself to be incompetent to provide work for crores of people who remain unemployed. Add to it the vast number of those who are simply partially employed. It has been estimated that people living on agriculture generally remain unemployed for a period varying between three to six months and the landless labourers remain unemployed in some cases for more than six months. Then there is another huge population of those working in industries (cottage) who are every day thrown out of employment. Who should find work for these people? The main question?

Illiterate people, poor and unresourceful, cannot be expected to solve this problem; nor the rich will be willing to share their wealth with them. Big industries, even if started, cannot give employment to such a huge population. What is the remedy and who is to discover it? To dream of raising the standard of living of the people who have no standard at all looks to be a huge joke cut at the people's expense. To provide criminals in jail with food and clothing and to neglect those who are innocent and willing workers is to incite people to commit crimes. Theft and robbery is the result of natural urge to save

one's life from nakedness and starvation. Not to provide work for the people and only to provide it when they commit crimes is a crime against humanity.

If once it is decided that it is the duty of the Government to provide work for the people, half the battle of removing poverty is won. It is a pity that neither the Government consider it to be their duty nor the leaders of public opinion create an agitation for it and they still deceive themselves to think that they can raise the standard of the masses.

Recently the Government have issued a communique on the question of nationalising some of the industries. Such a move has been adversely commented upon by industrialists. But if the Government had decided to nationalise cottage industries nobody would have objected and the Government would have caught the imagination of everybody. We are sure, the Government know their limitations and their resources and capabilities. They have seen that, even for a few lacs of demobilised soldiers, they are quite unable to provide suitable work though a great fuss has been made over this question. From the little we know, the Central or the Provincial Governments find themselves unable to solve this problem. To employ them in building work is no solution. If they have not been able to solve the problem of the soldiers, will the Government take up the uphill task of employing a cottage worker by nationalising industries?

We may be permitted to point out that the nationalisation of cottage industries is far more easier than to provide work for the demobilised soldiers. In the first place the cottage worker generally knows his job and is interested in his own work. His willingness to remain where he is, is a great asset. In the case of a demobilised soldier, he has neither the necessary skill nor he has any future plans to follow one profession or the other. Secondly, the cottage worker is already leading a miserable life and gets very little to keep his body and soul

together. A little organisation or guarantee for his occupation will prop him up and he will be satisfied and be grateful to those who help him. Demobilised soldiers have come mostly from agricultural classes. Their standard of living has been raised during the War and now they are not likely to remain satisfied with their old standard. Thirdly, whatever the artisans produce, there already exists a demand for their goods and a little organisation and advertisement will help them to remain in their profession. Fourthly, they can provide for their own tools and equipment to begin with and will be willing workers in the task that the Government decide to forge for them. Fifthly, they are still being forced and exploited either to work in the Karkhanas or in their own homes for the Karkhanedar. They will welcome to work for the Government, if they are assured of regular work. Lastly, there already exists an organisation of some sort in some of the industries in different provinces where either the co-operative societies are working or something else is arranged. Government servants know many of the details of these industries and there will be no difficulty in nationalising the same.

When Government experts go about, write reports and suggest improvements, they, in a way, admit that there is a field for the articles manufactured. They also seem to think that improvement in the method is also possible. What is required is simply to provide money for the organisation and to take the industries up as Government concerns. Here is a chance for the Government experts to take the matter up and show to the world that Indian Government can show its capability in construction and can prove its worth in peace, what it has already proved in War.

During the War, Government collected and spent money in astronomical figures. If Government keeps up the taxation at this level for a year more the money so realised will be more than enough to organise at least some of the most important cottage industries.

Government officials have acquired some knowledge in getting war articles manufactured. Now let them cater for the needs of civil population. This valuable experience should not be lost. Of course, during the War there existed a demand and it was so urgent that even a low standard of goods was acceptable. When an industry is nationalised the workers can easily be forced to produce only standard goods.

It may be said that places of manufacture cannot be easily provided in such a short period and if the workers remain as isolated units they cannot be supervised easily. This does not seem to be an insuperable difficulty. Temporary arrangements may be made as they were mostly done in the case of military production. But there does not seem to be any necessity to force the worker to leave his own home. He may be allowed to work in his own cottage. When the purchase will be a Government monopoly he can certainly be forced only to produce standard goods and, we are sure, he will be perfectly willing to do so. Of course, in the organisation there are likely to be some mistakes as it is bound to happen in such undertakings; but the arrangement should not be abandoned on this score. Let the Government once realise their responsibility of providing work for the masses and take up only those industries for which they have got their experts and in the meanwhile let them train more men. We are told that there are intelligent, literate and resourceful soldiers. If so, ^{we} will can be easily trained in this type of work. We have ^{to} seen that some of them are sent out to learn weaving, dairying, etc., and it is considered that they will become quite efficient in their work only within a short period of two months. If this is so, they can be certainly utilised for organisation work after a training of six months or so. Most of them may be absorbed as workers and others as supervisors and some of them may be utilised for transport work. Many of them may become salesmen, others as advertisers, hawkers,

etc. At any rate there is a big scope for utilising them in the above organisation. We have got already semi organised industries crying for improvement. Let the Government take these up and place them on a sound footing.

We are sure if once this work is taken up by the Government many new industries will suggest themselves and we shall see a prosperous country in a short period.

Once the official organisation functions a new orientation will be given to cottage industries which will at once raise the prestige and status of the workmen. If once the entire machinery of the Government is moved to patronize articles made in cottages, we shall have a new current of hope electrifying the workers. Enthusiasm so created will raise the standard of the masses. When once the worker is guaranteed a living wage he will be able to place his heart in his work. Quality of goods will be immensely improved. Every worker will be sure that justice will be done and his merits will be recognised. He will then try to show his art, which has so far been suppressed, and we shall have far more beautiful and artistic designs in the market.

Though the War is over yet the controls are still continue. The supply of consumer goods is still limited and will remain restricted for some time to come. Under the circumstances, the Government has full control over the supplies and can thus very easily adjust the production accordingly.

Under this most favourable situation nationalisation of cottage industries becomes quite easy. To-day consumer goods are not available even at prices fixed by the Government and consumers are forced to pay far higher prices than the maximum fixed by the Government. That being so, there is no chance of a slump in the market. For nationalisation, therefore, present is the

best opportunity and it must be taken advantage of immediately.

The only objection that can be raised against this type of nationalisation may be the old bogey of Government competing against private firms. This does not seem to us a serious objection inasmuch as the number of persons affected will be very small. Those who work as Karkhanedars will only be affected. The Government can no more allow the method of exploitation followed in these Karkhanas any more. Karkhanas do not employ even 1% of the total population of cottage workers and for their sake we cannot ignore the interest of the 99% of the people. If these Karkhanedars have not been helpful in the development of industries they cannot very much object now. But we think they can easily be absorbed either as retail dealers or government servants or commission agents. It may also be possible that some *via media* for keeping them intact may be found out. If Government is willing to take over the working of big factories during the course of nationalisation why then will they object to do the same in the case of small Karkhanas?

The main thing to be considered in all such organisations is the worker himself, and he must be protected, encouraged and helped. This cannot be done without some sort of Government organisation-scale in which the Government may show us the way to developing cottage industries.

If the idea appeals to the public and the Government is willing to take it up, the details may be easily worked out and difficulties suggested may be easily overcome. The idea certainly appeals to us to be very practical and profitable and we wish a trial of it may be made as soon as possible.

CHAPTER VIII

ORGANISATION

We give below a graphic picture of the organisation required to develop cottage and small industries in case the country does agree with our idea of nationalising the same. We strongly feel that the economic condition of the masses can only improve by providing employment through cottage and small industries and that can only be achieved by public and State help.

Following table gives the details of the 'organisation', at a stretch. In order to justify the above organisation we would like to add a few words as explanation so that the underlying idea may be clearly brought out.

Central Government:— The Central Government has so far not taken any interest in the development of cottage or small-scale industries. At times the policy of tariff has worked against cottage industries; they have done injustice many a times, while helping big industries. Time has come when the State should discharge their responsibility of providing employment to all and everybody. All talks of improving the standard of living of the masses are of little avail till the economic condition of the people is bettered. If we once admit the responsibility of finding useful employment for the masses, it becomes necessary that in a country of huge population the matter should be tackled by the best men available. We consider, therefore, that the Department of Cottage Industries be forthwith established as one of the main nation-building departments, both in the Central and Provincial Govern-

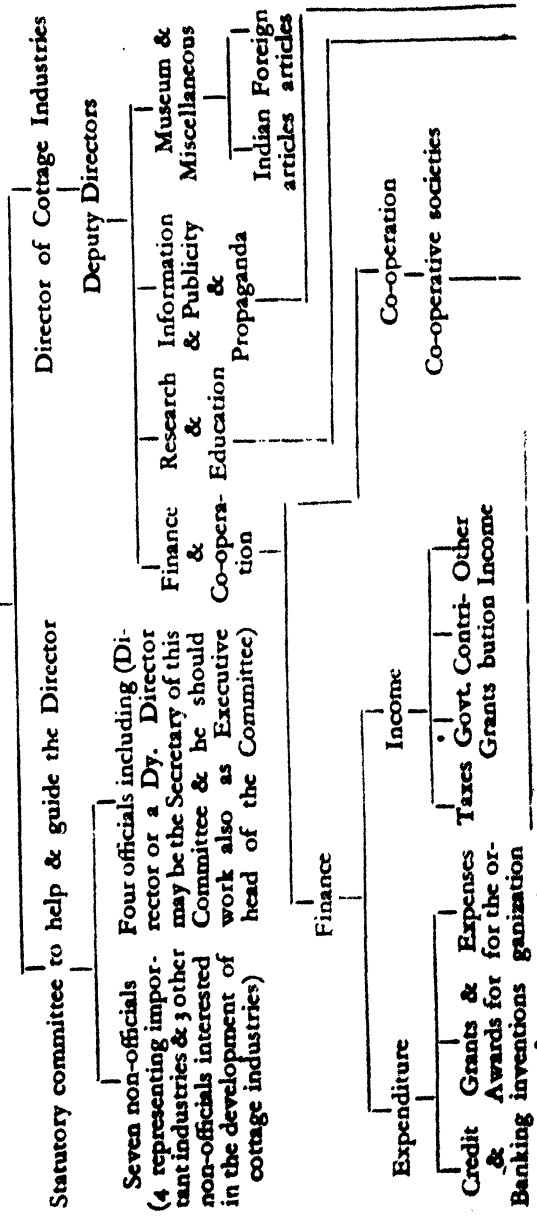
ments. Sufficient attention to this important subject will not be given without providing a separate portfolio both in the Centre as well as in the Provinces. So long we tag small industries to big industries justice will not be done to small worker. Big industrialists will both be influential and vocal, and will have a better hearing inasmuch as they will place their requirements in a more definite and clear form. From the perusal of the previous pages the readers will realise that cottage industries have to be protected not only from foreign countries but also from big industries. In order to do this the same minister should not be made incharge of both types of industries. There is, however, another reason for creating a separate portfolio for cottage industries. Tariff, Railways, Trade Commissioners in foreign countries, Research and Forests are controlled by the Government of India and all these things have a great bearing upon the development of cottage industries. Unless we appoint a separate minister to be incharge of cottage industries, justice will not be done. We have already pointed out elsewhere that while levying import duties cottage industries are sometimes very badly hit, specially when the imported article is used as a raw material by the cottage workers. Similarly the import of raw material at certain centres or export of finished goods from that centre, though gives a heavy load to the Railways, yet on account of a heavy load of packages, Railway authorities do not recognise the importance of giving a special treatment in freight charges to cottage industries. In any future research concerned with industries small man requires more help and encouragement than big industries, while so far small man's claim has never been entertained. An industrialist can afford to employ technical skill or a suitable organisation for research but nobody can expect workmen to combine in order to make arrangement for research in their difficulties. Similarly the

MINISTER IN THE CENTRE

With a portfolio of Cottage Industries

(He must be responsible for Rly. freight, foreign competition, tariff, foreign export, Research, collection of information through Trade Commissioners etc., besides general development)

Provincial Ministers in charge of cottage industries



question of export consisting of wares collected from a number of artisans will remain a difficult proposition unless it is organised for the benefit of the cottage worker. Trade Commissioners working as representatives of the country in different outside places can render very useful help to small worker in providing new designs and studying taste and fashions of those countries and passing them on to manufacturers. Travellers sent abroad will similarly help the workers in clearing out collected information. A small man will never likely be able to afford to study foreign markets individually or collectively. Big industries can take care of themselves and, if need be, can easily approach the highest officials for the removal of their complaints, while on the other hand, a cottage worker cannot have the courage to approach the official, and if he dares do it, he cannot effectively place his case. We, therefore, require a special minister for cottage industries both in the Centre and in the Provinces—a minister who will be the guide, patron, a teacher and adviser to the cottage worker as well as an alert sympathiser of the poor.

To provide a minister without sufficient equipment and staff will not be of much help. We have given details of the functions as well as staff required in the case of Provincial ministers. We have not done so in the case of Minister-in-Charge at the Centre. However, we have tried to indicate his responsibilities in different lines and that will give a sufficient idea as to what type of staff and equipment will be needed. However, let us point out that the minister must be provided with a very good library, arrangement for collecting statistics and all the details of manufacture. He must possess reliable figures of the people employed in different trades and callings and must have technical experts to advise him as to what new industries can be started and with what raw material. He must also possess a detailed knowledge of

the fashion, taste and requirements of the foreign countries. His department must possess information about the raw material available and the purpose to which it can be utilised.

During the War the Government at the Centre took frantic efforts in organising the production of new articles, which were either imported from the foreign countries or whose need was felt for one thing or the other. Production of woollen or silken goods and number of chemicals for which India had the raw material are good instances in point. If similar efforts are continued and team work amongst different experts is organised at the Centre, we shall see that within a short period we shall be providing all our needs and may be able to establish trade in foreign markets. We are perfectly convinced that there will be more than ample work for the Minister In-Charge at the Centre and he will render very good help to provinces. As a matter of fact, we are fully sure that in the beginning, for a few years, the amount of work will be so much that he will have to get a few assistants to collect, tabulate, collate and sift the information required. Great details of different industries as worked in the country and abroad and the raw material and equipment needed will have to be collected and utilised which will keep the entire staff very busy. Given the spirit and keenness, and we are sure the labours of the Minister will be very well utilised.

The Minister In-Charge of cottage industries in the provinces will be helped by the Director of Cottage Industries. The Director will be executive official head of the department and will be helped by the statutory committee of non-officials. We have provided a statutory committee instead of an Advisory one, for the simple reason that the latter is not effective. We have noted that when the advice of non-officials is not cared for, they naturally lose interest in their work and do not put in their best efforts. Though we

have gone into the details of the organisation of this committee yet this is a matter of detail and we do not press for the rigidity of the same. Our main purpose in giving these details is simply to indicate the lines upon which the organisation should work.

So far the Governments have considered an I.C.S. Officer to be the best for the purpose. He may be a very good administrator but he has no knowledge of the intricacies of business nor can he enter into the sentiment of the people to visualise their difficulties. Besides this he is quietly transferred to another department as soon as he begins to pick up the details. We strongly feel that the development of industries is only possible if businessmen are appointed on this responsible post. The post of a Director of Industries must be considered to be an honour for a non-official business man so that he may consider his reputation at stake while taking up that job, and it should not be filled permanently, so that new blood is always transfused and the development does not die for want of initiative. The selection of this important personality is the pivot of our organisation. If right type of man is appointed and on temporary basis, say for a period varying from 3 to 5 years, half of the battle will be won. We lay special emphasis on the selection of the Director of Industries. All our attempts for development will fall flat if right type of man is not selected.

Under the Director of Industries we have appointed a few Deputy Directors to be incharge of different lines of work, which will have to be taken up by the Department. The above table gives the detailed activities of the different Deputy Directors, still few words may not be out of place as a sort of elucidation.

The first and the most important activity is the method of controlling finances, specially the accounts side of it. In business, immediate steps will have to be taken with very far-reaching effects, but if on account

of red-tape of the finance department these things are not allowed to be done immediately, the business must suffer. The Deputy Director In-Charge of finance, therefore, should be given a free hand to a very great extent so that he may take suitable steps at the proper time, and the work may not be allowed to suffer. There is no harm if the extent of financial liabilities are fixed up but within that maximum he must have a free hand in all matters concerning sales, purchases, rewards, salaries, etc., etc.

Co-operative Societies will be another branch under him. The present method of spoon-feeding and control at every step in financial liabilities is perhaps the greatest handicap in the working of co-operative societies. Not to allow members to commit mistakes and learn from these losses is the greatest hurdle. We confess that to learn business by incurring losses is a dangerous thing but, undoubtedly, this is the only school wherein people are best trained.

In all Provinces Co-operation is a separate branch from Industries, while we have amalgamated both these functions under one Deputy Director. We have purposely done so.

There have been many cases where the Registrar of Co-operative Societies and the Director of Industries have not seen eye to eye with one another and in the struggle of these two officials, co-operative societies have considerably suffered. Cases are not unknown where parallel co-operative societies are formed (*i*) under the Co-operative Department and (*ii*) under the Director of Industries to do the same type of work. In such parallel societies instead of good rivalry being set up, work has considerably suffered. We want to avoid such an eventuality.

Co-operation is simply a system of work and not a business in itself. The work of the Co-operative Department should be restricted to the formation of a society for certain purposes and the observation of

certain rules, by which societies should be governed. If we make the Co-operative Department responsible for the entire working of the society, we presume the Co-operative Department to be an expert Department for all walks of life. For want of suitable personnel to run a business, co-operative societies have badly suffered. The success of business depends less on the system but much more on the soundness of the proposition taken up by the undertaking and the method in which the business is controlled. By placing all types of co-operative societies under the Co-operative Department we commit the mistake of handing over the business and the investigation of its soundness in the hands of those who are ill-qualified for it.

It may not be out of place to sound a note of warning for the guidance of the Deputy Director. The work of purchases and sale and standardising of the products, etc., will be taken up by co-operative societies. For good working of societies we shall require men of tact and business ability, which can only be acquired by proper training. Every educated man is not suitable for every job. We wish that boys of workmen themselves be trained to perform these functions or qualified, shrewd people from amongst the workers themselves be selected. Educational qualification should not be the criterion for enrolment for these jobs. Success will entirely depend upon the confidence you create amongst the workers and that will depend upon the right type of people employed on the top.

The second Deputy Director will be in-charge of Research and Education. Research and education are entirely two different branches. While a little work has been done for educating the workers, but no research, worth the name, has been taken up by the Industries Department. To employ a few qualified persons without giving them any opportunity to keep their knowledge up-to-date and call them experts for

all times is not a correct method of approach. There must be a qualified staff to handle the problems specially of technical nature in all their details. These research workers must be provided with the necessary equipment and an up-to-date library. The Director In-Charge of both these subjects must be a man of high attainments and he must be able to guide and organise the different functions entrusted to him. Sufficient money ought to be placed at his disposal to carry out his difficult task.

There are a few Industrial Schools run by the Government. The greatest defect in these institutions is that they have not been able to create dignity of labour amongst their students and the teachers themselves shirk from working with their own hands. No method exists to refresh their training and to imbibe the new methods adopted in other places. Mutual exchange of ideas amongst teachers of different provinces is never practised. Business men, industrialists and workmen from actual trade are never brought in touch with institutions nor any system of lecturing by practical experts exists.

There are industries which are worked both on big as well as on small scale. There are very capable men working in these industries and they can usefully help these institutions if they are asked to prepare special lectures for the students and workers occasionally. Of course, they will have to be paid. There are no museums attached to these schools where best patterns of workmanship, both indigenous as well as foreign, may be exhibited to create curiosity amongst students and visitors, nor any method to collect useful information from books and journals for the guidance of the students. The whole system requires overhauling and reconstruction in order to make the institutions a place of pilgrimage not only for students but for the best artisan in that line. Isolation of teachers from trade is another handicap. Regular meetings of workmen

should be organised and their criticism on the work of students should be invited. Difficulties of workmen should be heard, discussed and overcome. With a sympathetic heart and with an air of friendship with workers new improvements will be assured. It is not the workmen themselves who will be benefited by such an arrangement but the teachers themselves will also learn a lot.

We have provided a third Deputy Director for information, publicity and propaganda. Under these headings we have fixed up different functions, which this officer is expected to do.

Unless and until there is created a link through which the Indian worker is given the necessary information about his colleague in foreign countries very little headway can be made.

We wish the readers may study Bangle Industry of Firozabad, and, we are sure, they will at once be convinced of the possibilities of development. The bangle makers of Firozabad without going to foreign countries and without any help from the so-called Government experts, studied the details of the foreign articles and have themselves been able to manufacture varieties which were unknown before and through processes evolved by them, which are simple, ingenious and effective. By keeping in touch with the development in foreign countries we shall be able to widen the outlook of our workers and give them a chance of utilising their experience, skill and knowledge to produce a new material.

The fourth Director will be in charge of museums and miscellaneous functions. We have not elucidated his functions in detail as it will be the result of the future development and will depend upon actual working of this organisation.

If the above organisation is brought into being, we are sure, the work of the development of cottage industries will be systematically organised and cottage

industries will be placed on sound footing. Permanent staff will be trained and we shall be helping the workers at every step and thus will be placing in their hands enough money by which their standard of living will be raised and industries will become prosperous.

PART II

DESCRIPTION OF EXISTING INDUSTRIES

In Part I we have discussed the question of the importance of cottage industries, and their advantages and disadvantages. In this part we shall try to give a short description of different industries, which are already in existence so that the extent and importance of cottage industries may be brought home to the public and they may be in a position to understand as to how many persons are affected by this type of employment. We shall try to avoid the technical details of different industries, unless and until we find it necessary in order to convince the readers about the easy development of any of them.

It is unfortunate that in spite of the fact that a good many surveys of cottage industries have been taken up by different provinces, and reports on them have been published, there is still very meagre information about the number of persons employed therein and the extent of annual production of these industries. In spite of the fact that very little encouragement has been given for their development and in spite of the fact that the leaders of public opinion and the financiers have not tried to give them as much help as they ought to have the production of these industries far exceeds the production of articles manufactured in big-scale industries. Of course, as far as the number of people employed is concerned, it will always remain to be far larger than that in organised big industries. If we were once convinced that we can ever be able to give employment to our huge population of our country who have to be diverted from agriculture,

we would have never stressed the need of the development of cottage industries. Cottage industries not only provide the greatest employment but they affect the economic position of the people in general.

In this description we have knowingly avoided to mention those important centres where cottage industries are carried on, as we fear, that it would have given an impression that barring these centres such industries have no important position in the economy of the country as a whole. We have mentioned only a few places simply to emphasise the extensive scale upon which such industries are followed in a particular locality.

In this part we have also avoided the details of the possibilities of new industries which are allied to those already described, as we think that such a procedure will confuse the reader and they will not be able to concentrate themselves upon new industries. We have, therefore, decided to follow this course in Part III, wherein we have only selected those industries which can easily be introduced as they have already been successfully tried, on a small scale in foreign countries. Readers, therefore, will excuse us if we have adopted this course of description. Perhaps, it would have been a more complete method of description if we would have described, for instance, new industries connected with leather under leather trade. But this would not have given a complete picture of the difficulties with which we shall be confronted nor could the difficulties which under those industries will have to be developed be fully explained. For new industries, a different type of organisation, training and education may be required and all these, if mixed up with those already existing will not clear out the points as completely as they would do if a separate place is assigned to them.

TEXTILE

Textile is one of the oldest industries of the country

and though it has suffered vicissitudes from time to time, it still gives employment to a very large number of people. Mahatma Gandhi has singled out this industry and has laid the greatest stress upon it. The work, however, is full of difficulties inasmuch as a cottage worker has to compete against the most organised industry in the country. After a perusal of the description of this trade given in books of history, one is surprisingly convinced about the wonderful capacity of the artisan in his having remained in this trade against heavy odds and his having survived onslaughts of the most devastating nature.

It is miraculous that cottage weaver has defied the huge organisation of textile industry not only in India but also in Ireland, Germany and other countries. Much against our wish we shall try to give a very short description of this industry in its different phases.

GINNING AND CARDING

The first stage in the production of cloth is the ginning of cotton. In olden days cotton was ginned in every village, but now the industry has almost disappeared. It is now followed only either when the cultivator requires small quantities of lint for his own use or wishes to keep the cotton seed for next cultivation. In some villages the cultivator still gins by hand in order to supply his cattle with this important feed. However, it is not an important industry. In places where electricity may be made available the introduction of small gins may be advantageously made use of and it will give some money to the cultivator instead of selling his cotton. He will begin to sell ginned cotton and utilise the seed for cattle feed. We suggest, therefore, that this industry should be organised when the introduction of cheap electricity is included in the future programme of the Government.

Carding, though not as efficient as done by machine, is followed in every village. It is quite an

inexpensive method and we hope will survive for carding lint, stuffing the winter clothing and supplying for hand-spinning.

SPINNING

For the preparation of yarn, spinning is the first stage whether we use cotton, wool, silk, hemp, jute or any other fibre as our raw material.

Before the machine age dawned, India was exporting cotton clothes to France, England and many other foreign countries. Even after the machine age started it required an organised effort both from the British Government in England and in India to stop our cloth export. It was a fashion to wear Indian-made cloth specially among ladies and the fashion could not die out till the wearers were punished with fine and imprisonment. We need not go into the old sad history of the methods adopted to achieve this end. This will not help us in any way, in our present attempt, to revive the industry.

Nobody can hold that a spinner, if he works for the whole day on his job, is likely to get a living wage even at a rate the All India Spinners' Association has decided to give. But it must be admitted that the women folk generally, and infirm and old ladies particularly cannot utilise their time for anything more usefully. Even before Mahatma Gandhi gave the fillip to hand-spinning, the industry existed to a small extent. Hand-spun yarn was utilised for different types of clothes in villages. Thick woven cloth required for transporting grain, fodder and other agricultural commodities was woven from the hand-spun yarn almost in every village. Carpets were mostly woven out of this yarn. Mahatma Gandhi decided to identify himself with the poor and distributed money by means of organising hand-spinning and weaving in the countryside. We need not enter into the details of economics of this industry as it is admitted that it is an employment and not a paying proposition. But

nobody can deny that as an occupation nothing can improve upon it. Since the time Mahatmaji has made Khaddar wearing as a condition precedent for the members of the Congress, there has been created a class of spinners in the country. Mahatma Gandhi visualises that all should spin enough for their own needs, and one must leave purchasing cloth from outside. As the basis of this scheme is not on economic grounds, spinning has not become common in the country. Even if the spun-yarn would have been as strong as that of the mills, on account of its high price it might not have been patronised by the people. It must, however, be admitted that since the starting of the All-India Spinners' Association the quality of yarn has considerably improved but there is still a great gap to be filled up. Since we do not think there will ever come a time when we shall be able to clothe the whole country with the hand-spun yarn we are afraid the industry will not last long unless it is based on better economic grounds. However, for the guidance of workers in the fields, we offer a few suggestions for their consideration.

As Mahatma Gandhi himself suggested the present Charkha must be improved. It is a pity that, in spite of a reward of a lac of rupees, an improved Charkha could not be invented. We wish a further frantic effort be made and the reward must be advertised in all the countries of the world. No matter if a higher reward may be found necessary. It seems to be essential that the terms of competition should be made as clear as possible, so that mechanically-minded persons may be induced to compete.

If the organisers agree to change the principle of Charkha the old spinning jenny may be tried. We learn that China has made considerable improvement in the spinning-wheel. If so, it will be worth while to copy it. The War has ended and it will be quite a feasible proposition.

Further we propose the following other lines of attack on the problem. Blending of different types of cotton, mixing of fibres other than cotton, chemical treatment of cotton before turning to slivers, use of some chemicals to keep cotton moist, and the improvement of carding are some of the methods to be simultaneously tried along with the improvement of Charkha. Experiments with machine-made slivers be made to find out as to how far the quality and production are effected. We do not claim any originality in these suggestions but we throw them out for whatever they are worth.

Report about the survey on Cottage Industry in the Madras Presidency has examined the question of hand-spinning in a very great detail, and it would not be out of place to give a few relevant points and calculations below. The author has compared the cost of spinning yarn of 10 and 40 counts both made by hand and by mill as follows :—

DETAILS OF COST FOR 10S. BY HAND—

	Rs. as. p.
Four viss of unginned cotton	1 8 0
Ginning Charges	0 3 6
	<hr/>
	1 11 6
Deduct cost of seed separated from 3 Vis.	0 6 0
	<hr/>
Charges for carding and sliver making for 1 viss-3 lbs.	1 5 6
	<hr/>
	0 3 0
	<hr/>
	1 8 6
Loss in carding	0 1 0
	<hr/>
	1 9 6
Cost of yarn 1 viss or 3 lbs.	1 0 0
	<hr/>
	2 9 6
Cost of 10 lbs.	8 12 0

The cost of mill-made yarn 12s. is about Rs. 6-4-0 to 6-8-0. Difference in price is Rs. 2-8-0 per 10 lbs.

(40 Hanks made 1 lb. of the yarn in 40s.)

	Rs.	as.	p.
Cost of cotton 1. 1/8 lb. including wastage	0	12	0
Labour for spinning	2	8	0
	<hr/>		
Cost of 1 lb. yarn	3	4	0
Value of 10 lbs. Hand-spun yarn	32	8	0
Mill-made yarn 10 lbs. costs	11	2	0
	<hr/>		
Difference in price	21	6	0

The difference in prices of mill and hand-spun yarn was calculated in 1926 as follows :—

<i>Count of yarn</i>	<i>Price of hand-spun yarn</i>	<i>Price of mill-spun yarn</i>
10 to 12	Re. -/13/- to -/14/-	Re. -/8/- to -/10/-
20S.	Re. 1/8	Less than Re. 1/-
30S.	Re. 1/14	Less than Re. 1/2

At present the difference, perhaps, would be much more. The above statement makes another weakness clear, that higher the counts the more is the difference. This means that it may become some time business proposition to spin lower counts while the spinning of higher counts will not pay.

In India people generally use cotton for stuffing their beds and covers during winter season. After the season in the next year cotton has to be changed. In villages of U.P., and the Punjab and in other places the quantity of used cotton available in this way is considerable. Such cotton cannot be sold to the mills but can with advantage be utilised for spinning coarse yarn. Such yarn can be utilised for carpets, *Durris*, *Niwar* and the like. This line, if organised, may give employment to cottage worker without competition. The same report has observed a few more weak points with which we agree. It points out the imperfection of the Charkha as follows:—

1. Intermittent twisting and winding.
2. Necessity for the use of both hands.
3. Smallness of output.
4. It attempts only one out of the several operations in the process of transformation of cotton into yarn and there is no simultaneous arrangement for carding, drawing, etc.
5. The yarn (cotton) spun on the Charkha does not easily always stand the strain of fly-shuttle loom.

We hope these defects may be removed and their removal may be a condition precedent for giving an award to the improved wheel.

In spite of all the objections that can be raised against hand-spinning there is a very pertinent advantage in its favour which has been pointed out over and over again by its advocates. They rightly remark that "nobody can point out any better and easier employment for such a large population of the country." Though at present hand-spinning is given the dignity of labour and also a certain prestige by the nation, yet hand-spinning was never considered to be a contemptuous occupation. An idle brain is a devil's workshop and to keep such a huge population without employment is to release the devilish force that idleness creates. To avoid this disruptive force, is it not desirable that the nation must pay a certain compensation? Looking from that point of view, either you will have to provide some better and more paying means of employment (which seems to be an impossibility) or pay for it. If the whole nation realises this important factor, they should not mind paying a little more price to keep the spinner employed even by paying a higher wage.

The author of the Madras Report has very well put the whole thing in the following words. It says, "It should, however, add to the meagre earnings of the ordinary agriculturist, if he takes to it for want of a more suitable subsidiary occupation. Ordinarily he

grows his cotton, his women-folk are not alien to the art of spinning and in the domestic economy, he finds his coarse clothes more suitable to his taste and calling. To the old and infirm and to those who could find no better occupation, however meagre might be the earnings, it is a substantial addition to the family income and in the absence of more universally agreeable occupation suitable to the social status of the different classes of people hand-spinning has its own merit." It goes on to say further, "There are other industries, for instance—coir spinning, palmyra plaiting, etc., which bring no better income but are still carried on and compared to them hand-spinning is more homely and dignified. The industry involves little initial outlay and the mechanism of the Charkha is so simple that an ordinary carpenter could prepare it without much labour. Although the occupation may be monotonous, it does not demand any physical strength beyond staying power.

Till the time an improvement is made in the Charkha it may be worth while to prohibit mill-made yarn for the use of the following articles. This may encourage the industry without in any way calling for a big sacrifice from the people. Durris, carpets, *Niwar* ropes and other such articles where either twist does not count or which are very coarse. Imports of such articles from foreign countries at the same time be prohibited.

Further a study may be made as to what best can be made from hand-spun yarn. There may be several articles found which may be added to the above list with advantage. For instance, we learn from the Bombay Report that some special type of yarn was made by Momin women and this was used for Zora weaving. It has now been replaced by mill-made yarn and these women are thrown out of employment. Such encroachments should be avoided.

WEAVING

The greatest objection against the hand-spun yarn is that it affects the profession of weaving

quite considerably and we have no right to spoil the economics of the weaver in forcing him to weave this type of yarn. It must be admitted that hand-spun yarn takes a longer time to weave and brings less income to the weaver. When we consider the question of spinner we should not lose sight of the weaver. If we could utilise all our weavers for weaving hand-spun yarn and could pay them as much as they are now paid by the Spinners' Association, we would have no objection although the wages fixed by the All-India Spinners' Association to the weaver cannot be said to be adequate, but it may be recommended inasmuch as it gives a regular income and the weaver is not exploited by any middle man. The other economic objection against cloth made from hand-spun yarn is that it is costlier than mill-made cloth of the same count. It lasts less and thus proves expensive in the long run. It is only for the rich who can make use of it but the poor cannot afford to have it.

In order, however, to develop the hand-spinning industry without detriment to the weaving industry we may state that Khaddar must be protected against adulteration or competition by the mills. If such a protection is granted and the nation takes to it, the solution of employing the people to some extent may be found. Leaving Khaddar alone it must be admitted that the weaver has managed to exist against big organised factories. If the middle man would not have exploited him to his own ends he would have, perhaps, given the factories a successful pitched battle. A brave soldier who has so far succeeded in fighting his glorious battle must be helped, encouraged and protected.

It is a pity that the Review of the Trade of India generally does not give information about cottage industries though they are a great factor in trade, nor there is any arrangement to collect annual figures of employment in cottage industries and their production. There seems to be no reason as to why these

statistics be left for collection to the Provinces whenever they deem it to do so or they be collected only at the time of census. When we find that the employment the handloom industry provides is far in excess to mill industry it is but necessary that the Government should issue a special Review every year about cottage industries and if they so desire they may compare it with mill industry.

We give below some figures from the Facts Finding Committee about the employment and production of handloom industry in India:—

The number of active looms is about 17 lacs out of which more than 2,65,000, i.e., 13% looms are reported to be idle. Out of these looms 14,00,000, i.e., 72% are engaged in weaving cotton textile, 99,000 looms, i.e., 5% in wool, 3,71,000, i.e., 16% in silk 25,000 or 1% in artificial silk and 1,00,000, i.e., 6% in other textile mixtures.

As regards the quality of the looms employed 64% are throw shuttle looms, 35% Fly shuttle looms and 1% of other categories.

The number of weavers is 14,34,000 whole-time and 7,47,000 part-time. The total being 24,00,000 (including 1,75,000 estimated for smaller states). The number of paid assistants was 2,53,000 and unpaid 25,73,000. Thus the total number of people employed comes to 60 lacs. In addition to these there are the dependents whose number cannot be less than 40 lacs. Assuming that each of the 24 lacs of weavers has to support besides himself 3 persons on an average the total population depending on the industry must be, according to the above report, round about 10 millions or one crore. The total value of hand-woven cloth according to the Committee in 1939 works out to 72.80 crores, Cotton cloth 47 crores, silk 15 crores, artificial silk 4 crores and wool 3 crores.

Total production of mill-made cloth in 1936-'37 comes to 3,220 million yards against 1,265 million

yards from handlooms. According to the above report the mill-made cloth has replaced the imports and not the handloom cloth. Handlooms give employment to four-fifths of the total number of workers employed in the cotton textile industry. The cotton textile industry employs only 5 lacs workers of whom a considerable number of workers are employed in spinning mills producing yarn for the handloom. Thus although to-day mills are producing 68% of the total cloth they employ only a fifth of the total number of workers in the cotton textile industry.

The same report, however, regrets that the fall in earnings of the weavers has been tremendous during the last ten years and in certain cases it is as high as 80%.

The greatest weakness in handloom weaving, however, is that it uses the mill-made yarn and yet had ultimately to compete with the mills. You cannot rely upon a weapon made in your enemy's factory. The mill industry can at any time stop the supply or raise the price of the yarn to a pitch that it no more remains a business proposition for the weaver to prepare cloth. It is true that there are a few mills which simply spin, but do not weave. But their number is very small and if the spinning and weaving mills will ever think of raising the price of the yarn, these mills will willingly do so and will like to make higher profits. Of course, it will always be a paying proposition for a spinning and weaving mill to raise the price of yarn and lower the price of cloth to drive out the competitor from the field. Not only the mills can raise the price of yarn but they may refuse to supply sufficient yarn. Besides the above difficulties yarn becomes expensive on account of freight charges, octroi duty and middleman's profit. At least two middlemen are employed by the mills. In small places there may yet be a third middleman. To add to the trouble sometimes the yarn is less in weight, less

in number of hanks and lower in counts. The weaver who generally purchases on credit has to suffer knowingly these disadvantages. In this country all such cases are governed by the general law of cheating and the Government has not seen its way to organise a civil police to protect the citizens from such deceptive practices. Cheating in this way is rampant and there being no check, honest man always suffers. We wish some legislative measures be adopted to check such malpractices.

The other greatest weakness of the weaver is his financial position. He has no security to offer against credit. He is too poor and indigent. His position has become so hopeless that he has lost his honesty also. He lives a fatalist life and tries somehow to drag on. The middleman from whom he purchases his raw material charges a higher price in the first instance and supplies him inferior article. Since he has no security against his advances, the dealer forces him to sell the finished product to himself alone, and thereby also deprives the weaver of getting a good wage. The weaver is unable to wait and has to dispose of his cloth at any price. Thus the dealer profits at both ends. On account of this difficulty there has arisen a class of dealers who supply the yarn, give the design and purchase the cloth. This method gives the weaver a regular income but the cream of trade goes to the middleman. It has been proved by several survey reports that whenever the price of handloom cloth goes down middleman's profits are not affected. Wages are only lowered in such a case. Some middlemen have started their own factories wherein they arrange for the tools and the weavers are required to work either on daily wages or on piece work. In these places also the poor man is exploited.

The only solution to overcome this difficulty, as we have pointed out elsewhere, is to start spinning factories for the weavers. These concerns may be

limited companies but the profit made by them should not exceed a certain figure. They should supply yarn to the weaver at fixed prices. Marketing of finished products should also be organised. The smaller the spinning unit the better, so that they may be located at number of places to avoid transport charges. Unless this is done, handloom will not be able to hold its own.

Handloom industry produces all types of cloth from the coarsest to the finest and it may be true to say that if the Indian Mills only supply all types of yarns, plain as well as coloured, no weaving mill need function in the country. The handloom weavers will supply the entire need and the industry will be very well distributed throughout India. Perhaps, there may remain the necessity of finishing cloth, as we have stated elsewhere. That being so, is it not desirable in national interests to see that such an industry is not allowed to disappear?

Weavers, in spite of being illiterate and not being helped by the scientists to give up-to-date ideas, are keen and alert to take to new designs and at times, they have produced artistic and beautiful cloth. All this proves that they are neither conservatives nor oblivious to progress.

There are many special advantages available to the handloom industry and these have allowed the weaver to exist in spite of the disaster that has visited him so often. The first and the foremost advantage is the display of colours which mills cannot easily do. Secondly, handloom weaver can interweave the cloth with gold and silver threads and he can easily beautify the borders. Thirdly, the handloom weaver can weave any width and size to suit his customer's requirements. Of course, he can hold his own easy in weaving coarse cloth of low counts, as we have stated elsewhere.

Now looking to the importance of the industry as well as to the fact that it gives the greatest employment

to the people, it seems to be desirable to protect the weaver against the organised textile industry. It is a pity that the mill-owners do not realise the necessity of the principle of 'live and let live' and they decry all attempts for protection. They quietly forget that the mill industry has survived not on account of their organisation, but more so by the sacrifice that the people of this country have made by boycotting foreign goods and patronising Indian mill-made cloth. The country has also, at times, suffered financially in levying the protective duty both on yarn and cloth.

The question of protecting the handloom industry against mill industry has been investigated in the report of the Bombay Economic and Industrial Survey Committee in 1938 of which the well-known industrialist, Sir Purushottam Das Thakur Das, Kt. was the Chairman. On page 156, the Report says, "Representatives of the Bombay and Ahmedabad Mill Owners' Association attempted to prove by reference to statistics of mill production, imports, the estimated handloom production, etc., that the organised cotton textile industry was mainly competing with the products of similarly organised foreign textile industries and not with those of the local handloom weavers. We are unable to accept this contention in toto. There is no doubt that the mill product whether imported or indigenous, has been steadily encroaching on what used to be the handloom weaver's preserve and the most recent example of such penetration is in the field of women's clothing. It may be true that the mills are not making saris and khans exactly of the kind which the handlooms make, but they are certainly making saris and bodice cloth which women have for various reasons taken to wearing in preference to the handloom variety. The representatives of various Handloom Weavers' Association such as those of Brihan Maharashtra Weavers' Association, Karnatak Weavers' Association, The Industrial Co-operative Association, Ahmadnagar;

The Industrial Co-operative Association Hubli, etc., bitterly complained of this competition and some of them suggested the imposition of a duty on mill cloth, while others pleaded for a statutory division of the textile market between the mill industry and the handloom weaving industry. We are unable to consider these suggestions in detail and make our recommendations thereon, because we are convinced that unless power is obtained to control imports effectively, any such action may result in benefit to neither the local handloom weaving industry nor the local mill industry. Moreover, the organised mill not located only in this Province and any action taken by the Provincial Government may only result in loss to the local mill industry without any advantage to the handloom weavers. Finally all such actions restrictive in some measure or other of the activity of large-scale industries inevitably raise inter-provincial and inter-state questions which cannot be solved by the unilateral action of a single Provincial Government. In our opinion the question of regulating the activities of large-scale industries particularly the textile industry which compete with cottage industries is a subject which cannot be decided upon by the Bombay Government and we recommend that this question should be referred by the Bombay Government to a Special Conference of the representatives of the Government of India and the other Provinces and State Governments in the country and Provincial action should follow the lines of an agreed policy that such a conference may adopt. We would like at the same time to record our opinion that in case powers are obtained to control imports as suggested above and an agreement is obtained from the other Provincial and State Governments on the matter of the regulation of large-scale industries competing with cottage industries, some regulation of the kind referred to above particularly a division of the market accompanied by a duty, if necessary, to prevent the encroach-

ment of the mill market into the handloom market offers a possible solution. We think, however, that the whole question should be examined in all its various aspects by the Conference the convening of which by the Bombay Government we have recommended above."

The Report could not decide this question simply because it was not a Provincial matter. If the Committee would have been organized by Government of India, some method of protecting the handloom industry might have been found. Since it has been admitted that there exists competition between the mill and the handloom industry, and that the latter is far weaker than the former, it is but necessary that the Government of India should come to the help of the latter.

It should now be agreed that there exists a competition between the handloom and mill industry and that competition can only be avoided by Government intervention inasmuch as the handloom weavers are not organised and they are, therefore, unable to place their grievances before the Government. Besides they compete blindly amongst themselves and so cannot easily combine and add to it the disadvantage of using the mill-made yarn for their cloth production.

Without going into more details we propose that a legislation should be enacted to prohibit the Indian mill industry not to encroach upon the field of handloom industry. The entire field of production should be divided amongst the handloom and mill industries and certain counts should not be woven by the mills and should be exclusively left for the handloom industry. Similarly the mill industry should be prohibited from encroachment upon the field of production which has remained the main province of the handloom industry. In cases where the protection has to be granted against the import of certain counts of yarns from foreign countries, which may be mostly used by the handloom industry, the interest of handloom industry should not be ignored. In

cases where the protection is necessary, a rebate should be allowed to hold the production from this imported yarn or some other method may be evolved, so that the industry may not be killed in order to protect the mill industry.

In all future developments of textile industry only new spinning mills should be allowed to be erected and the existing mills must be forced to set apart a certain percentage of yarn to be sold as such. In no case weaving looms in the existing mills be allowed to increase. The recent restriction proposed by the Government of India is not enough.

The tastes of the people always change and equipments and methods are found out to cater any such changes. Due to these changes number of methods have been evolved in finishing the cloth in an attractive manner. We cannot expect from handloom weavers to employ all these means in the manufacture of their goods. It is one of the great handicaps on account of which handloom industry has suffered in competition with the factory-made cloth. It has, therefore, been suggested under a different heading, and in a separate list in the body of this book that the finishing of cloth should be organised, where all cloth prepared by handloom should first go before it is marketed. We do not want to duplicate the same idea here.

Since handloom gives far more employment to the people than factories we must help the weavers and grant them protection both against foreign and internal competition.

Printing of Cloth—It is an important cottage industry which has developed in different localities. Some of our prints are in demand in foreign countries and orders are always repeated. If the industry is well organised here is a room for the activities of both the middleman as well as for the worker. In order to capture the foreign market, however, it is essential that our goods be standardised, and a strict control to keep the exported article

of a certain standard be maintained without which we cannot preserve our reputation.

There is need of improvement both in technique and supply of raw material—specially the colours and mordants. If the cheap method of paper stencils be introduced as in Japan, designs can be varied at will and the production will become cheaper. Printing is a chemical process and it requires more knowledge of chemical reaction than possessed by our workmen or organisers. We also require travellers to go about and study the taste of the people and advise the designers to change their designs accordingly. Laws and rules must be framed by which a new design may easily be protected. There is, unfortunately, cut-throat competition amongst the dealers and we know that in cutting prices middleman seldom suffers, but the poor worker is always hit hard. Some sort of association to avoid undue competition be formed and its authority be recognised by law as has been done in case of sugar and cement.

Production of designs cultivates a special aesthetic taste. We recommend that along with ordinary drawing, such useful and economic drawing should be taught to our children in schools. If it is properly done we may be able to produce many young persons specially girls who can earn a decent living by providing designs and selling them. To employ Government experts who are likely to lose their initiative after some time is a poor attempt in this line.

Fastness of colour and type of cloth used are very important factors in trade and it seems to be desirable that some arrangement of certifying the grade and quality of the articles sold should be printed on every piece before it goes for sale. There has already been started deception in this respect and if not checked the industry will be ruined. Arrangement for grading and certifying of goods meant for export should at once be introduced.

Carpet Manufacture—It has a great future but this trade is entirely disorganised. A great deal has to be

done in the blending of different fibres; the effect of colour has to be studied and the worker has to be provided with cheap raw material which can cheaply be secured from many sources. Standardising the quality can help much in increasing sales and consumption. We have an assured market both in India and abroad, provided the sale is organized and quality guaranteed. Perhaps only in Hyderabad State an effective arrangement to develop carpet industry has been made. Government has established an experimental carpet factory in Wardugal—an old centre for this industry. Number of looms now has increased from 87 to 350 and now rugs and carpets to the value of Rs. 1,20,000 have been exported in 1943 against the previous export of Rs. 30,000 only. Best carpets are said to be produced here.

Strings & Ropes—Cotton strings and ropes are used for tents, nose-strings for cattle and for number of other things. They are made from cotton yarn waste and also from cotton yarn. Both plain and coloured strings are made. In fancy strings, variety of colours is displayed. In some places people have tried to manufacture waist strings. They have been prepared in mixed colours and in their manufacture a mixture of cotton, jute and silk yarn has been used. There is a scope for this industry to develop and many more users can be found for these articles.

Fish Nets—It is an important industry carried on mostly near sea-coasts or big rivers. Though generally the work is done by the fishermen themselves but still it gives employment to many people. In other countries, beautiful nets of different sizes are used by ladies to tie their hairs with. They are also used along with their hats. Nets with thinner spacing are also used as covers. Japan does a brisk export trade in this line.

Hosiery—It is an important article of trade. We shall discuss the subject under a separate heading.

Filter Cloth—It is another line which is successfully

carried on in Cawnpore and other places. It can easily develop if after a proper study of the type of weave, sizes and counts are standardised. Since quantity required is very small we hope full use of this line will be made by cottage workers. Cottage industry can only succeed if we strive to produce quality cloth to serve the purpose for which it is meant.

Cotton Cleaning—In Bombay there are many people who purchase waste cotton from the mills and clean it. After cleaning it is sold and poor people employ it in stuffing their beds, etc. In other places cotton waste is either burnt or dumped as manure. By inventing a cheap contrivance we can utilise this waste material and can employ some people with advantage. Ordinarily there are waste cotton plants attached to mills where waste cotton is cleaned and spun for low counts.

Tape Weaving—It is an allied industry which has assumed a special importance in Ahmedabad for its supply to the mill-made cloth. This industry can easily develop at all those places where cotton mills are working. Besides depending upon the mill industry it can stand upon its own merits and many new designs can be manufactured to suit the taste of the people. There seems to be a big scope for this industry. The equipment needed for the industry is quite inexpensive and women in the family can easily follow it up in their leisure hours. Artistic designs may be made by mixing cotton thread with silk and metal threads.

Niwar Weaving—It is another allied industry of weaving. Practically in all cities manufacture of Niwar is very common. Coloured and plain Niwar is prepared and sold almost everywhere. Coarse yarn is mostly used for this article and this industry may, therefore, be a help in the production of hand-spun yarn. During the War this industry was given a good impetus and we hope it will pay if an enquiry be made as to the purpose this article can serve in the foreign market. There seems to be thus a possibility of establishing an export market.

There has developed recently a new industry of preparing cotton cloth patties of 9" to 12" in width which serve as screens when stitched together. Many designs in these patties are produced to make them attractive.

Sewing Thread.—It is a cottage industry and must be kept as such. Unless scientific methods are introduced and up-to-date appliances are made this industry will not survive.

WOOL

After cotton textile, wool occupies the next place. Woollen industry of Kashmir and other places has a marked place in Indian economy. The industry, however, has remained static while the world had gone a great deal forward and our products, though pure, are unable to compete with foreign products. Though Science has evolved many a new fibre natural wool has still its own place. There is a great scope for this industry and it can give employment to a very large number of people. We should remember that there are about two and a half crores of sheep in the country and the total quantity of wool produced is quite considerable.

First we should concentrate upon wool production of the right type. As wool is a natural product breeding of sheep plays an important part. Fortunately we possess a breed which can subsist on very scanty pastures. It is a very hardy animal. It is admitted that by proper feeding the quality of wool is improved. Unfortunately, we do not know what feeds are suitable for this purpose. Besides very little work is done in producing better type of animal. Woollen mills, which ought to have taken keen interest in the production of wool, are satisfied with imported wool and they seem to take little interest in wool production. Government seems to be indifferent and has done very little in this direction. The entire work is in the hands of illiterate and poor people who somehow pass their days by taking their flocks from place to place for grazing. Their

methods are crude and primitive and require a great deal of improvement.

There are very cold places in India where only wool can protect the people from icy cold atmosphere though it is true that in a large part of the country ordinary cotton stuffed covers may replace woollen blankets but even in these places woollen blankets are the only shelter against rains. The necessity of wool improvement, therefore, cannot be minimised. The large imports in woollen goods to the tune of 12 lacs of pound a year is a clear indication of the possibility of the development of this commodity.

Leaving the possibility of the improvement of the breed in the hands of the agriculturists let us begin from the stage wool is clipped from the animal.

In spite of the small production of wool per animal we waste a lot of wool in clipping. If instead of clipping by hand-shears we employ an up-to-date clipping machine we can increase the supply of wool by at least 10 per cent., and can produce wool of a more uniform nature and quality. Clipping machines may be introduced on hire-purchase system or the clippers may be appointed to do the job.

After the clip is made wool must be sorted. Wool all over the body is never of the same quality. Some parts give finer wool than others. Again some portions have longer wool than the rest. Simply by proper grading of wool at this stage, value and price of wool may be enhanced by about 25 per cent. It will not be a small gain over the total quantity of wool that we produce each year. Training centres can be started for this purpose. This improvement will only pay if an arrangement of marketing of wool is properly made and the sale is not left in the hands of middlemen who are only interested in their commission. By this means not only a better price will be obtained but the coarser varieties will be utilised for coarser cloth and finer ones for better cloth. The grading may also be made as regards colour

which may be an important factor for some localities. The younger the animal the finer the wool and this factor may be considered in gradation.

Spinning—Spinning of wool gives some employment to the people but the method is both crude and expensive. Most of the Gadaryas (sheep owners) make their own yarn by twisting on wooden spool. This yarn is uneven and thick and is only usable for the production of rough blankets used by poor people. Yarn spun on Charkha is used to some extent for making tweeds and Patoos. For making Lohis and Shawls yarn is generally imported from foreign countries. All power or handlooms generally employ mill-made yarn. In Amritsar alone as many as 850 power looms prepare articles made from imported yarn, which mostly used to come from Japan. We need not point out that Japan produces very little wool and mostly used Australian wool for the manufacture of yarn. If it pays Japan to import wool from Australia and then turn it into yarn and export it to India why it should not pay us to make yarn in India from Australian wool.

Cheap woollen articles made from shoddy mostly in Italy and Poland flood the Indian market and depress the Indian trade to the disadvantage of the cottage worker. Import duties can only help if we begin to employ scientific and up-to-date methods. We consider there is a need for number of factories in India for the preparation of yarn both from indigenous and imported wool. If the proper type of carding, cleaning, etc., is arranged and yarn is prepared in the country, we need not depend much on foreign imports. We can also employ shoddy just as they use in other countries and can mix with other fibres to produce as good and cheap articles as are being imported.

Our main weakness in the production of woollen cloth is the production of yarn and we should not lose any more time in starting woollen spinning mills. We were surprised to learn that even in Kashmir

people import yarn from foreign countries and prepare goods from that yarn and pass them off as Kashmiri cloth. Is it not better to produce yarn ourselves and thus to save our hard-earned money in the bargain? We do not see any other solution of the problem. It is true that wool spinning will improve by proper treatment and better carding. Still for finer yarn we shall have to employ spinning mills.

Weaving—The yarn is peg warped and sized with starch made of tamarind seed and occasionally with wild onions. At places it is dyed with alizarine dyes to produce different colours.

Weaving is done on ordinary looms. Mostly blankets known as Cumblis are woven and sold as such. They are generally very rough. Before they are sold they are milled by the following processes. The Cumblis are spread out on a country cot with roughly woven ropes and four men standing on either side in pairs rub the blankets, after they have been folded, backwards and forwards across the cot, hot water being poured on it all the time to keep it wet. This process felts the fibre and is repeated four or five times for each fold of the blanket with the result that the superfluous wool is rubbed off and the blanket no longer shows holes in it. There is considerable shrinkage by this process.

Greatest help can be given to this industry by the introduction of carding, milling and fibre-raising machines. During the War such machines have been introduced with advantage and we think these improvements must continue. Government opened centres where blankets could be prepared for the Army. Main work was done in U.P., Punjab, N.-W.F.P., Patiala State and other provinces and States. In U.P. alone about two and half lakh of blankets were annually supplied. It is a pity that just after the War the Government experts could not continue the effort and were satisfied only by closing these centres.

Pile Carpets—Besides blankets pile carpets is another

old industry. It is said that these carpets were very much encouraged from the time of Akbar the Great. Unfortunately since 19th century the industry had a set back. Carpets, however, are still manufactured in Kistna, Moslipattam and Conjeevaram and other places. Mostly dead wool is used for the purpose. The dyeing of wool is generally done by the weavers themselves.

Pattos and Shawls—In Kashmir Pattos, shawls, tweeds, lohis and blankets of very fine quality are made. The place is extremely suited for the development of the industry. The All-India Spinners' Association has organised all the weavers and spinners in the whole of the State and the workers have given a great encouragement to this industry. We are, however, sorry to say that sufficient attention is not paid towards the technical improvement of the industry. It is desirable that up-to-date scientific knowledge should be adopted and both chemical and mechanical improvements should be introduced so that most of the weavers may not have to depend upon the imported yarn for their living. We consider that by starting carding, spinning, fulling and milling mill of a modern type a great deal can be done to help the industry.

Namda—Manufacture is an important article of sale. The imported article is far too superior. Arrangement of making Namda of the right type be made.

Felt.—Woollen felt is required in large quantities in paper and straw-board mills and since the supply will remain limited the industry can succeed on a cottage scale. Attempt should be made to manufacture these articles.

Since the time Italy began to manufacture artificial wool a number of fibres which look like wool and whose touch is better than wool have been evolved. These fibres are far cheaper than the natural produce. In future articles made of these artificial fibres will flow in our markets and it is time that we make arrangements to produce all artificial fibres in our country. Oil

cake is the main material for many of these fibres and we abound in oil cakes. Vegetable protein can also be prepared from many other wild and cultivated plants. If we start the industry we shall be able to utilise our raw material, give employment to many and will guard against the future ruination of our industry.

SILK

Silk is an old and important fibre. India is the only country where a large variety of worms are employed to produce fibre for weaving. Besides silk, Endi and Munga are other important silk fibres. World has done a lot of investigation in the rearing of the worm, but we have not taken advantage of the improvements. Perhaps the greatest attention has been devoted to this industry in the Mysore State. There a large population is engaged in the rearing of the worm. Next important place is Madras, then come Bengal and Kashmir. Though India was famous for its silk but yet it could not stand the competition from Japan and China. Gradually the production dwindled considerably. According to Tariff Board 1940, there were only 105 weaving establishments in 1937 employing 4,700 workers, but in these establishments mostly imported silk was employed. The total production of raw silk was only 6 lac pounds. It is generally consumed by handloom weavers.

Mysore State realised that there can be no better subsidiary occupation for the agriculturists than the rearing of silk cocoons and prepare silk out of it. Kollegal Taluka in Madras being near to Mysore State took it up and started the industry without any special help from the Government. Here is a clear instance of people adopting a new industry provided they are once convinced of the profitableness of the same. In 1928 in this Taluka there were 10,200 acres under mulberry cultivation, while the total area under cultivation was 90,000 acres. The employment of such a huge area for

this purpose clearly proves that an agriculturist is really dying for a subsidiary occupation and will adopt it if once he is satisfied of the utility of following such a course. This gives a lie to those who always preach the conservatism of the agriculturists. Silk-worm rearing thus has become a regular business of the cultivator in the above place.

Below is another instance as to what can be achieved by the Government help. During the War parachute cloth was an essential War need and fortunately for that purpose only pure silk could be used. The whole government machinery was moved to find a solution. Raw silk available in Bengal, Kashmir, Madras and Mysore was neither sufficient nor silk could be properly twisted by crude Charkha. Attempts were at once made to remove these defects. Improved machines were imported and afterwards made in the country.

It is only during the last War that right type of silk has begun to be produced. The Government started their attempt in 1941, and in 1942 there were 3,500 new basins installed to produce filature silk suitable for parachute manufacture. In Kollegal alone 500 basins capable of proding 1,50,000 pounds of reeled silk annually were installed. In Bengal 1,500 basins were placed by the private people from loan advanced by the Government of India. In Mysore 1,800 basins were installed. In 1943, 3 lac lbs. of silk of the proper type was produced. In 1944 the quantity was doubled and it is estimated that not less than a million pound will be produced in 1945.

The reeling machine was first imported from abroad, but since there was the difficulty of transport, good machines for the purpose were made in India. Only the looms and reeds are imported but their parts are being attempted to be manufactured in the country.

A Central Sericulture station has been set up at Beharampur in Bengal with a sub-station at Kalimpony (Bengal) by Government of India. Experts are imported to establish the industry. It is considered possible now

that India may be able to compete with Japan and China silk.

Need we say that Industry development is a provincial subject and if the Red-Tapism would have been followed in this case, as is generally done, nothing would have been achieved. All constitutional objections were set aside and under the stress of emergency Government of India had to perforce develop an old dying industry.

We hope the Government of India will foster up their newly born child with the same affection with which it was conceived and brought forth. We hope the Government of India will not allow it to die under constitutional objection since the War is over. This industry provides a subsidiary profession to agriculturist and must be encouraged. We hope experts will take immediate steps to tell the people where and how this industry can be established with advantage.

As far as unemployment and economic conditions are concerned, India is in a state of emergency. Steps, far more effective than employed during the War, should be taken during the peace. All efforts to push new industries must continue with redoubled vigour. India is a vast country and there are suitable places in all the Provinces where silk can be produced and worms can be reared with advantage. It is the duty both of the public and of the Government to discover such places and establish sericulture as a subsidiary occupation to agriculture. If the technique is mastered and people are trained and the industry is protected by imposing import duty as well as by standardising goods internally there is a great future for this industry.

India perhaps is the only country where Tussar, Endi and Munga silk is produced. If a research is made in the constitution of these types of silk and the worm is improved, there may be a possibility of producing more animal filature in this country and provide a side occupation. The worms of these varieties are harder in their habits and feed on the leaves easily available.

There is a great demand for these fibres. It may be possible that these silks may find some other important use in the modern complicated world. So far the development of these varieties has been entirely neglected. Endi silk has special merits for those places where castor plant is grown as a crop and leaves cost nothing. There is a further advantage in rearing this worm that in the extraction of fibre worm has not to be killed. Thus farmers who shun to take life may take to the rearing of this worm. If the multiplication of this type of silk is encouraged it may also help Khaddar production. It may be possible to mix it with cotton before spinning. We specially invite attention of the All-India Spinners' Association in this connection.

From the description given above one will be convinced of the potentialities of this important industry. We need not be afraid of artificial silk in this matter. If Italy, France and Japan, manufacturing large quantities of artificial silk, have faith in the development of silk industry why should we not have the same faith specially when we are assured of the market in our own country. Not only silk saris and other clothes are popular with us but from religious point of view silk articles are considered to be sacred and most people must use them, specially on ceremonial occasions. This must keep a demand for pure silk for a sufficiently long time. However, it is necessary that the weak points of the industry may be tackled and removed.

The first and the foremost necessity is the rearing of the suitable type of the silkworms. In other countries a great deal of work has been done to improve the breed and worms are evolved by which yield is more than doubled. These hybrids will have to be evolved for different climatic conditions and sufficient seed has to be supplied in localities suitable for them. Of course the smaller the number of varieties the better. The seed will have to be tested by microscope and other appliances.

For both these objects the work must be done by trained hands. For this purpose we require the Government help. Over and above this entymologists have to be provided to take measures against disease and pests. Very useful work has been done on the cultivation of mulberry in Japan. Varieties are evolved which yield the largest quantities of leaves in a small space. Since the worms live only on leaves, only such varieties should be propagated which produce more leaves. In our country there is already existing a pressure on land and we can ill afford to waste any area and must economise in this respect. If it is found possible propagation of mulberry plants in waste land should be tried. Further investigation should be made to find out if other leaves can be used for feeding.

Arrangement for extracting of silk may be made at a central institution wherein all the rearers may be partners and may be paid on the estimated silk in their cocoons so that an urge to produce better cocoons may be created.

The present method of reeling must be replaced by better machines. Since this experiment has already been made no further expense need be incurred on that score, but a frantic effort seems to be necessary to manufacture right type of efficient and durable machines. Local artisans may be trained in their manufacture so that they may be locally made and repaired.

Dyeing is the next step. Fast colours of whatever origin with beautiful shade, with details of dyeing, should be arranged. In Benares the use of cheap colours is the main defect of silk cloth. People should be trained in dyeing fast colours and in order to save the industry the use of cheap colours be prohibited.

In order to avoid competition import duty may be levied both on yarn and cloth of foreign origin and it may be made compulsory to give the quantity of actual silk in every piece manufactured or imported.

In manufacture a considerable quantity of silk goes

to waste. Special machines for utilising silk waste must be installed at suitable central centres where all this waste may be utilised and thus the cost of silk may be reduced.

Weaving.—The biggest centre for silk weaving in U.P. is Benares. Murshidabad in Bengal is another important place. Silk is also used both in weaving and borders in Madras. In U.P. silk weaving gives employment to over 1½ lacs of weavers and their dependent. This province manufactures silk worth more than 9 crores on handlooms.

Silk is a costly material and gives a better wage to the weaver. Borders of silk in different types of cloth specially Dhoti and Saris is very common and silk saris are a speciality. Before the War we were importing silk from foreign countries to the extent of 2 crores of Rupees annually. Over and above this we were using all our production. It gives a fair idea of our silk consumption and proves the importance of this industry.

In Benares there are 70,000 weavers and their dependants who live by this industry. The weavers have evolved an ingenious method of preparing new designs and if they are encouraged they may be able to hold their own against jacked looms.

Gold and silver threads are woven in silk and very expensive cloth is thus produced. It is a fine art which has existed for centuries past and should not be allowed to die.

Mixture of silk with other fibres is quite common in foreign countries. If practised in this country, as the method had already started, it may ruin the trade altogether. It seems to be necessary, therefore, that all articles of silk, foreign or Indian, must be compelled to print the quantity of pure silk in them and false declaration must be punishable.

Manufacture of parachute cloth should continue

and if any other use of silk has been discovered that discovery must be utilised.

In industries like flour, sieving is done in silk screens. This bolting silk comes from abroad and is sold at very high rates. There is no reason as to why these screens may not be made in India. The quantity of such silk will always be small and there will never be any likelihood of its manufacture by the mills. Arrangement for manufacturing bolting silk and preparing screens therefrom be investigated and started.

More attention should be given to other types of silks which worms in India produce and their behaviour should be investigated. It is possible these silks may be exported or may be utilised to advantage with cotton or other fibres.

Other Fibres—Amongst other fibres used in weaving, artificial silk is the most important. It is a pity that for the supply of this fibre we depend entirely upon foreign countries. In Japan very small factories exist for its manufacture and there is no reason why we cannot do the same here. In Japan in 1935 factories not employing more than 9 men were producing 15% of the total production of artificial silk and factories in which not more than 30 labourers were employed were producing 46% of the total production. Even if huge amount is needed for starting an artificial silk factory there is no dearth of money in the country and if any one industrialist does not want to take the risk all the textile mills contribute a small amount each and start a joint concern. One such successful factory will open the field.

During the War many miraculous fibres have come to stay. What will be the effect of these fibres on natural fibres and what will be the future setting of the World nobody can say. Artificial wool from milk was considered a great step when Italy announced its production a possibility during the Abyssinian War. But since then a great variety of fibres have been

placed on the market and are daily being produced.

India is very rich in raw material and there is no reason why we should not keep alert and utilise these chemical discoveries for our advantage instead of importing these fibres. Our chemists should make a special study of these fibres and the Imperial Research Bureau must equip itself for such a research. We should no more depend on the Cotton Committee for these researches but number of chemists should be employed on this job. Who knows India may contribute its own quota and may discover a still new fibre in which the whole world may become interested.

As long as this is not done India may be importing these fibres for one reason or another. Of course, as far as the weaver is concerned, he cannot be expected to make these fibres. It will be to his advantage to make use of new fibres. From national point too it will be advantageous to import yarn in place of cloth.

Import duty on yarn always hits the weaver and benefits the mills. Weaver will always like to get these fibres at the cheapest rate while the factory owners may require protection against them. That being so, we suggest that in any such eventuality it should be considered imperative that the interest of the weaver should not be sacrificed for the protection of big factories. The time has come when our method of levying protection duty should be revised. We may introduce a system of rebate for the articles utilised as raw material in the manufacture of finished goods. The subject is important both in case of fibres and many other articles in the manufacture of which foreign material is used as raw material. To give another instance, for the making of wire nails, iron wire is needed but the latter may have to be protected to encourage wire industry. If a rebate is not granted nail manufacturer will have to suffer. Similar may be the case of manufacture of bolts and nuts. Copper and brass sheets imported for utensils against sheet industry may be another instance

and so on. We, therefore, urge that the system of rebate be introduced along with protection to avoid such difficulties.

Besides imported fibres there are indigenous fibres which find place in textile industry. The most important of these is jute. For making many jute products in cottages jute yarn is used. In all such cases the cottage worker should be provided with yarn from factories at reasonable rates so that he may be able to get a living.

Fibres used for industries other than textile will be discussed under separate heading.

Knitting:—Though knitting is an important branch of textile we have discussed it under another heading due to its importance. Here we shall discuss all the fibres used in knitting in one place.

Knitting from very old times is done by hand and girls are taught this important art practically everywhere. In leisure hours it is a suitable occupation for women. Beautiful designs in knitting and forms are every day devised and adopted. In spite of the industry being common it takes such a tremendous time that only knitting of wool is now done by hand and for cotton goods machines are utilised. Small machines worked by hand are designed and are in general use. If these machines are made available by hire and purchase system the industry will become more popular and ladies even in high class families will not consider it to be derogatory to employ their spare time in taking to this industry. This industry is just as good as Charkha itself. In knitting many articles such as socks, banyan, jersey, pullover, stockings, vest, caps, etc., are included but the largest number consists of hosiery alone.

Before the War the annual imports of hosiery goods in India was valued at more than a crore of rupees. Japan was the biggest supplier. Some people wonder as to how Japan could send out hosiery goods at such

a ridiculous price. We have seen their automatic knitters which with power can manufacture thousand of socks a day. The arrangement in these machines is so automatic that the manipulation of needles for making the toe and the heels and the upper portion need not be attended to if the machine is once correctly adjusted. This brings down the cost of labour very low. For very cheap socks old yarn is generally used.

Need we point out that the upper portion of the sock remains in tact even when the sock is worn out. This yarn can either be removed and used or attached to the new sock. As a matter of fact, few firms in Japan specialise in supplying the lower portion of the sock to which you can easily attach your upper portion yourself. A sewing machine, specially suited for this job is also available. Other yarn which has been used once can again be utilised provided it can be easily rewound. Thus the cost is brought down to the minimum. If we adopt the same methods we can also produce cheap goods. We wish some people may utilise this trick in trade. In Meerut old woollen yarn is dyed and used in making socks and people have a brisk trade though they make these socks only by hand. Ordinary mistris of small means in Ludhiana (Punjab) have successfully produced knitting machines but they have not been able to manufacture needles. This weakness was discovered during the War. It is absolutely necessary that needles may somewhere be made in India to remove this shortcoming. Both woollen or cotton goods can be knitted on these machines. The thickness of the yarn will decide the type of machine used.

Miscellaneous articles such as buttons, bags, flowers, etc., are also made from yarn. Cotton-yarn-buttons, perhaps, are the cheapest articles in the market. Their production gives food to many infirm and weak ladies in the United Provinces. These buttons are not only very cheap but they can be washed without damage

along cloth. If they are more extensively used we can decrease the import in buttons very considerably and patronise a useful industry.

Stuffed toys is another line in the same direction. We wish more aesthetic articles are produced and they become more popular.

During the War Government required knitted goods in the shape of jersey, vests, drawers, pullovers, etc., and were forced to import yarn from Australia and United Kingdom. Now the industry seems to have developed a great deal and we wish this gain should not be lost. As a cottage industry it has a great future.

India is a tropical country and woollen knitting can only be a seasonal work. But there is a large consumption of cotton goods. Silk is also used by rich people. Whether cotton is required for knitting or wool in every case mill yarn will have to be employed. Though attempts to manufacture knitted goods from hand-spun yarn have been made but no success is so far achieved. There seems to be no likelihood that people will take to this type of knitted goods which will always remain weak, clumsy and expensive. For cottage worker the cost of mill yarn will remain a great problem. Japan was the biggest supplier of yarn before the War. How things will stand in future nobody can predict. If we want to make this industry popular we shall have to make some arrangement for the supply of cheap yarn.

LEATHER

India possesses one-third of the total cattle population of the world. She contains 250 million cattle besides 48 millions sheep and goats. She is the largest supplier of hides and skins of the world. From the Review of the Trade, the enormous quantity of hides and skins exported will be quite apparent. In the year 1937-38 the total quantity of hides and skins exported to different countries amounted to 41,300 tons of raw

hides and skins and 23,700 tons of tanned hides. The value of raw hides and skins was Rs. 494 lacs, while that of tanned hides amounted to Rs. 645 lacs, bringing the total to Rs. 1139 lacs (more than Rs. 11 crores). In the year 1938-39 the amount exported decreased to 8 crores 57 lacs. The following is the analysis of raw and tanned hides and skins in 1937-38 :—

<i>Particulars</i>	<i>Quantity in Tons</i>	<i>Values in lacs of Rs.</i>
RAW HIDES & SKINS :		
Raw Cow Hides	16,800	123
Buffalo Hides	4,400	30
Other hides	400	4
Goat Skins	18,600	307
Sheep Skins	800	14
Other Skins	300	16
TOTAL ..	41,300	494
TANNED HIDES:		
Cow hides	13,800	254
Buffalo hides	1,300	21
Other hides	1,900	45
Goat skins	3,400	165
Sheep skins	3,300	160
Other skins
TOTAL ..	23,700	645

The above figures clearly bring about two points. Firstly, that out of the total export of hides and skins 44% are sent as raw hides and only 56% are sent as tanned hides and skins. Secondly, that most of the hides and skins consist of cow hides and goat skins.

From the bulk calculations it will be quite clear that the price of raw cow hide per ton is, on an average

Rs. 700 per ton while that of the tanned hides is Rs. 1800 per ton. Similarly the price of goat skins raw is Rs. 1,650 per ton while that of the tanned goat skins comes to Rs. 4,790 per ton. The difference is enormous and clearly points out that if we would have exported all hides and skins after tanning the value that we would have received from foreign countries would have been more than double. It is not only that we lose thereby national wealth and sell our raw hides for a song but it also proves that if we would have tanned all these hides in our country we would have given employment to thousands of people. This clearly justifies that a proper organisation and development of leather tanning will give both employment and money to the poorest of the poor in villages. Perhaps, we cannot find a better industry than leather tanning which can be developed as a side occupation in villages along with agriculture. It clearly brings out a case for providing suitable employment to the landless labourer in villages and at the same time increasing the national wealth of the country. If we add to it number of articles manufactured from leather, which can easily find market in the country, the amount of money spent on the development of this industry will be clearly justified. We wish that the Government as well as the leaders of the public opinion should concentrate upon this industry if they want to divert a large population from land to industry.

If we further go into figures of tanned leather we are at once driven to the conclusion that even in tanning we are not getting the full price of our goods. The total amount of tanned leather in India amounts to 20.8 millions hides out of which the number of village-tanned leather hides and skins amount to 9.1 million, i.e., 43.8%, 8.6 millions are kip-tanned, i.e., 41.3%. The number of hides and skins tanned on the modern method amounts only to 3.1 millions, i.e., 14.9%. These figures reveal that out of the total

number of hides and skins tanned in the country, 14.9% are only tanned by the rational, scientific up-to-date method while 85.1% are tanned in a crude and primitive method. If we change our method from crude to the modern scientific method we can make still more money either by exporting or by using leather in our own country. This state of affairs points out that we should not only concentrate on tanning of hides and skins produced in the country, but points out the need of the introduction of up-to-date method of tanning in every group of villages where old method is followed. There has been no attempt made so far to change the old method by up-to-date modern scientific methods. By this we do not mean that this work should be taken away from the village people and be handed over to the capitalist and big factories be installed. On the other, we want that the method should be brought within the means of the village tanner by reducing the equipment to the lowest possible limit. This seems to be possible as All-India Spinners' Association has already devised means of doing so, to which we shall refer later.

It may be argued that if we care to tan all our leather and try to export this commodity out of the country, it may not have very good sale and other countries, which have been using our raw hides, may not purchase our tanned leather. This apprehension seems to be ill-founded at least for a number of years to come. On account of the present War the quantity of leather has become far less in the world than we can expect and there will, therefore, be a continuous demand for this article from foreign countries. We know for certain that the number of cattle cannot easily be increased within a short period. Even if the other countries do not purchase our tanned leather, there will be no difficulty in utilising this commodity in the country itself.

After textile this is the largest industry existing in

the country and since it is capable of development on cottage scale we emphasise its importance and hope that both the Government and the people will take sufficient interest in its development.

To understand difficulties of this industry it may not be out of place to say a few words about its details. Let us first deal with the preparation of leather before we deal with the thousands of articles made from it.

It may not be out of place to mention that on account of our carelessness we get the lowest price for our hides and skins. First and foremost attention should, therefore, be given to the improvement of raw material. India is mostly a vegetarian country and most of the hides are received from cattle which die a natural death. According to the old practice prevailing in every village the carcass of the dead cattle becomes the property of the Chamar of the village. There came a time when the Chamars became greedy and began to poison cattle in order to get hide. Though this evil is met with everywhere, it was more common in Madras. Owners of cattle, in order to save the loss of their cattle, took to brand their cattle to the extent that the hide when removed may fetch very low price. The evil though now has disappeared yet the branding has remained with the result that the value of the hide is very much affected.

At present, however, another evil has recently started in number of villages of Punjab and United Provinces that the Chamars do not remove the carcass nor they remove the hide and in number of places cattle are now buried instead of otherwise disposed off. Thus very valuable material is lost to the country. In some places scavengers have taken the work of carcass removal and they either remove the hides or sell it for a song to others to be removed. This is very unfortunate that on account of false sentiment valuable expert and hereditary knowledge is lost to the community. We think it to be necessary that propaganda be

made against this practice so that this national wealth of the country may not be affected. Whenever such an evil exists it must be removed and arrangement for the production of sound good hides be made so that full value may be realised by the country.

Hides and skins are a perishable commodity and putrefaction starts if they are not properly preserved. The cheapest method is to salt them and dry them for future use. In some places cheap Khari Namak (Sodium sulphate) of local production is used for this purpose. Salt in India is an excisable commodity and is very expensive though it can be made at about 5 annas a maund. Government has made certain rules under which salt free of duty is made available for industrial purposes. But the benefit of such an exemption cannot be availed of by illiterate and small people producing only a few hides in a month, nor can they be expected to follow the excise rules and to stand the red-tape of the Department. Even salt without duty is expensive as it has to pay freight charges and Government expenses and after paying which its price comes to about 12 annas a maund. It is, therefore, desirable that excise duty on salt may be entirely removed as soon as possible. It is a duty that falls on the poorest man of the country. Its removal has been advocated at so many times by the leaders of public opinion. The result of all this is that many hides are not only kept unsalted but are exported in that very condition. This results in the deterioration of the commodity to a very great extent. If we want to save this valuable commodity something must be done and done at once.

Dry or fresh skins and hides are brought to trade and they are either tanned or exported raw to foreign countries. For making use of them in the country they are in every case tanned barring a small quantity used for making ropes etc.

Before the advent of big tanneries tanning process

was done in group of villages by a few cottage tanners, who either were selling it as tanned leather or used to turn into water buckets, shoes, bags, etc. The process of tanning has considerably improved by scientific knowledge but the methods of tanning in villages have remained the same. Chrome tanning is a new introduction. We are glad to say that All-India Spinners' Association has so modified the system as to suit the cottage worker. Now almost all types of tanning can be done on a small scale. Tanning is a very important cottage industry and when properly organised can provide work for a large population.

We give a short description of tanning below. It is not our purpose to give its technical details but a short description may be desirable to understand the points of difficulty. Tanned leather for local use and for sale is prepared by the following methods:—

- (1) Dhori hides
- (2) Chrome leather
 - (i) For gin rollers
 - (ii) For sole leather
 - (iii) For upper leather
 - (iv) Others
- (3) Bark sole leather
- (4) Fancy leathers and
- (5) Miscellaneous leather

(1) This process is very common throughout the country. It is the cheapest and most inexpensive. Hides, generally of buffalo, are turned end wise and made into a bag, keeping the upper part open. These bags so made are filled with tan material which consists of local barks or myrobalan or a mixture and the liquor is allowed to trickle out of the hide and thus tanning the leather.

(2) Chrome leather is a new scientific method wherein molasses and sodium bichromate is used

with other chemicals. This method gives very good results and take a much shorter time in tanning. The difficulty is that one has to handle chemicals about the purity of which one must have a good knowledge. It also requires a few apparatus which are suggested by All-India Spinners' Association. In big tanneries, however, this method requires elaborate machinery.

Chrome leather is required for number of articles and the tanning varies with all of them to a little extent. It seems to be desirable that this method be extensively followed everywhere and the apparatus required for this purpose be made available. Training centres be started in all important places. Importance of the introduction of this method will be apparent from the following words of a small pamphlet issued on the subject by the Khadi Pratishtan:—

“Unless high class chrome tanned leather is finished in cottages the village chamars, whose only profession is handling of hide, will continue to remain poor, neglected and largely dependent upon exporters of hides or leathers (Chrome leather) for their living. With the introduction of chrome tanning in cottages this is bound to change, leading to the economic improvement of the condition of those who are at present extremely poor and ignorant. . . .”

We entirely agree with the sentiment expressed in the above words and wish that the whole industry be organised on the above lines. According to this pamphlet only 15 days are required to tan leather. Though it has not described the methods of preparing leather for different uses but we do not think there will be any difficulty on this score if once the technique of the process is mastered. We strongly recommend its introduction and we are sure that its technique will improve by its coming in general use.

(4) Several types of skins are made into fancy leather but the demand is erratic and not regular.

(5) Under the head miscellaneous comes leather of belting, rollers, laces, etc. There is only a local demand for such leather and generally it is made to order.

Before hide is tanned there are a number of processes required which can be divided into soaking, liming, dehairing, deliming, pickling, etc. For all these processes a different technique and skill is required.

The most important things, however, are (a) the supply of water for washing, etc., (b) raw material such as bark, chemicals, etc., (c) sufficient space, (d) disposal of water, (e) and the utilisation of waste material.

Let us discuss these in a little detail:

(a) Tanning is an offensive trade and must be carried out at a place remote from habitation and at a place which is not frequented by the people. To arrange for good water at such a place is absolutely necessary. Though tanneries are generally located on the bank of rivers for the cheap supply of water but such places cannot be made available in all villages. The only supply possible is well water for which an arrangement for lifting may be necessary. If properly constructed tanks are made and water is economically utilised, the quantity of water can be considerably reduced.

(b) Coming to the question of bark and raw material it is a pity that the poor man is left to his own resources and practically nothing is done to help him. There are number of types of barks available in different localities, specially from forests. The collection of barks is not organised. Mostly this work is done by contractors who take contracts for different types of minor products and hence do not give sufficient attention towards the purity of the material. If we want to improve the industry the collection of barks should be taken up by the Government itself and pure and guaranteed article be supplied to the tanners. If barks are available round about the locality the tanner

has either to collect the bark himself or has to depend upon local trade. In the first case his labour becomes too expensive and this work can only be done in the slack season. But if he purchases from trade he gets adulterated article. There are number of types of barks in different parts of the country which produce nice tanned leather. Out of these Anaram bark (*Casia Auriculate*) in Madras and Babul in U.P. and Punjab are important. The former gives the best tanned leather and the exporters allow a special premium but there seems to be no arrangement for its regular supply. The other main difficulty with this bark is that it cannot be easily separated from the plant, it being very thin. Attempts to design a machine for its extraction have so far failed. Extraction by hand is very tedious and expensive.

We are of opinion that the plant should be cultivated specially when its value as a green manure is established and we are sure that by proper cultivation the yield will be regular and its extraction will be easier and less expensive. The plant is found practically all over India except N.-W.F.P., Punjab and U.P., i.e., places where plant is affected by frost. It is possible to develop some strains which may stand frost or plant may be cut before the frost. By cultivation and proper manuring the twigs may become thicker and the quantity of bark may be increased. The main hindrance in improving these plants is that there is no department responsible for their development and the article is required by small man. In all countries of the world all plants are developed by the agricultural department and it is also the duty of this department to investigate the possibilities of new use to industries. We wish that similar duties be assigned in India so that the plant kingdom may be well exploited. To divide the responsibility between industries and agricultural departments leads us nowhere. On account of these difficulties bark is only used for skins which fetch

high prices and can stand the cost of this valuable material.

The Government seems to have taken the least line of resistance and they have tried to popularise wattle bark from Africa. The public ought to protest against the discarding of the use of a better material available in the country and not to develop the existing material on the lines suggested above.

No arrangements seem to have been made to standardise and to arrange for the sale of bark and myrobalans. For want of this arrangement the industry has suffered a great deal.

Coming to the supply of chemicals the first necessity is the supply of good lime. Small man has to depend upon what is available in the market barring those places where shells are available cheap or can be collected free. They are burnt by the tanner himself. In the use of lime atmosphere becomes foul and sometimes leather also suffers. But if a small percentage of sodium sulphite is used the work progresses very smoothly. Sodium sulphite deteriorates by keeping and to get it of good strength is not easy. Til oil is another article which is also not available pure and the same is the case with Pungam oil. Both oils are more generally employed. People generally mix mineral oils and sell adulterated articles. Laws against adulteration are very defective. Government must check adulteration with strong hand and should not allow industries to die on this score. It has been found that there is a considerable difference in the quality of myrobalan available in the market. For a small man it is not possible to purchase sufficient quantities of tanning material at a time. His only method of testing is the use of the material. It will be profitable, therefore, that an arrangement for gradation and standardization of supply be made available.

For colours and chemicals the ignorant and illiterate man must depend upon the unscrupulous shopkeeper who would like to pass an adulterated article

as genuine without knowing its effect on trade. If the use of chrome leather be introduced in villages, which we think should be our ideal, the difficulty of getting pure stuff will be much more and steps should be taken for supply of pure articles.

(c) Village chamars have to depend upon zamindars to have a suitable place for their tanning. In number of localities, their own houses are being used for the purpose with the result that not only they suffer from the foul air but they also make the other neighbours suffer from the same. For a small man in the villages it is not easy to apply for acquisition of land and even if it is done the tanner will have to pay the heavy penalty for such an insult to his landlord. It seems to be desirable that some arrangement for the acquisition of a suitable place be made. Some official should be given the power of acquisition so that without any offence tanneries may be located at suitable places. If the Government provide designs, in expensive plans for this purpose, it will be extra help to the tanners. Such places should be provided with suitable water and also arrangement for disposal of water.

(d) *Disposal of Water*—Waste water is of three types. One consisting of washings only. This water contains salt and is generally injurious to the cultivation and should not be allowed to run in cultivated fields. If round about the tannery, plants like coconut, plantain, etc., which like salt water be grown, injury to land may be avoided. Fortunately, wash water is not in much quantity. Second type of water is obtained from the tanning material. This water is generally useful for vegetation and if properly regulated and not allowed to flow only one side for a long period it can be utilised with advantage for crops. The third type of water comes from chrome tanning. Chrome salts are very injurious to vegetation and such liquors should not be allowed to flow on land suitable for cultivation. The best thing is to precipitate these

salts with sodium carbonate. In big factories the sludge so precipitated may further be utilised to prepare chromium salts. At any rate if this sludge has to be disposed of it should never be mixed with manure nor allowed to spread on cultivated fields.

(e) Waste material will consist of (i) exhausted barks, (ii) fleshings-cuttings of hides and skins, (iii) lime sludge, (iv) hairs and wool. Exhausted barks may be used either as manure or as fuel. Fleshings and cuttings can be used for making glue or may be sold as glue stock. They are a valuable manure also. Lime may be used as field dressing with advantage where soil is deficient in lime. Ordinary hairs from skins and hides may also be utilised as manure if they cannot be sold for a good price. Hairs decompose slowly but they contain large quantity of nitrogen and thus are valuable manure. In the case of sheep or goat skins wool if properly separated may fetch a good price. If properly arranged, tanners may make some money out of their waste.

If the tanners are given the necessary encouragement, organisation and technical advice, this industry, which once was very lucrative and prosperous, may be made so again. It can give employment to the largest number of people in villages.

There are special leathers which require special treatment. All such special leathers are imported from foreign countries. Though the prices of such leather are very high but very little attempt has been made to meet the requirements of the country. It is but necessary that establishments to make these types of leather be made in the country.

LEATHER GOODS

Leather is utilised for the manufacture of number of articles. In villages it is used for water buckets, shoes and strings. Footwear is the biggest branch for which leather is used. Besides boots and shoes, and

village shoes, chappals are made from cow hides and have a great demand. Barring a few factories on a big scale in India all these articles are made locally in cottages. Even in places like Agra and Cawnpore all the shoes are made in ordinary shops comparing very well with the factory-made articles, provided the small worker is supplied the right type of leather, both for sole as well as for the upper portion of boots and shoes.

During the War the worker has very well learnt the method of division of labour and they have successfully utilised this method in the production of many leather articles.

There are a number of small machines which can be usefully employed by small man. They produce better finish and reduce the cost of labour. They cannot be said to be strictly speaking labour-saving machines but certainly they are of very great use. Some of these useful machines are securely locked in Government Leather Schools not to go abroad amongst those who badly need them.

In a number of places cuttings from boots and shoes are utilised for making laminated leather boards. The process is rather crude and simple. It consists only of pasting cuttings with pulse flours, and pressing the small laminated board under ordinary screw press.

Besides the above articles holdalls, straps, belts, buttons, etc., are made from leather. Very good suitcases, money-bags and the like are also made from leather and they are quite decent and compare well in prices with the imported articles. There are thousands and one things which can be manufactured from leather, provided a proper guidance is given and people get the necessary training both in designs as well as in the details of manufacture.

Harness saddlery are also made in number of places in cottage industries. Before the factories were orga-

nised even the leather articles utilised by police and army were made on a small scale.

Since the time different factories are started, machinery parts require leather for different purposes. Roller, pickers, washers are some of the articles now manufactured in number of places, which are centres of factory industry such as Ahmedabad and Cawnpore. In one place alone pickers worth 3½ lakhs are manufactured in a year. Washers are made in Nadiad alone to the extent of 1½ lakhs. It is due to the local artisan's enterprise that these jobs have been found out and a good trade is being done in them. The artisans require leather of foreign make for this purpose and when they do not get the right type of leather they are forced to utilise the Indian-made leather which is not as good as the imported one. It is necessary that proper steps be taken to prepare proper type of leather for these industries and supplied at a moderate rate. If that is done, we are perfectly sure, most of articles, which are now imported, will soon be made in the country.

Leather belting is used sufficiently in large quantities in the country. We are sorry to say that largest quantity of belting is generally imported. There are a few factories started in India but they cannot meet the demand. Attempts should be made to manufacture belting from ordinary leather in small places. This work can easily be done provided arrangement for pressing and supply of right type of leather is made. There is a great scope for this industry being developed in cottages. When in Japan most of the leather belting as well as rubber belting is produced in small works, there is no reason why it cannot be so done in India. The list of articles made from leather is essentially a large one and if proper analysis of the imported articles be made and their manufacture is properly organised, we are perfectly sure that there will be found a great scope in the leather trade and most of the people will get their living by the manu-

facture of these articles. We require leather schools in every big locality and teachers should go out for giving short training to the artisans in the manufacture of new articles. We hope and trust that steps will be taken to organise this important industry. During the War the cottage worker has been utilised for the manufacture of number of articles and this they have done to the satisfaction of the authorities whenever and wherever steps were taken to supervise the manufacture from start to finish. If once vigorous attempt is made there is absolutely no reason why the artisan will not strive to produce the best articles now imported.

Allied Industries to Leather.

Gut manufacture—It is a very important industry. Sialkot manufacturers have proved that Indians can produce best gut for tennis rackets and other purposes. The only necessity is the proper organisation for sale. It is a cottage industry which has a big scope of development. London market has responded well and there is a demand for it. Ahmedabad also prepares gut but the industry is not very important. There are other places where gut is manufactured but looking to the vast material available this industry for the most part is neglected.

Glue manufacture—It is a very important industry and can be practised in cottages. There are some makers of glue in big cities but the article prepared is full of impurities and the method is extremely crude. Fleshings and cuttings are generally exported and a very little quantity is utilised. In India large quantities of glue are used in plywood and other trades for pasting. It is also used for casting printers' rollers and now large quantities are used in making jelly, and jujubes of confectionery. It is also eaten in number of other forms and is considered a valuable food on account of its nitrogenous contents. As far as we are aware good edible glue or gelatin is nowhere

made in India. All good glue is imported. In our process of preparation high temperature destroys its strength and many impurities find place in its manufacture. A great deal can be done by improving the technique. If vacuum concentration is introduced, which need not be costly, very good glue can easily be prepared throughout the year. We were simply surprised to learn that quite an ingenious method of drying glue by spraying by Pichkaries (pumps) on a hot plate has been devised by the glue makers themselves.

There is a great scope for the clarification of glue. It is desirable that the Directors of Industries should take special interest in this valuable material. It does not require a large investment. It is rather a pity that with a paraphernalia of so many experts this important industry is almost neglected. Any good chemist put on the job would have improved the process a great deal.

It is not only the fleshings and the cuttings from which glue can be prepared, bone glue offers a good scope. In other countries bone glue is prepared in large quantities and there is no reason why this raw material should not be utilised.

Bone crushing—It is another good industry which can be developed easily on a small scale if the Department of Agriculture takes as much interest in this useful fertiliser as they do in other manures. It is disgraceful for this country to export bones and import fertilisers.

Horn meal—Horns contain about 12% nitrogen and is a very good organic manure. Wherever horns are used for making combs the shavings have been tried as manure and they have given very good results. If machinery for filing horns be imported this valuable manure can be prepared in all groups of villages.

Horn articles—Beautiful combs, caskets, knives, stocks, etc., are made from horns. These articles take

good polish and fetch good prices. In different exhibitions organised by the Congress very delicate designs showing the workmanship and skill of the artisans have been exhibited. If the industry is well organised we can give employment to many people in villages. Horn articles are mostly made from buffalo horns and they are mostly exported from U.P. and Punjab for this purpose. It is a pity that no industry exists in these provinces. There are only a few centres where horns are utilised for making combs.

Horn and horn meal can be utilised in making useful articles by chemical methods. No attempt seems to have been made in this country to collect this information and utilising it for the use of the industry.

Ferrocyanide of potassium—The manufacture of this article from horns, blood or other animal products containing nitrogen is very easy and can find a ready sale. No attempt is made to manufacture the same. It is true that this is a wasteful method than the synthetic process adopted in other countries but in a country where such articles are wasted, this industry can give employment to some people

Bone char—Bone char or bone black or ivory black is a well-known pigment. It is a good bleaching agent also. Its preparation is not at all difficult and it can easily be prepared by either burning bones in a limited supply of air or by dry distillation.

METAL INDUSTRY

Iron

Use of iron was known to Indians from times immemorial. In hills old furnaces for smelting iron are found which were worked with charcoal. They stopped working for want of fuel. Indian Woltz was a special type of steel, which enjoyed special reputation

throughout the world. Sabres, swords, knives were manufactured in number of places.

Iron Smelting—It was once a very prosperous industry in forests where fuel was in abundance. Since the time coal is used for this purpose industry had disappeared altogether. Iron ore found in hills is no more melted now as the cost of coal becomes very high. Generally such ore is not rich in iron. Melting of ore cannot profitably be done on a small scale.

However, there are small foundries making different articles in different places in the country. They mostly use scrap iron at cheap rates, mix it with small quantities of pig iron and cast articles for ordinary use. Mostly cane crushers are made, finished and given on hire to agriculturists. Before the advent of sugar factories and even now at places where sugar factories do not exist the cultivator has to convert his cane into jaggery. Iron Kolhus are in demand. Kolhus are generally given on hire and the cost is thus repaid within two or three years. Though it will pay to the farmer to purchase his own crusher but generally he does not do so as in that case he will have to make arrangements for repairs and spare parts. In the case of hiring the proprietor keeps sufficient number of men who go about to look after the repairs and keep the Kolhus in good condition. He also keeps spare parts which can at once be provided in case of breakdown.

The above is a very good method in popularising agricultural implements and should be recommended. If improved implements are introduced in this fashion with a very small outlay the agriculturist will be able to take to these up-to-date articles and will make use of them. If co-operative societies are employed for this business, danger of exploitation will be avoided.

There has arisen a demand for small hand pumps for domestic supply of water. In places where water level is not more than 20 feet these small wells work very well. They are not very expensive and their

fixing does not cost much. Their repairs if once understood is not difficult either. There are places where a dealer provides these pumps on a monthly hire basis and takes the responsibility of keeping them in repairs. But this can happen only in those places where there is a sufficient demand to keep the man going. If the ordinary blacksmith be trained in the details of fixing the pumps and making repairs there is likelihood of introducing these pumps in many localities.

These pumps were first imported but now the machines and filters are being made in small foundries and only the galvanised pipe is purchased. It is, however, to be regretted that the attempt at imitations is a poor one and we have not changed the arrangement to make the machine more convenient and fool-proof.

There seems to be a possibility of utilising these machines for irrigation purposes for small fields. It is more convenient to work them in place of Dhekli if a wheeled pump is employed. It seems to be desirable that comparative tests with these machines against Dhekli be made. Mortars pestler and other small machines are also made in some places.

There is yet a scope for small foundries in which small agricultural machines like chaff cutters, ploughs, harrows and other agricultural implements may be made.

There have sprung up many rolling mills which roll waste iron in round and flats with advantage and at time can undersell articles made in big factories. The arrangement does not require much space or equipment. Iron cots are also made by a few small workshops. Punjab has given the lead in many iron articles made on a small scale. Electric fan, knitting machines, even hand saws and plywood machines are attempted to be made in small establishments. Some of these works were started by the artisans themselves, while others are started by business men who

employ skilled labour. In Ludhiana knitting machines are also manufactured on a small scale.

Locks—Different types of locks made from brass, iron and other alloys are made in number of places. They are both made by casting as well as by forging. In other countries iron is moulded on a small scale for this purpose known as malleable iron. If the details of this method are learnt by our workers we can certainly hold our own in cheap goods. We wish that institutions may be opened to teach this industry wherein the designs, finish and the alloys may be studied. It is regretted that our workmen and dealers both concentrate upon the production of cheap articles without caring as to how it will affect their trade in the long run. In doing so they generally make useless things which do not serve the purpose at all. Cheapening of an article can be done in many ways and we wish our workers would have concentrated on these ways instead of spoiling the workmanship and utility of the article. Simplicity in designs saves more money than finishing an article badly. Changing the raw material is another method of cheapening the thing. Sometimes the method of manufacture brings down the cost of an article to a great extent. All these and many other things are better ways of cheapening the cost of an article than selling a thing cheap and at the same time useless.

Dealers must study the new designs coming in the market and try to utilize the principles involved in them. In foreign countries lock making is a speciality and every day new types are evolved whose principles can easily be applied to our products. There must be an arrangement to collect these designs where the workers may be allowed to study them.

Finishing of locks may give us a far higher value than we are getting to-day. Electro-plating has become fine art and must be practised. We shall refer its details elsewhere but we wish to emphasise that making locks from brass is more expensive than making

them from iron. If iron locks be chrome plated they will cost less and must sell at high rates. We are glad that at Aligarh, which is a first-class centre for locks and other metal articles, Government maintains a school for teaching the manufacture of many metallic articles but we are sorry to say that a far better equipment is needed for such a school and more attention ought to be devoted upon it. Similar schools with advantage may be started in other provinces.

Furniture fittings—Quite a large number of articles are imported from foreign countries under this category.

Most of these articles are made now in the country but since they are made by hand, they cost much. There are small machines for this purpose and they can with advantage be introduced on hire-purchase system.

Domestic iron articles—Angithis, stands, tonsuls, chimtas, pans spoons, chains, etc., are articles invariably imported from outside. Most of our scrap can be easily employed for this purpose and we can easily provide work for many people. These things may not pay when an attempt to manufacture the whole range is made. One article is made by one man or parts of it, and then assembled together is a question which requires investigation and details. But here is certainly a big scope for giving employment to many. There are places where water buckets are only manufactured. There are others who manufacture only Taslas. Still others manufacture only chains and so on.

Scissors and cutlery—It is a very important cottage industry but the scientific knowledge has far advanced. We cannot expect much from illiterate and uneducated people to improve their method of manufacture. Besides the general handicaps from which all the cottage industries suffer is the ignorance about the suitability of the steel for this purpose and arrangement for obtaining it. Generally ordinary wrought iron or

mild steel is used for the purpose and for better quality old worn out files are used. It is but necessary that these people be supplied with the best type of steel suitable for cutlery and scissors so that the quality of their goods be maintained. Some of the artisans are quite capable of finishing good and nice articles but what can they do without suitable raw material and good equipment for the purpose. The latter may partially be replaced by their skill but the former cannot be replaced at all. The method of forging as now adopted is very time-consuming and expensive. We saw in Japan a cheap device for hammer locally made from motor springs to which a suitable hammer is attached. This hammer is run by hand and the spring action gives a uniform beating and quickly gives it the required shape. Similar or a modified equipment may be made with advantage. Article must be attractively finished either by polishing or by electro-plating so that it may find a ready market. If in places like Meerut, noted for scissors, an electroplating house be maintained, the sale of scissors is likely to go up.

Steel trunks and iron safes—We are glad to see that both these things are manufactured in cottages in quite a large number. Though there are started some big factories, but their number is very small. There is a great scope for the expansion of this industry. If the workers are organised and supply of raw material and sale of the finished goods is assured, there is likelihood of a brisk business in this line. However, variety of design and standardisation will pay if we want to create a language of the market.

Wire netting—During the war many establishments made successful attempts to make wire netting by very crude equipment. Galvanized black iron wire as well as brass wire is used for the purpose. We think this industry is likely to survive if the Government supplies the necessary technique and equipment. The

handloom method now employed may be quite useful and cheap for certain articles only.

Wire drawing—Silver and gold and other wire drawings are a very old industry. There are very small machines used in foreign countries for this purpose. These machines do better work with far less manual labour. We wish their use may be made common and some system of hire and purchase be adopted to bring these within the easy means of the ordinary artisan. Silver and gold wire is used for embroidery purposes and they are sufficiently fine. Sometimes alloys are also worked up. These wires are also used in ornaments but generally the goldsmiths make their own wires instead of purchasing them.

Metal leaves—It is another cottage industry. Lead, silver and gold are the main metals used. The industry is dying because of the cheap articles imported from foreign countries. If small hammering machines worked by hand or by small motors are introduced the industry may revive. We can add bronze and aluminium powder with advantage in the above list.

Tin Smithy—There is not a single city where tin smiths do not make thousands of domestic articles from tin sheets. The manufacture of containers for different articles are, however, made by machines. We wish that the use of small punches and presses be made common so that articles may not only be uniformly finished but a variety of designs may be made by these artisans as then they will more easily be able to change the dies. Hurricane lanterns, small caskets, etc., are some of the well-known articles that can easily be made. Japanese toys are mostly made by small punching machines and presses. The ingenuity of one worker will be a great asset if we once introduce these small machines and teach the artisans their uses. These machines are neither complicated nor expensive.

Buttons—Metal buttons both of tin and aluminium and other metals are quite a good line and some people

are already manufacturing them on a big scale. Several firms supply these machines.

This line of metal industries is quite a big one. We have simply tried to illustrate. We do not claim to make the list an exhaustive one, nor can we do so within such small space. Readers can themselves expand the list and can add many more articles to the above list.

At number of places, specially Ambala and Agra, scientific apparatus are being made in very small workshops and they are quite good and useful. Since electroplating is introduced they are very well finished. We have dealt with this matter at a separate place.

In all big cities there have sprung up many repair shops which repair motor cars, busses, bicycles, etc. These workshops are fitted with lathes, drills, etc., and can easily do ordinary repairs. In these workshops some workers exhibit ingenious methods of doing things and make very delicate parts. We wish encouragement to such small men be given to show their skill.

If the country is industrialised there will be a great demand of small tools and machines and new inventions. All this development will be easier if intelligent mistris are utilised for this purpose and they are encouraged to evolve and manufacture their own machines. In Japan complicated machines are made in very small workshops. The artisans if they have not good arrangement for making any part specially steel castings, they get the part made from elsewhere, otherwise they finish the whole thing themselves. We purchased confectionery machinery and machinery for preserves and Sharbats (cold drinks) from a very small man who had only a small foundry, a lathe and drill in his own workshop. There are very small workshops run by ordinary mistris wherein filter presses, vacuum pans (small size) small lathes and drills, zip machines, presses and the like are manufactured and sold. Thousands of such small workshops are found

in big cities and they mostly manufacture small machines for the cottage workers. A similar thing if started in India and the artisans are organised they will not only make money for themselves but will make small machines by which others can have a good living. We have depended too much on foreign countries and have made it a fetish to get all machines from abroad. If once we encourage our skilled workers we can change the face of the country in a very short time.

Screw cutting—Bolts and nut manufacture, iron nails, manufacture of files, etc., are all small things which can be successfully made by cottage workers. Even the machines for these can be made in cottages. Organise skilled mistris, provide them with modern tools and finance them and you will find them manufacturing many small and useful machines. Let their intelligence be utilised for the evolution of new tools and machines.

Blacksmiths are found in every village and they generally help the agriculturist with their skill and art. Some of them have started making Persian wheels, buckets of different types, forged utensils, etc. Their ingenuity shows that they are capable of doing far more complicated jobs if opportunity is granted. By the advent of improved agricultural implements they are being thrown out of employment. They are forced to go to urban areas to search new avenues for their living. In a country where three-fourths of the population live on land, the small number of blacksmiths would have been inadequate to supply the modern needs of the farmers if instead of concentrating on the imports of improved implements we would have introduced their manufacture in villages. We ought to have analysed our needs and then ought to have divided the work in such a fashion that agricultural implements and machines would have been manufactured in villages while only those which require big equipment for manufacture would have been imported.

BRASS, COPPER, ALUMINIUM AND BELL METAL

This industry is found practically in every big city. Utensils of different types mostly for domestic use are manufactured. The work is either done by casting or by beating metal sheets to a shape. Metal sheets are generally imported but casting is done from scrap mixing with it a small quantity of metal. This industry meets the local need. There are places which are famous for different articles which are exported to large distances.

Places like Moradabad in U.P. have made a special name and though the artisans are simply exploited by the wealthy merchants but still the industry gives employment to many people. We require new ideas, improved method of manufacture and the introduction of articles in new places to keep the industry going but artisans are too poor and illiterate to acquire these things and the capitalists seldom care to look beyond their nose. Unless cottage workers are themselves organised, the industry will not prosper.

We are glad that aluminium sheets and ingots will now be prepared in India and we shall not have to import this cheap and valuable metal. During the war a great many new alloys of aluminium are discovered. It is but desirable that all that knowledge should be made available to our workers so that they may be able to manufacture new articles before our market is flooded with them from outside. Study of alloys and their manufacture is a very important field of development.

Curious ornamental figures and other articles of arts are made at different places and some of them are very artistically carved. These articles are purchased by travellers and are taken to foreign countries. There is some export in these articles too. If we want to export, a regular study of the taste of the people seems to be necessary.

Many articles of domestic use are imported from foreign countries, many of which can easily be made in India.

Artistic wares—In many places old artistic designs still survive. There is a lot in this art which if properly organised is likely to supply the need of the modern world. Inlaid work or enamelled work of Multan may be an instance. Bidriware of Hyderabad may be another instance. In the former work is done in silver buttons. The latter is an old art started during the period of Bahamni kings. Zinc and copper are alloyed in certain proportions. This alloy assumed jet black colour. The articles are finished with charcoal and *sesame* oil. Articles are then moistened with copper sulphate and carved. In the crevices so made silver sheets and wires are hammered and polished. They are then heated and smeared with a special type of earth. Trays, match box and other articles are made in this fashion.

In number of cities perambulators were made before the War. During the War bicycle parts are being made in number of places. How far these attempts will survive is a question which only future will decide. In other countries parts are made in small establishments and there is absolutely no reason as to why such articles cannot be made with advantage in our country.

Silverwares—Rich people use silver utensils. Different artistic designs are made for presentation on ceremonial occasions. There is a good trade in foreign countries in these articles. Beautiful designs and carvings are made. It is an art which gives living in many centres to a number of people.

Since the advent of different types of alloys, German silver is used both alone as well as in admixture with silver. This brings down the prices to some extent and the mixtures take a better polish. But in order to preserve the industry it seems to be necessary to protect the consumer from the dealer and the

genuineness of the metalware should be guaranteed.

Ornaments—Perhaps in the east throughout ornaments are worn by the children and women. Certain ornaments are included in the religious customs which must be worn on certain occasions. In every village there are found one or two goldsmiths doing this work. New types of designs are coming into fashion. During last few years rich people are mostly depending upon the urban goldsmiths and the village worker is feeling the pinch of it. It seems to be desirable that there must be some method to acquaint the village worker in new designs so that the latter may keep pace with the modern and up-to-date fashion and designs.

We need not go into the desirability or otherwise of the use of precious metals for this purpose. But it must be admitted that gold and silver for this purpose is consumed considerably and most of it is converted in ornaments giving employment to many artisans. There is a need of organizing this industry.

FIBRE AND STRAW INDUSTRY

It is one of the most useful industries to agriculture. India is the main supplier of jute fibre to the world. It also exports jute bags and other articles made of it. The area under this crop amounts to 30 lacs of acres every year. There are other fibre-crops besides cotton and its area on an average is estimated to be 88,000 acres. It is regretted that fibre plants have received a spasmodic and ineffective attention. Most important indigenous fibres are San Hemp (*Crotalaria juncea*), Deccan hemp (*Hibiscus cannalinsuns*) and agava. Besides these plants coir from coconut is another important fibre in places near the sea coast. Fibre is also extracted from the twigs and wood of many plants. Government gardens have tried a few more fibre plants of which Rozalla (*Hiluscus sahdariffa*), bow string hemp (*Boheneria ninea*), Manila Hemp (*musa Textiles*), Newzealand Hemp (*Phornrium Tenax*)

may be mentioned. All these plants yield fibres in foreign countries and they enter into the commerce of the world. So far no attempt worth the name has been made to acclimatize these plants as regular crop. Still there are quite a number of wild plants which yield very strong fibre. From time to time Government experts have collected their names and have done nothing more. In foreign countries *Thespesia Lampas* and *Urena Lohata* are being tried as jute substitutes. Both of them grow wild in India. Some attempts were made to extract banana fibre but the industry could never be established in spite of the fact that we destroy lacs of banana plants every year. Sisal hemp, though in Java and other places, has assumed an important place as an article of trade, but in India it has always remained a hedge plant. We are satisfied with employing a few prisoners in jail and using small quantities of fibre in making strings and twines. Its utility has been established by big plantations started by foreigners in the country.

In spite of the fact that we are very rich in fibre material still we import cordage and ropes to the extent of 15,000 cwts. a year. Japan, though not an agricultural country, exports simply hemp plaited articles worth more than 40 lacs of rupees a year. It has been proved several times that most of our fibres can be used for twines, pack threads and fishing nets, etc., and that these articles can be easily manufactured in cottages still no attempt has been made to organise these industries.

Before proceeding further it may not be out of place to describe a few important plants which yield the commercial fibre. Jute is the most important fibre in which Bengal has a considerable export and it is exported both as fibre as well as gunny bags. Recently cloth and carpets are being manufactured. Barring few places jute fibre is very little utilised by the cottage worker. In Bengal very coarse cloth-bags,

strings and ropes are made from this fibre but mostly the fibre is sold to the mills.

The next important fibre is the san hemp which grows mostly in northern India. It is mostly used for making ropes for agricultural purposes turned into Tat pattis and a little quantity is exported. It is also grown as a green manuring crop and ploughed down for manure. If plants are allowed to grow to the flower stage and then cut roots may enrich the soil and the plant may yield fibre. Its utility for spinning as well as for making puttis is established but no serious attempt has so far been made to utilise it for this purpose to a great extent. In Deccan Ambari or Deccan hemp is grown as fibre crop. Though it is not as strong as san hemp but its utility as a fibre for ordinary purpose is well established. Its leaves are also used as vegetable and seed is sometimes used for oil. Its crushed seeds in times of scarcity are mixed with flour and eaten. Agava is another important fibre. If we would have studied its agricultural side and would have established some method of manufacture of fibre from leaves we could have used this fibre for many useful articles. The method of retting and extracting fibre by pounding is a very crude and defective method. Department of Industries in Bombay is said to have devised a machine which is said to be well suited for that province. We do not consider this machine has become popular. Efforts should be continued till a good machine worked by power may be installed in suitable centres where this plant grows either as a hedge plant or in plantation.

In 1935 we studied in Hungary and Italy specially the extraction of fibre from hemp, and we were very much impressed by the improvements made therein. The first and the foremost point is to prepare the fibre. The finer and whiter the fibre the better the price. In Hungary fibre is used for making canvas cloth and in Italy the fibre is used both alone and mixed with

cotton and other fibres for cloth. This is also bleached and dyed. The Imperial Forest Institute, Dehra Dun has brought out recently a pamphlet on the subject which gives a long list of fibre plants. This will convince everybody of the necessity of utilising this raw material.

The first step in fibre industry is the question of the extraction. Fibre is generally extracted by retting in water. Fibre is a part of the skin of the upper portion of the plant consisting of gums, pectins and other organic material which cannot easily be removed without retting in water. Plants are cut and submerged in water, and some mud, bricks, etc., are placed on the same not allowing them to float. In other countries only clean water is used for this purpose and stones are used for keeping the plants down. Clean water takes longer period in retting but gives a far cleaner product. After keeping the plant in water for a number of days gums and pectins are dissolved. Then the plants are taken out and left to dry in the sun, put in shooks standing longitudinally. When they become dry they are stored to be worked at leisure. Then they are taken to the factory where they are further dried by steam and passed through corrugated rollers. These iron rollers break the plant into pieces but the fibre remains unaffected. The drier the plant the easier will be their breakage. The fibre thus obtained is then taken in hand and shaken, by which broken parts fall down and only the fibre remains in hand. This fibre still contains minute parts of broken wood which must be removed before any further process can be done. For this purpose the fibre is placed against a blunt revolving knife which removes the wood and leaves the fibre quite clean. Then the fibre is carded and woven by machinery.

We saw in Italy another inexpensive method. A wooden machine is made which consists only of a block with a slit inside in whose hollow space the retted dried plant is placed and by another wooden log hinged

to the block it is beaten and broken. By doing this way several times the plant is entirely broken and only the fibre is left in the hand. Italian farmer thus produces sufficiently good and fine fibre without any admixture of wood. Dried plants are broken by a wooden mallet—the work may be effectively done but the quantity produced will thus be small. In Japan they have made a more effective machine by revolving a drum over which iron strips are fixed through which the plants are broken.

There are two important things to be noted in the above process (i) that the plant be retted in clean water and dried and (ii) the plant may be broken so that the fibre may easily be separated from wood. We in India separate the fibre after retting it in muddy water by hand and then fibre is washed. Our method yields an unclean and dirty fibre. If drying the plant after retting and then scutching the same in a dry condition is introduced the raw material will be very much improved and it will then be capable of taking fast brilliant colours. If once we can produce finer and whiter stuff the industry will expand itself and will give employment to many more people.

This applies to all types of san hemsps, jute, etc. There is another class of fibres in which the whole covering portion of the plant is utilised for fibre. Munj grass is a good instance. It is the dry leaves of the plant which are turned into fibre by simple beating and thus dividing the leaves in small portions of fibre. There is a third variety of fibre in which the entire grass is used as for instance Baib Grass, and Dab. Both these types of fibres are utilised in making strings or bans. In certain localities very fine varieties of bans are prepared from these fibres. We have seen in Italy and in other places very cheap wooden chairs having only four wooden sticks joined together woven for a seat with these types of strings. In India Mudhas of different types are prepared and they

are made of reeds woven with Munj strings. Some varieties are very attractive. They provide cheap, attractive and clean seat. They are more convenient than chairs. It is a pity that they cannot be easily exported. If some folding devices are introduced in their manufacture they may find a very great market. There is yet another variety of fibre in which the small and tender twigs are beaten and beautiful strong fibre results. Dhak twigs as well as Babul twigs are so utilised and ropes and strings are made out of them. Such fibre is only locally used. Such fibres possess exceptional qualities of strength, durability as well of resisting moisture. Instead of importing ropes from foreign countries if we make our own raw material we may stop the import in cordage altogether.

Coir or the fibre of coconut is another good material. Its main place of manufacture is southern India. Husks are kept under water for 8 to 10 months covered with leaf and mats with heavy stones placed on the mass to submerge it below the surface of water. When thus retted they are taken out and beaten to separate the loosened pitch from the fibre. In some places the fibre is cleaned with water mixed with tamarind flour and thus the fibre loses its dirt and becomes white. After the fibre is thus extracted it is spun and woven into different forms and shapes.

Coir and coir goods have a fair export to the foreign market. In 1927-28, 194 tons of coir and 33,069 tons of manufactured goods and 15,811 tons of coir ropes and cordage valued at 57,088; 11,156; 924 and 258,991 rupees respectively was exported to foreign countries. If properly organised and improved methods of manufacture adopted, the consumption and manufacture can be considerably increased. This is an industry which gives an employment to agriculturists in their leisure hours. Similar is the case with the palmyra fibre which is also an article of trade and the fibre is used for brushes in foreign countries. Aloe fibre is another

important fibre which is extracted in a crude method in jails. There exists a big plantation in Mysore State where fibre is extracted by machine and thread of good strength is made from it. There are cheap mechanical methods by which more and better fibre can be extracted but very little attempt seems to have been made in introducing these methods.

All the above and many other fibres are used for the manufacture of ropes, strings, mats, foot boards and for many other articles. The importance of this raw material points out the necessity of systematically studying the details of the industry and putting it on a very sound basis.

Mat industry—It is entirely a neglected industry. From very old times different types of mats are manufactured in the different parts of the country. But their demands have remained confined to localities where they are manufactured. Japan used to send different types of attractive mats both painted, decorated and plain and they were at once patronized by Indians showing thereby that there existed a demand for this cheap article. There is no reason why Indian mats would not have been consumed if they would have been organised by the same method as in Japan. Mats in Japan are made by poor people and in cottages. Their position is no way better than our people but since they were organised by the Government and the trade was pushed forward, Japan could provide work for their countrymen while our workers remained helpless and starving. In India, barring the fibre mats, different types of leaves are employed for this purpose. These mats are generally brittle and when dried are easily broken and so their export has not found favour. Fortunately there are grasses, just as good if not better, which can produce just as good a matting as produced in Japan. Sitalpattis of Bengal and Korai matting of Madras are well-known types which produce very fine mats and they can easily be exported and can stand travelling

long distances. No attempt seems to have been made to grow korai grass at other places. If a thorough search be made we are sure that many more grasses will be found useful for this purpose. But who is to make such a research?

Braided and Plaited Goods—Japan exports braided and plaited goods over and above the mats which we have discussed above. Fibre braids coloured or plain, are very common. They are turned into different articles such as hand-bags, fancy curtains, etc. The biggest use is made of wheat or barley straw in this connection. Though wheat straw is a valuable fodder but barley straw is difficult to be cut or treaded fine and so it is not palatable to the cattle. From the point of view of a plait maker it is the best straw. Mostly straw hats and other articles are made out of it. Straw can easily be decolourised by sulphur fumes and then it can easily be given fast dyes. The straw can also be used as a drink-stick. It is far cleaner and sanitary than the paraffined paper generally used. All countries use straw for this purpose.

Vegetable Bristles—It is another valuable line to utilise fibre and many twigs of plants. We import large quantities of brushes every year from foreign countries, though brush making is our oldest art. If a proper investigation be made we can export large quantities of bristles to foreign countries and can utilise them ourselves.

Hand-made Paper—It is another fibre industry. In Japan hand-made paper is mostly used for writing in Japanese characters. If legislation is enacted to utilise only hand-made paper for certain purposes it may find a better sale. Japanese have devised small digesting pans, small electric driven beaters and a very ingenious and inexpensive method of drying paper with the help of heat kindled and maintained by the rubbish locally available. All these devices can easily be introduced and the cost of making paper can be brought

down. Quantity of paper can also be improved. In Japan generally a ream of 450 sheets is easily made per day by one man. We do not know why our output is so low.

All varieties of paper for which there exists only a limited demand may usefully be manufactured by hand. It will never be worth while for big factories to take to these articles. Blotting and filter paper may be such kinds. Costly papers like invitation cards, fancy writing pads etc. are prepared in all countries by hand. At any rate this industry can only exist on patronage. Some type of patronage may be created in the country for special types of papers.

Paper machine:—Is an art which dates back from centuries. Kashmir is well known for artistic designs in paper machine and even to-day beautiful articles are made. There is a need for a flow of new designs and its use for new articles, if we care to keep people in trade. Decorations require change according to fashion and taste of the people. The more the literacy spreads the more will be the waste paper available. If the industry develops we can make good use of the waste material and will be able to feed many mouths by this industry.

TOBACCO INDUSTRY

Bidi:—From a very long time tobacco is one of the important cash crop in India. Practically in every city and town there are people who prepare and sell tobacco for Hukka smoking. Most of the people are addicted to smoking. But since Hukka is not handy to be taken from place to place nor fire is easily available, Bidi is the poor man's luxury. It is difficult to trace the history of this industry but nobody can deny that it is India's invention. To trace a suitable leaf and to prepare the tobacco which will easily burn and to give the necessary blends are all the details worked out by the workers themselves.

There are thousands of children and women employed in this industry. Bidis are cheap and people of ordinary means prefer them to cigarettes. The industry must have developed much more but for the fact that the leaves employed are not available throughout the country. The Bidi makers are not tobacco farmers. The Department of Agriculture has not taken any interest in blending or the propagation of trees for the supply of leaves, nor in culturing the proper type of tobacco. No attempt seems to have been made to discover other leaves suitable for the purpose. We are sure that there must be found many more varieties of leaves if a proper search is made. If proper blending of tobacco is done we can certainly produce Bidi, which will suit the fashionable people and will replace cigarette. The blending of tobacco and the preparation of tobacco is a highly developed art and all that knowledge ought to be applied to this important industry. We see a great future of this industry if intelligent scientific people take interest in its improvement. It will prove to be a good subsidiary occupation for the agriculturist and must be encouraged.

In spite of such a simple occupation the cream of business goes to the middlemen and the Karkhandars do a brisk trade while the labourers are paid low. In spite of all this it is quite a suitable cottage industry. The extent of business can be gauged by the fact that in Bombay there are number of Karkhanas employing more than one hundred people. The output of one of these establishments is 5 lacs of rupees and that of the other 6 lacs in a year.

The importance of tobacco industry can be gauged by the fact that in 1938-39 we imported tobacco and tobacco products worth more than one crore of rupees.

Cheroots and Cigars :—It is a very old and important industry in South of India. It is very difficult to say as to how this industry was first started. Trichno-

poly started it first. The first firm began work in 1850. About 1870 Waraiyar manufacturers imported people from Pondichery who could wrap and roll cigars more neatly with their left hand. These cigars became very popular and began to be exported to Europe. Though tasteful and agreeably pungent Indian cigars are at a disadvantage in as much as their colour is darker and their flavour is not as good as of the foreign make. About 1890 Messrs. Spencer & Co. entered the field and they have now practically a monopoly of this trade. It proves beyond doubt as to what can be achieved by the proper organisation of an industry, however small it may be.

We give a short description of this industry from Madras Report :—

“It is said that peculiar saltish water of Dindigul and other parts of the Madura District is specially suited for the growth of tobacco used for cigar manufacture. The chief growth of characteristics of the smoking tobacco is its ready ignition and retention of fire. This sort of tobacco is available in places where the soil and water contain nitrous salts, i.e., nitrate of potassium and sodium.

Tobacco intended to be converted into cheroots is dipped for a night in pots of fermented jaggery water to which some salts are added and is taken out the next morning and dried in shade so that it might be soft enough for working. It is generally wrapped etc.”

The above description shows that the method of manufacture can easily be learnt and there are number of places in India where this type of tobacco can be grown. In the whole of Hisar and part of Rohtak water contains nitrous salts. There are other places containing nitrous salts where tobacco easily grows. If the industry goes in intelligent hands, it can be considerably developed and we do not see any reason

why the import of cigars cannot be entirely stopped. It is also possible to build foreign trade.

Cigarettes—For ordinary cigarettes automatic machines may be required. The factory does not require much labour. Even the power required is not much. We do not see any reason as to why small factories employing only a few hands cannot be started. If the industry is started on cottage scale in different localities it will give employment to agricultural labour inasmuch as large numbers will be required for growing, picking and curing tobacco leaves. With such a huge population, most of whom smoke tobacco, there is a good chance of creating a subsidiary occupation for the agriculturists.

Though the Department of Agriculture has done a lot in the introduction of various strains of American tobacco and arranging for curing barns but there seems to have been made no attempt to investigate the possibilities of starting industries connected with tobacco. It is regretted that the activities of agricultural department in India are restricted only to agricultural operations. The Department takes no interest in the commercial development and research of the utility of agricultural products. It is one of the main functions of the Department in America and they daily discover new uses of agricultural produce by which the farmer is very much benefited. We wish that the Department should take interest in not only discovering new uses of our products but at the same time finding subsidiary employments for the cultivator.

Chewing tobacco—It is another cottage industry which gives employment to many people in urban areas.

OIL, SOAP AND PERFUMERY

There are very few places where oil is not produced in the villages. Since the advent of oil mills this industry has suffered greatly. Poor men eke out their living somehow. No improvement is made in

his equipment nor has he been helped in the purchase of raw material or the sale of his product. He cannot be expected to keep stocks of oil seeds, neither he has the money nor sufficient space for storage. How does he manage to live is really a miracle.

We are glad to say that Mahatma Gandhi has come to his aid and the All-India Spinners' Association is trying to evolve improved Ghanis and popularising his products.

Some people put a pertinent question and ask: is it possible to keep the small oilman in business when his extraction of oil is so low and his cost of working is high? On the face of it the question may be answered in the negative. But if we give the necessary thought to this important question we must answer it in the emphatic affirmative. If the artisan is helped by the Government, oilman, we are sure, can still hold his own against the mill industry. We hope the readers will excuse us for entering into the details of our arguments.

All oil seeds can be divided into two varieties. The first variety comprises of those seeds whose oil cake is a valuable feed for the cattle and the second are those whose oil cake cannot be so utilised. We need not say that the value of oilcakes as a feed lies in its protein and fat contents, fat being more important than protein. Protein contents of oilcake remain the same whether they are made by the small man or by the factory. As far as we are aware the digestibility of oilcakes prepared in the mills and the ghanis has not been compared, but the palatability of the oil cakes prepared in the ghanis is considered to be high. Oil contents in the oilcakes prepared in ghanis is certainly high than the oilcakes of the mills. It is unfortunate that ghani oilcakes fetch the same price as those of the mills and the government or the department of Agriculture has never cared to grade oilcakes according to their oil contents. If this would have been done

the oilman must have been compensated for his labour. We cannot expect a wooden Government to take interest in stopping adulteration in cattle feeds when they have not done anything in connection with human feed. Thus the readers will see that the industry is being killed not on account of its inherent fault but more because we have not adopted the method of guaranteeing oil contents of oil cakes in the country. Will the officials come to the aid of the industry now?

Second point which we want to impress is the edibility of the oil itself. Sesame and mustard oils are generally used for human consumption. Mill made oils are not so good as those which are made by ghanis. The more oil you express the more impurities you add to it. All gums, pectins, etc., are mixed up with oil in mill extraction. If oil so extracted is to be purified by the use of caustic soda we shall have to remove the alkali by some other means. Cold drawn oil from the ghani is far more suitable than the mill made oil for edible purposes. That being so, is it not in public interest to protect and help ghani oil for edible purposes? People who use oil as food will be quite willing to pay higher price for genuine, unadulterated oil extracted by ghanis against mill oil. If Government makes a law to prohibit mills to extract sesame and mustard seed oil industry in the villages will at once be doing a useful service and can easily be established. We wish that by law the function of ghanis be separated from those of the mills and encouragement to this dying industry be given.

Ghanis can be more useful in extracting castor oil for medicinal purposes. This oil sells at a far higher rate than the ordinary castor oil. If the industry is organised India can stop the import of this oil and can supply the foreign market with it.

We further visualise that refined oil must replace the hydrogenated oil. Of course, the use of refined oil as an adulterant of Ghee, for which the hydrogenated

oil is mostly used, may not be so readily acceptable but for frying and other uses it will prove to be far cheaper than the hydrogenated oil. If this industry is grafted on to the Ghani industry, the latter can easily survive.

It does not mean that we should not try to make improvement in our ghanis. By all means the improved kolhus designed by the All-India Spinners' Association may be introduced and full advantage of the up-to-date machines be taken. We rather desire that electric ghanis must be started in villages for oils not used for food.

There are number of other oil seeds whose oil has specific properties and whose quantity is not so large as to attract the mill people to take to their crushing. If these oils are properly advertised there can be created a demand for them and they are likely to give a remunerative wage. Margosa or Nim oil may be mentioned as an instance. Its specific disinfectant qualities are very well known and it fetches a high price in several localities.

In spite of the fact that in most of the universities in India, wherever industrial chemistry is taught as a subject, oil and soap is the main subject taught and yet we have not been able to replace articles like oil cloth, linoleum, varnish and paint which we import every year to the tune of lacs of rupees.

Paint and Varnish—Practically in every city there are hundreds of people who used to get their living by making paints and varnishes. Barring very ordinary types now all varnishes and paints are purchased by these artisans and their trade is practically ruined. Manufacture of paint and varnish does not require very elaborate machinery, barring a good mixing and grinding equipment. We wish that this trade should remain in the hands of the cottage workers specially when we know that many of these artisans are quite intelligent, ingenious and know their job. If we utilise, them and encourage them we shall not

stand in need of imports from foreign countries. It is a pity that we export linseed to foreign countries and then again get the same oil in the form of varnish and paint and pay exorbitant price for the same.

Perfumery and Essential Oils—Oil seeds perfumed with flowers and then expressed give perfumed oil. The demand for this type of oil will always remain small and so this work will have to be done by the small man. Refining oil and making it thin to suit the taste of the people and perfuming the same by scents is another industry which employs a few people in cities. If the work is done by more intelligent people who have the experience and knowledge of chemistry, this industry is likely to become very prosperous. The blending of perfume is an art and cannot be taken up by anybody and everybody. Even now very expensive oils are imported from abroad and people are willing to pay fancy prices for them. Many chemists can earn much more than their salaries, if they take to perfumery and oil-refining trade.

Essential oil industry has assumed quite a big dimension in other countries and there is a big scope for its expansion in this country. In spite of the synthetic perfumes there is still a great demand for genuine article provided it is available. Laws for grading and guaranteeing the genuineness of an article are absolutely essential to protect the industry. But our cry seems to be in the wilderness. We hope the next Government may take more interest in these things. In Kanauj (U.P.) still there are many people depending upon the manufacture of Khas, Chameli and other oils.

Research is a great necessity. In Java when the sugar industry was given a set-back, Java Government started developing the Khas plant and succeeded in producing a strain which develops three times the Khas essential oil than what Indian plant contains with the result that within a short period they monopolised the trade of the world and India lost its posi-

tion. You cannot expect an ordinary illiterate man to find ways and means for such improvements. The Research Board does not try to solve such things, as the poor man is neither vocal nor there is anybody to look to his needs. Need we point out that Khas plant grows at a place where nothing else will grow.

We are glad that Mysore Government has started the plantation and has planted big areas of waste land under Khas cultivation.

India is full of plants yielding essential oils. Some work has been done in Dehra Dun Forest Research Institute. Thanks to the indefatigable work of Dr. S. Krishna who is always keen to find out new field for his activities. We require hundreds of chemists like him to investigate the possibilities of our products.

We wish that the useful research literature published in Dehra Dun is made available in our own vernaculars so that the man who matters may be able to utilise it.

Eucalyptus Oil—It is an important medicine and is in great demand. The trees grows all over India with ease. It grows to a great height in a short period. 17 years old plant is considered to have leaves of right maturity. Extraction of oil is very simple. Leaves are taken from the plant and are allowed to dry in the shade. When they are dried they are transferred to a still ordinarily 4 ft. high and 2½ ft. in diameter made with copper plates at the bottom and iron sheets at the sides. At a little distance there is placed a false perforated bottom under which water is kept to generate steam. An outside arrangement to replace water is kept. Over the perforated plate, the leaves are placed and the still is tightly closed. In this lid above there is a pipe which takes the steam from the still to the condenser which is kept surrounded with cold water. Steam along with oil is condensed. It has to be further decanted and again mixed with small quantity of water and a little of caustic soda and again distilled in a smaller still. By this treatment oil becomes white and

is sold to trade. It is a cottage industry mainly practised in Nilgiri where Eucalyptus is a common tree and is cut mostly for firewood. The oil is mostly produced at contracted rates settled with the dealers who make advances to the distillers.

Lemon Grass Oil—In number of places lemon grass oil is similarly prepared and sold. The grass also grows abundantly in number of places and there is a good demand for this oil both in the country and outside.

Other essential oils can be mentioned such as acacia, rose, thyme, mint, lemon oil (Citronella), etc. If the essential oil industry is well organised it can give employment to both the distillers and the agriculturists. The arrangement for steam distillation is quite simple and can easily be adopted.

Fish Oil—Extraction of fish oil is a very old industry in Madras. Small establishments do this work. Fish after extraction is used as manure. This industry has assumed considerable importance since the time it has been discovered that shark oil contains vitamins useful to human body. There is likely to be developed a foreign trade in this article.

Ordinary fish oil is used for making soap, jute batching, sheet tempering, in the manufacture of paints, varnishes and for other purposes. The method of extraction is very simple. Fish are boiled over fire with water. By heating oil comes on the surface. Fish is filled in sacks and is pressed in ordinary screw press by which the remaining oil is pressed out. Then oil and water are kept for some time so that oil may float over water and may easily be decanted.

SOAP

Soap making is a very old industry. Before the use of caustic soda India was making its soap both from *reb* and *sajji matti* and vegetable *sajji*. In all big cities *reb* or *sajji* was causticised by caustic lime and boiled with oil to produce soap. Though the tech-

nique of soap making was not studied in all its details yet good washing soap was prepared and sold. It is said to possess more washing properties than the washing soap now manufactured, perhaps due to the presence of potash and free alkali.

Soap manufacture has become now a fine art and requires a great deal of experience and knowledge to prepare a good soap. There exist a great many type of soaps which are now made and sold under fancy names. Though factories require quite an elaborate arrangement for soap manufacture, yet skill and good technique will always produce good soap. All semi-boiled and cold process soaps and so also liquid soaps can be and are made in cottages.

It is a pity that in order to cheapen soap people adulterate them with soapstone, starch, etc., which have absolutely no detergent properties. In spite of many big factories, we still believe, there is a large scope for a good intelligent worker provided instead of using inert fillers the manufacturers are given an insight into the use of detergents which produce soap both at once cheap and useful. Local soaps can always command a good sale provided they are well made. We wish short courses may be provided to give training in soap manufacture and sufficient knowledge in the up-to-date methods of manufacture. Of course the provision of raw material will be necessary. This cleaning substance can and must be produced in every village and must provide employment to a great many people. Raw material and market being at hand there is a good scope for this industry.

Specialised soaps, which have a little demand but where the margin of profit is very high, can better be made on a small scale provided some chemists utilise their time in the technique and investigation.

Timber and Wood Industry—This industry gives employment to thousands of people. There are spe-

cial facilities existing in India to do this work on a cottage scale.

In spite of the forest services being sufficiently old and the Research Institute, Dehra Dun doing useful work we cannot help saying that our forests are not systematically developed. Commercial utilisation of forests is yet in its infancy. Whatever industries are started wherein a special type of wood is needed we are always confronted with the remark that the quantity available is so small and distributed that we cannot make use of it on a commercial scale. Good timber for making pencil was not found available in the country and it has to be imported. Similar was the case with match. For making bobbins we are confronted with the same difficulty. We consider that the Forest Department should give a better account of itself. In cases where suitable timber is not available we must have proper arrangement for utilising Indian wood, made suitable by artificial means of impregnation, seasoning or the like.

Since timber is generally distributed at long distances we are not able to start big saw mills as they are found in other countries. Fortunately, therefore, the work of sawing timber has to be done by hand and about 80% of work is so carried out. Sawing is, therefore, likely to remain a cottage work. But this is likely to handicap us by raising the price of our raw material and debarring us from the utilisation of waste wood which has to be left for rotting at the place where logs are prepared. Valuable bark of the trees, leaves and twigs and the sawdust have all to be destroyed in the forest and is a dead national loss. Suitable cheap arrangement for transport therefore, is the greatest need for the development of our forest resources.

The main objection raised against our timber is that it is full of knots and cannot be utilised for good furniture. Is it not due to the bad handling of the

growth of the trees? If so, the fault does neither lie in the varieties of trees nor in the trees themselves but in the propagation of trees and the control of their growth. We wish that the department may try to overcome these difficulties so that the propagation of trees may be better understood and followed. In future our demand for good timber will be much more and we should not be confronted with this difficulty any more.

Plywood—In 1937 when we went to Japan we saw plywood being made on a very small scale. We could not believe that a similar method of cottage industry will be adopted in this country. We are glad that during the War India started producing not only plywood on a small scale but also succeeded in producing machinery for this purpose. 'Necessity is the mother of invention' was found to be true in this case. We wish that experience gained may not be lost.

Since it has been established that plywood can be successfully made on a small scale and that being so we hope and trust that the cottage workers will not allow this important work to be taken away from their hands. We are quite conscious of the fact that during the War articles produced were very inferior and they will no more be tolerated during peace times. Let the small worker, therefore, utilise to his utmost the experience gained during this period. Let him keep his tools quite fit and let him prepare only first class articles without which his existence will certainly be jeopardised. We must concentrate on quality goods. Cheapness will be possible only by a better organisation and savings made in the method of working and by other means instead of using cheap wood or bad workmanship. The industry has a big future but its success will entirely depend upon the quality we produce.

Woodwares—It is a very big and extensive line

and includes packing cases, crates, tent poles, tool handles, barrels, bobbins, reels, spindles, railway sleepers, furniture, etc., etc. It also consists of many carved articles which have a big sale. Most of the work is done in small cottages. There is a great demand for different articles at different places, but the success of the industry depends upon the quality and availability of the material. During the War trees have been ruthlessly cut down in the forests as well as in the plains. Timber takes a long time to grow and unless we concentrate upon conserving our supplies we shall feel the pinch of shortage very soon. It seems to be essential that the Forest Department may take very keen interest in educating people as to how poor wood can be utilised for better products and how a tree can be economically used. Therein lies our future salvation. In Japan even the furniture required for the houses is standardised and no odd size is available. This avoids wastage. As soon as a tree is cut every part of it should be utilised with economy and propaganda for utilising every piece for its best should be made.

There is a great weakness in our timber trade inasmuch as we have no good arrangement for seasoning. This requires locking up of capital and seasoning is a time-consuming process besides the skill and technique necessary for its success. To depend upon private enterprise may not be feasible. The work should be taken up by the Government and seasoned wood must be sold by them. Some sort of certificate certifying the kind of wood employed be introduced so that the users of seasoned wood may be protected.

During the war bobbins, spindles, reels, etc., are being made in India which were generally imported before. It is essential that this trade may be established now on sound lines. This can only be done by improving the article on the one hand and patronising the indigenous article on the other.

In furniture, toy making and also producing carved articles if division of labour is introduced amongst the cottage worker wherein some operations are performed by one class of people and the other by others, articles will be made cheaper and quality will also improve. This is only possible when a reasonable allocation of the cost of manufacture of different stages be fixed by some semi-government organisation.

Turning is a good line in wood trade and articles like cot stands, cradles, cups, tumblers, ash trays, etc., are produced in innumerable varieties. Lacquer goods is another branch quite well done in many places. To keep the workers in trade attractive designs is the main need.

Furniture—Fashion and taste of the people are daily changing. Foreigners take advantage of their study and export very expensive furniture to be consumed in the country. If we want to keep the cottage worker alive we have to take effective measures so that the artisans keep pace with the times.

Bamboo, Cane and Rattan Work—Articles of beautiful designs consisting of baskets, chairs, screens and curtains are made practically in all big cities. In Japan a special study is made of the different varieties of bamboos. The variety of article made from bamboo is perhaps the largest in Japan than elsewhere. It will pay us if we study and introduce new articles in the country. Small and big curtains and artistically printed chiks was the main import from Japan. We can now make all these articles in our own country and give employment to many. Cane and rattan work is made in cities and there is a great demand for such type of work. Chairs, tables, waste paper baskets are some of the articles generally used everywhere. In some places even carriages made of cane with cycle wheels drawn by horses are used. They are very light and well made. It is an art which creates an aesthetic taste.

India produces rattan and cane but they are not so polished and shining as Malaca canes and, therefore, we are forced to import the latter. Attempts at growing better variety be made and conditions under which it grows more elastic and polished be studied.

Stone Work Industry—This industry gives employment to many people in places where suitable stones are available. The work is done by hand. Soapstone and marble stone chips are made into beautiful artistic articles both plain and inlaid with coloured pieces. Alabaster is used in other places. Mortar, pestles, sandal grinders are other articles of domestic use. Stone is also used for building purposes and for that purpose ready made articles are sold.

At places where slate stone is available it is used for roofing and for making writing-slates. If we survey this industry we find that very artistic designs and useful and cheap articles are made in number of places. Some of them would have found a good market not only at long distances but also would have been in demand in foreign countries, if exported. For want of organisation and advertisement they are only locally sold to the great disadvantage of the illiterate worker.

Pottery and Ceramics—This is the oldest art of the country. In villages potters used to supply variety of domestic utensils to every home and were paid in grain at the time of harvests. The custom is dying out. Potters trade still persists and for big congregations in villages his wares are still the cheapest. The articles are fragile and cannot be easily exported so they are made for local use only. Though the introduction of brass and Chinaware has affected the trade yet for cheapness it has no comparison. It is a pity that in India there has been no attempt to improve the industry. In Naples (Italy) we saw beautiful terracota tea sets. In one of the biggest restaurants we saw all terracota articles used over and over again.

In India perhaps the people cannot be made to believe that clay articles can be used over and over again though chinawares are no better from this point of view. If clay wares are suitably glazed they can certainly replace chinaware specially locally. If these are made stronger some of the varieties may easily be exported. The Department of Industry should try to introduce scientific knowledge amongst workers and utilise the existing art. Glazed flooring tiles may be introduced with advantage.

At places in India potters of their own accord have produced black glazed pottery and have manufactured tea sets and other beautiful artistic vessels made of clay. They should be encouraged and their difficulties should be solved.

Cheap and easily melting glaze from lead salt is known to the people at many places and occasional use of it is made locally. What we require is some low melting glaze mixture made of glass in which lead may not be used so that these wares may safely be used for serving food.

Toys and Figures—Lucknow and other cities produce beautiful figures and toys in clay. They are beautifully decorated and sold very cheap. The artistic design and their imitation both in colour and shape is marvellous. These articles can easily find a big sale not only in India but also in foreign countries provided the trade is organised and suitable cheap packing is found for them. Natural imitation of fruits in clay models can find a good sale in all educational institutions and can be very good models in clay modelling.

Manufacture of Chinaware has been introduced in number of places but this is mostly done on a factory scale. The legitimate share of this trade does not go to the potter who was entitled to it. We see no reason as to why ordinary potters cannot be trained to manufacture these articles. In Khurja (U.P.) attempt has been made to introduce the manufacture of stone and

chinawares by the potters in their cottages. How far we shall succeed it is yet early to say. We have seen the manufacture on a cottage scale of all the articles in Japan and we see no reason why this cannot be done in India. If need be, we can import some Japanese artisans in our country.

The greatest difficulty in the success of this industry is the firing of the articles. If individual furnaces are made the cost will be prohibitive and the burning by coal in small furnaces will be expensive. If electric and coal furnaces be installed by the Government and reasonable charges for firing be levied in different centres there should be no difficulty in developing this important and useful branch of industry. We wish in suitable localities where raw material is available schools in ceramics may be started and part-time training be given to the artisans. A kiln may be installed by the school and local workers be asked to bring their wares to this place for firing. If competent men are employed the industry is likely to establish itself.

Slipwares will not require much investment to begin with. Perhaps it may pay to send a few artisans for training abroad to master the technique of trade.

Bricks and Tiles—Manufacture of bricks is an allied industry and is already done in the country. The cream of industry goes to the factory owner and the wages of labour are very low. Tile making is another industry and it is only done on a very small scale by some of the potters but generally this is also a line taken up by the capitalist. The manufacture of pressed cement goods is another line which is likely to give employment to many people. Cement is produced cheap enough in the country and the number of articles made from it are daily increasing. It will be worth while for the cement marketing board to write out small pamphlets in the different vernaculars of the country and to open an institution wherein people

may be trained in the making of different cement articles. This attempt will bring about more sales of their cement and these trainees will serve as their best advertisers and users. If the cement board does not take up this work the industrial department may take it up. There are number of types of clays in the country which ought to be analysed and their suitability for ceramics be established. There are other raw materials necessary in this connection also whose importance must be enquired into. At present we possess very little information on this point.

Fire Bricks and Refractory Bricks—This is a type of work which can be done on a cottage scale. So far very little work has been done and that too by big capitalists. If arrangement for teaching this important line be made most of our young industrial chemists with small capital may take up this line with advantage. In this line too there does not exist sufficient information about the raw material. We are very rich in refractories and the demand of refractory material will develop along with the development of chemical industry. The industry, therefore, should be systematically organised.

Crucibles—From times immemorial India was making use of its own crucibles. Goldsmiths even today make their own crucibles. Since the time graphite crucibles are introduced Indian-made crucibles have been discarded.

Crude attempts have been made at number of places to manufacture graphite crucibles. Inferior articles cannot easily stand in competition with better articles of foreign make. It is, therefore, necessary that up-to-date knowledge may be collected and modern technique be employed in the manufacture of this important article.

Crayons and Coloured Pastles—Allied to pottery is the industry of making chalk crayons. Up to recently they were imported; but, now, they are generally

made in the country. Gypsum found in considerable quantities is powdered and calcined and turned into plaster of Paris. The latter either alone or mixed with gypsum powder or other substitutes is cast into crayons in metallic or wooden moulds. After plaster of Paris has set crayons are taken out and dried. If colour is used coloured chalk can be made.

Pastles for writing on paper are also similarly made with the use of soap and other suitable material. Plaster of Paris itself and busts made from it can sell well and at a good profit.

GLASS

Glass is a very old industry in India. It was not only employed for bangles but heat resisting glass was made and used in medical preparations by ancients. Manufacture of optic glass was not unknown either. Glass, to-day, is a high specialised industry and requires both technical skill and chemical knowledge over and above the up-to-date equipment. Most of the articles are even now produced on a cottage scale and if these artisans are encouraged there is a great potentiality in developing their trade. We have seen small furnaces making block glass and supplying it to small blowers. There are number of cottage workers who prepare specific articles and supply them to the public. The entire work of making medicinal phials is being done on small scale by hundreds of establishments at Nagina in Bijnor District (U.P.). Phials manufactured by these artisans are quite good and cheap. The entire glass-bangle industry in Firozabad is of this nature. There is a very big scope for developing this industry and it seems to be essential that the industry be properly organised and placed on sound basis.

Though the subject is a very big one we shall only describe the organisation of glass bangles as it is one of the biggest line in glass trade.

Glass Bangles—Before the War the total supply of bangles was distributed as follows:—

80% of the total supply was met with by Firozabad (Agra District U.P.) 15% came from foreign countries and 5% were made in other provinces. Not less than 50,000 people are employed in this industry. We have the good fortune to see most of the important establishments and have the time to study their technical details. Block glass is supplied by a few small furnaces working in the crudest fashion. Railways have given special facilities in the supply of coal to this place and this is the main reason as to why block glass manufacture has developed in this centre. Firozabad supplies not only block glass to the bangle makers but also exports to other places.

We were struck by the ingenuity and skill of the process that illiterate artisans have developed. As far as we could ascertain the Government experts have not given much help to this industry, rather it was complained to us that since the time the distribution of supplies is taken up by the Government nepotism is introduced to the detriment of everybody. We cannot, however, vouchsafe the truth or otherwise of the complaint. These people have successfully devised their own cheap but very effective methods and small equipments to manufacture very complicated designs. It is true that new designs in bangles were made by Japan or Czechoslovakia but the bangle makers sat at them from the time these bangles were imported in India and in a very short time evolved methods of their manufacture; without knowing chemistry and physics, without copying others and without any outside help, they could not only develop a method of manufacture but could also evolve cheap and ingenious methods to do so. An expert must take off his hat and must be convinced once for all that there exists an originality, resourcefulness and persistence in the Indian artisan for which every Indian must be proud.

These people could achieve miracle if real scientific help would have been given them. They handle quite easily number of chemicals whose properties they understand and take full advantage of them. To create a mirror effect by depositing silver nitrate in their hollow bangles, to make use of colloide gold are some of the instances in point. Without making any expensive machine a labourer drives an iron rod over which ingeniously a spiral of bangles is wound up and the technique is so complete and effective that the sizes and thickness of bangles must remain uniform. Control of heat in an open hearth is wonderful. Instantaneous joining of bangles on the flame is really startling to an outsider. What would have happened if these artisans would not have been exploited and would have been helped by proper education? We wish the industrialists and educated economists should see this place to learn as to how the division of labour is worked up in practice and minor operations are performed by number of workmen specialised in their own line.

There is need to help and encourage these men by honest and sincere efforts in overcoming their minor difficulties. We were told that during the War Government discouraged the industry to their utmost and dubbed it as a luxury industry without knowing that wearing of bangles is a religious sentiment amongst Indians. The workers struggled and came out successful and prosperous. Will the Government help them now and encourage these artisans to assume their normal course?

There is need to regulate internal competition, standardise their goods and supply them the raw material of the suitable type and in sufficient quantities. Movement of their finished goods have to be expedited and lastly to utilise their earnings in useful channel.

It was disgraceful to see the insanitary conditions under which small children work on kerosine oil flame. Even ordinary amenities of metalled roads are not available in this rising town. We wish civic

responsibility amongst the people be created and a healthy atmosphere in the city may be introduced.

Glass Beads—Government has appointed a glass expert and his only achievement is a new industry of making glass beads. We saw this industry in Government School at Benares and were only disgusted to see the insanitary conditions under which the boys are trained to lose their eyesight and to develop lung disease. We believe burning of kerosine oil may be substituted by some other inoffensive oil or electricity or a method of artificial ventilation may be a possibility. This industry has a possibility of development and may be encouraged.

Lac and Lac Industries—Shellac is a side occupation of agricultural labour. In forests as well as in places where shellac is produced number of people are employed in its collection, refining, etc. Besides preparing the article in saleable form shellac bangles are produced in number of places. Mirzapur and Benares are the main centres of their manufacture. Quite beautiful and cheap ornaments are manufactured out of shellac and they are not only used by poor people but even rich people make use of them. Number of artistic articles are made in Benares and other places.

Shellac is an insulating material and it is in good demand in foreign countries. Plastic is made from it and we hope in future there will be a big demand both in India and abroad of lac articles.

AGRICULTURAL INDUSTRIES

Besides the manufacture of Khand (Sugar), jaggery, flour ginning, etc. there is some work done in cottages in the manufacture of agricultural implements making of sickles, plough shares, Persian wheels and the like. These are manufactured at a few places but no attempt seems to have been made to help the design or technique. Nor arrangements are made to supply him the right type of raw material. Many types of agricultural

implements can be manufactured on a small scale. Harrows of different kinds, cultivators, ploughs, chaff cutters, etc., can all be manufactured on a small scale. The first thing is that the Agricultural Department should take interest in designing new implements and pass them on to the Industries Department to organise their manufacture. The policy of asking tenders only from big firms and patronise the capitalist must cease. The skill and workmanship of the small man must be utilised. The Department knows well that some of their implements are the outcome of the brain of our ordinary mistris and they can still do more if they are properly encouraged. We lay great stress in using the talents of our carpenters and smiths in villages who are the hereditary workers to supply the needs of the farmer. If they are made literate, properly educated in the manufacture of implements, they can supply the cultivator with the best and most suitable tools without disturbing the village economy to a great extent. As long as we pin faith in the import of implements from foreign countries, no headway will be made in this line. Both the manufacturers of implements and agricultural engineer are far away from knowing the local needs of the people. We have already wasted several decades without achieving any substantial results and will lose many more if we do not start now on the lines suggested above. We see a great future in India for the use of improved implements but we shall be sorry if all this trade goes to the foreign manufacturer and the Department of Agriculture simply becomes their advertising agent. Need we emphasise the experience of the introduction of chaff cutters which never became popular till Sialkot started to make them in the country. We wish this trade to remain in the hands of those who have faithfully served the farmer and are capable of doing so now if they are given the proper training and the opportunity.

Food Industries—After agricultural implements

comes the question of food industries. We have no hesitation to say that the processing of food products legitimately belongs to the producer. Though both the Central and Provincial Governments did propaganda for growing more food but they never cared to organise the food industries amongst the farmers. They took the most convenient and easy course of helping the capitalist to make money out of these industries. Are the agriculturists only fit to grow crops and starve? When the agriculturists were asked to grow vegetables why were they not organised to dehydrate them? A Central Co-operative Factory of the agriculturists could certainly be organised and the poor man could be helped. Was canning and preserving so difficult that the intelligent sons of the farmer could not take to it? All such things are done by the farmers in other countries and the farmers can certainly do them in India.

We give below a list of food industries developed during the War with Government help and from their perusal it will be quite clear that Nos. 1, 3, 6, 7, 8, 10, 11, 12, 13, 14, 15, 16, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, and 48, could easily be taken up by the agriculturists with a proper organisation and training:—

1. Biscuits Shakapara. 2. Biscuits Fancy. 3. Chutney.
4. Cigarettes B.T. 5. Cigarettes I.T. 6. Coffee Ground.
7. Condiment powder. 8. Curry powder. 9. Golden syrup.
10. Lemon juice. 11. Lemon juice cordial.
12. Lime juice cordial powder. 13. Mustard ground Refined.
14. Malt. 15. Pepper ground Refined. 16. Salt Refined.
17. Tobacco B.T. 18. Amla Sweet. 19. Arrowroot.
20. Baking powder. 21. Barley pearl.
22. Corn flour. 23. Honey. 24. Jellies Assorted. 25. Oat meal.
26. Pickles. 27. Sauce Table. 28. Vinegar.
29. Custard Powder. 30. Egg powder. 31. Milk powder.
32. Milk powder (Full Cream). 33. Malted milk.
34. Dehydrated onions. 35. Dehydrated potatoes.

36. Dehydrated vegetables. 37. Fruits dried. 38. Jam. 39. Raisins and Nut Rations. 40. Tinned potatoes. 41. Canned Fruits. 42. Marmalade. 43. Ghi Milk. 44. Oil Cooking (Refined). 45. Oil Salad. 46. Butter tinned. 47. Oil Groundnuts. 48. Fish dried and smoked.

We emphasise that all food industries must be reserved for the farmer and others be prohibited to take to them. If we go on taking all subsidiary occupations from the agriculturist one by one and do not provide him with new industries, people cannot get a reasonable wage. The provision of new industries for the producer is essential from the point of view of a consumer also in as much as if the agriculturist is paid for his idle hours his cost of production will be reduced and articles of food will become cheaper. In all such industries there will always be a bulk of wastage which will ultimately go to the manure pit if food articles are manufactured by people other than farmers while the latter shall be able to utilise most of these articles as human or cattle feeds.

We are, however, glad that food industries have made a good headway during the War and some of them are well established. Their continuation will remain ultimately not in the hands of the manufacturer, but the producer. Proper type of fruit, vegetable and grain will be the first requisite of success and this can only be done by the co-operation of the growers. It may be the dehydrated vegetables, or the production barley or the manufacture of rolled oats or canning of fruits in all cases quality will count. It must be remembered that processed food is far costlier than the unprocessed food and that being so the consumer looks to the quality and not to the cheapness. After the War if the manufacturer does not care to improve the quality he will soon be ousted by Quakers' oats, foreign-canned fruits and mustard and condiment.

Most of these industries have started on a small scale and they are really the domain of cottage indus-

tries. If once the agriculturists take to them their ingenuity will help them and soon their reputation will be established.

CHEMICAL INDUSTRIES

The development of chemical industries is of paramount importance in any country for its industrial advancement. In the third part we have given a long list of Chemical Industries which can be started on a cottage scale and we shall discuss here only a few which are already being followed or are introduced during the War.

The oldest Chemical Industries are four : (i) Salt, (ii) Potassium Nitrate, (iii) Sodium Sulphate or Khari, (iv) Sodium Carbonate or Sajji Matti or Sajji. Salt manufacture is only done under a licence and we need not say anything more in detail. In our Hindi Book (Namak) we have described the reasons as to why the excise duty on salt be abolished so that the quantity produced may be increased and the poor man need not purchase his expensive salt. We still maintain that Indian cattle, if not human beings, suffer from salt starvation. Some of the industries suffer very badly on account of excise duty. The concession of excise free salt is not of very much help to these industries on account of the delay and botheration involved in securing the same. Besides salt would have been available to the industries at a far lesser price than that it is available now. If the excise duty be removed, all places where salt industry was flourishing in olden times will again become prosperous and people of those places will reap the benefit of it. It will again become a source of subsidiary occupation to agriculture. Places like Bharatpur, Bikaner, Hisar and places near the sea coast will be producing salt cheaply and efficiently. Salt wells like those of Gurgaon will again be worked giving employment to thousands of people who are now thrown out of employment with no fault of theirs.

We state with all the emphasis at our command that the Government has no right not to allow this industry to be worked at places where no other subsidiary occupation to agriculture is possible. It is cruel and criminal of any Government to destroy an existing profession without giving another alternative to the people of that place.

Salt manufacture was and is a cottage work costing nothing and there exist the sill to follow the profession. Fortunately the best season for work is the time when the cultivator remains entirely idle, even a small income from this work can be a great help. Since after the War there is likely to be a far higher demand for salt we invite the Government's attention to remove the excise duty.

Sodium Carbonate—There are wild grasses which contain quantities of sodium carbonate. Before the Lablance process was discovered soda carbonate was made from ashes. Spain was the main centre of this industry. From times immemorial this practice exists in the country and industry has survived till now. In Punjab and Sind even now saji is made by burning wild grasses. It is used both for medicine and food. This being a subsidiary industry, arrangement to grade the products and supplying better technique be made.

Sodium Sulphide—It is a next step from sodium sulphate. This chemical was imported but during the War there arose difficulties of transport and encouragement was given to the manufacture of it in the country. Though it seems to be a paying proposition to change sodium sulphate into sulphide but in order to place the industry on a sound footing economics of its manufacture must be studied. We are glad that huge deposits in Jodhpur State are being exploited and factory to manufacture sodium sulphide on a big scale are under consideration. How will this affect the

small manufacture is yet early to say. Cheap sodium sulphide will be a great help to leather trade.

Hydrochloric Acid—The manufacture of this article in Bengal is a cottage industry, and it is manufactured in earthen pots with very little investment. With a small control and improved equipment it can easily stand against big factories.

Nitric Acid—The same applies to the manufacture of this article.

Alums, Iron and Copper Sulphates— There are other Chemicals which are and can easily be manufactured on a small scale.

Sodium Silicate—It is manufactured on a cottage scale in number of places. If people improve the technique of coal economy this industry can easily be established.

There are other chemicals, drugs and pharmaceutical preparations whose list is quite a large one, which can be prepared on a small scale provided the manufacturer possesses the necessary knowledge, skill and technique. With such a large number of chemists in the country we hope they will have the enterprise to start their own manufacture. The margin is still sufficient to keep these establishments going.

MISCELLANEOUS INDUSTRIES

Below we give some of the cottage industries which are already in existence and which with better organisation can be placed on sound footing. Many fancy articles such as dolls and toys, coconut shell covering, fancy leaf boxes (Palmyra), ornamental fans, engraving on either copper and brass and other metals, ivory work, fancy horn articles are some of the important articles made in cottages. They only have generally a local demand and sometimes are purchased—as curios, but if properly advertised and their popularity is organised their sale can be considerably increased. For pushing up these articles a propaganda is needed. We can export many of these articles in quite a large

number and can reap a rich harvest and give employment to many people in the country.

Musical instruments is another line in which a few artisans are employed. This line can easily be developed.

Pith Work—In some places pith work is beautifully done. Tanjore in Madras is a centre of this type of work. Temples, mosques, etc., are made in pith work and are in great demand in the locality. It is a good line to develop the aesthetic taste of the students and it will be a suitable subject in the curriculum of basic education. Shola hats are sold in the country in sufficient number and their main beauty is their light weight. The grasses giving shola pith grow wild in Bengal. In Delhi and other places these hats are prepared from piths. India abounds in pith-producing plants and we can introduce this industry in number of places with advantage.

Umbrellas are made in number of places from imported ribs. It is a common industry in Bengal. There is difficulty in getting the right type of cloth and ribs at cheap rates. This industry ought to be properly organised.

List not Exhaustive—The above list can be made more extensive and so also the description may be expanded. We have not the space to go into more details but this will convince the readers that cottage industries are far more an important subject in extent, variety and employment than the organised industries. It is a pity that poor man is left to struggle himself and no attempt has been made to place cottage industries on a sound footing. If scientific knowledge, mechanical skill and economic organisation are placed at the disposal, the cottage worker in India can be more easily and quickly industrialised without waiting for the capital goods to be imported from abroad. It is a pity that cottage industries, being in the hands of the poor man who is neither vocal nor pushing, are

always left in the lurch. We are sure that in the future political dispensation of the country this step-motherly treatment will disappear and existing industries will be organised, improved, protected, and encouraged so that the standard of the people be raised and the money be better distributed amongst the masses than it is ever likely to be done through big industries.

PART III

NEW INDUSTRIES

The cursory treatment given to cottage industries by the Bombay Planners and afterwards by most of the writers on Post-War Reconstruction clearly shows that the thinking public is not yet convinced of the huge possibilities in the development of cottage industries. In the previous pages we have tried to show the details of different existing cottage and small-scale industries. Yet it is by no means an exhaustive list. Many more things can be added to them. The number of people actually employed in all such industries cannot easily be known. The figures available are only underestimates. But whatever data is available, clearly justifies the conclusion that even to-day cottage industries employ far larger population than all big industries combined. We have tried to show at another place that the employment to a huge population of this country cannot be given by the introduction of big-scale industries. For giving employment to our people, cottage and small-scale industries are the only means of solution. It should not be misunderstood that we in any way disparage the value of big-scale industries. We do feel big industries have their own place and they must be developed. We are quite conversant that some industries cannot be started on a small scale and we have to concentrate not only in making our country self-sufficient in the manufacture of all finished goods, but also we must arrange to manufacture capital goods from which finished articles are made. We should manufacture automobile engines, aeroplanes, all types of auto-

matic and ordinary machines and should not depend upon any other country for their supply. But in considering the economic development of the country we feel that we should not lose sight of the fact that we are forty crores, and lacs of people are increasing every year. To create unemployment and then to arrange for doles can never prove a good solution. When we realise that the number of people, who will deserve charity or help from the Government, will be several crores we cannot but rely upon finding out employment for them. We must understand that charity or dole always demoralises a nation. Many of us may like to starve, as they have always been doing, rather than accept charity. Employment is the only solution and it can only be provided by cottage and small-scale industries. We would like to appeal to our industrialists, with all the emphasis at our command, that they should desist from starting industries which are already being followed by the cottage or small workers. There is ample scope for big industries. Let them allow the cottage industries to live, develop and multiply.

Both for the Government as well as for the people it seems desirable that they should, while planning and introducing new industries, go into the question whether that article can be made on a small scale and if they are convinced that it cannot be done, then and then alone they should try to establish big industries. If they do not give preference to cottage and small-scale industries they will not be able to solve the main problem. Not only we require new cottage and small-scale industries for manufacturing articles, which we are purchasing now from foreign countries, but we require many more occupations for agriculturists, who have sufficient leisure from agriculture, which may serve as subsidiary occupations and add to their scanty earnings. It would be a dream to think of raising the standard of the masses without raising the income of

the agriculturists, which can only be done by finding out subsidiary occupations for their leisure hours.

Considering from both points of view it is imperative to add to the list of existing industries for which there already exists a demand in the country.

There is yet another side of this question—even if we want big industries to develop and considering that they are likely to employ all our surplus labour, big industries cannot be easily started for another few years, as there is and there will be a deficiency in securing capital goods. India shall have to wait till machinery is available from foreign countries. But if we take to cottage and small-scale industries most of the machines can be manufactured and a few models may be purchased and improved upon to suit our conditions. This is all the more reason that we should concentrate immediately upon the development of cottage and small-scale industries.

Before we go into the details of new cottage industries we beg to point out some of our handicaps. In other countries of the world Trade Reviews annually issued by the Government contain details of imports for different articles as well as the details of export. In India we do not have these details and in most of the cases different articles are grouped together and their detailed imports cannot be worked out separately. We do require many more details and the Department of Imports and Exports should be sufficiently strengthened so that we may be able to supply details to the public at large for whatever goods and articles that information is needed. In starting a new industry the knowledge, the extent of the consumption is a necessity, without which planning cannot be done. The extent can only be made available from import figures. For an undeveloped country, like ours, we would have expected that our annual Reviews ought to have contained figures in much more detail and at the same time Government experts ought to have indicated what

articles out of those are capable of being manufactured in the country. We wish such information should be available at an early date.

The other necessity for starting new industries is to know the details of raw material available in the country, along with their purities, extent and other particulars. At present we possess very little information in this connection. The only figures known are those of agricultural products. We are glad that the Government are strengthening their Geological Department and after some time information about mineral resources may be available. There is no annual publication which gives the details of raw materials, their extent of availability and the purpose for which they can be used, nor we have any publication from which we may know what new developments have taken place in other countries about the new crops, new industries or the utilities of the raw material. We are passing through a race of development and unless India is posted up-to-date, we cannot make any big headway. It is the function of the Government to keep people informed as to what is happening in the world, and what new discoveries, inventions and uses of raw materials have been discovered. If the Government has not done this work, we would have expected the Federation Chamber of Commerce to take up this important line. If the Chambers do not inform their members about these things, they are not doing the public duty for which they are meant. If they have not done so far, we invite their attention to take this line up immediately. To expect such a big enquiry by any private person or a private firm is not possible. It requires a good library, as well as sufficient staff to collate all the material available.

We have Trade Commissioners in almost all the important countries of the world but they are of not much use for the country. They ought to have been telling us, in their annual publications what types of

articles we can export for these countries or what lines of industrial development these people have taken, which we can imitate. We get very little information through them for industrial development. England itself publishes small pamphlets, occasionally, as to the possibilities of her trade in other countries. Similar publications ought to have been started in India if Trade Commissioners pay a little attention to this important phase in the development of industries. India can no more remain isolated nor it can develop without the help of other countries. The knowledge and experience available in the whole world must be pooled down to develop our industries and that cannot be done unless Government Departments are properly organised and systematised to meet the need of the country.

There is a third point in this connection before we proceed. So far we have been exporting raw material to different countries. But there are very good chances of exporting finished goods which can easily be prepared in our cottages and they may be highly valued in foreign countries. Japan studied that point very minutely and could find out many such articles, which would find a sale in the foreign market at very good prices and could give a living to the cottage worker. We have referred to this aspect in the second chapter, but we may be excused to reiterate what we have said before. We are very rich in our weeds and agricultural products. The wages we give to our labour are the lowest in the world. That being so if we study the necessities of foreign countries and know their fashions and tastes, we can utilise this labour for the manufacture of many articles, which foreign countries are in need of. By exporting goods a country need not exploit others, but may supply the needs of a foreign country at a much cheaper rate than what those countries could produce. Plaited goods is one of the most important industries in Japan.

We have no trade in plaited goods, while Japan exports straw braids in sufficiently large quantities. We can produce these things in cottages as a side industry and can supply them to other countries. Their manufacture is simple, the raw material is in plenty and labour is cheap. It is only a question of organising export trade. There are a number of eatables which we can manufacture cheaper than they are produced in other countries, and we can provide, in this way, some work for our people. The manufacture of guts, the tanning of leather and the like are all well known. We refer the readers to our book on Japan for most of the details of the articles which fall under this category. Such industries can only develop provided travellers are sent to foreign countries to study the taste and requirements of other people after providing them with sufficient knowledge about the raw materials available in our country. If we train our young men for this purpose and send them out to observe minutely and study abroad, we can profitably start a number of new industries.

The next point, to which we should draw the attention of the Government and leaders of public opinion, is that new industries cannot easily be started unless a propaganda for mass education is done. If we make our people literate we can easily keep them informed about discoveries, inventions, improvements in processes, machinery, tools, etc., which are likely to be suitable and useful for their occupation. If such knowledge is disseminated, there will be found many intelligent people to take new lines of development. Without literacy this cannot be achieved. To-day human element has been entirely neglected and we consider that the Government officials and a few leaders of public opinion can bring about improvement in all walks of life. This is entirely a wrong notion. The first requisite for any development, much more for economic development, is that the

people themselves must begin to think and they should try to improve their own condition. There are no more powerful instruments than education and literacy to remove fatalism amongst the people. Whatever type of Government takes charge of the country, we shall have to make our people think about their own future and there will lie the secret of all improvements and developments. Though it seems to be a sort of digression, but we beg to point out that nothing can be achieved without literacy and we shall have to concentrate upon it as soon as possible. We entirely agree with the constructive scheme that Mahatma Gandhi has evolved. He has rightly given sufficient stress on education and if the Government is not going to introduce compulsory education in the country even after the War, there is no other method but to start it ourselves. We must see that every child, young and old, male and female should be made literate in the shortest time possible.

The list of new industries can be enlarged and for this we shall need much greater space than this small volume permits. Simply to convince that new things can be manufactured on a small scale we give here the details of a few articles. Readers themselves can add to this list a number of other articles of the same category.

All industries may be divided into three headings :— Mechanical, Chemical and Agricultural. We shall divide our list under these headings.

MECHANICAL INDUSTRIES

By mechanical industry we mean the manufacture of those articles in which proper types of tools are required. A chemical industry on the other hand involves the use of a chemical process. As regards agricultural industry, it will be either mechanical or chemical or both. But we have given it a separate heading, as we consider such industries must be re-

served for the agriculturists or the artisans living in villages.

Coming to mechanical industries, the biggest and the most useful industry, that can be started, is the manufacture of bicycles. We have given it a first place for the simple reason that this industry will illustrate most of our points which we want to bring out during the course of this chapter. Some of the readers may think that bicycle cannot be manufactured on a small scale. But if we refer to the history of bicycle manufacture in Japan we find that in 1930 establishments employing from 5 to 9 labourers were 51·44 %, while establishments in which 10 to 14 labourers were employed were 16·45 % and establishments employing 15 to 29 labourers were 18·02%. The total percentage of small establishments employing not more than 90 labourers was 85·91. How these small establishments could produce bicycles is a question which must be carefully studied. Bicycle consists of a number of parts and all these parts can be separately manufactured quite easily if proper types of tools are available. Establishments employing only a few labourers were started to manufacture one or two parts at one place, while the other parts were manufactured in a separate establishment. All the parts, in this way, were divided into number of small establishments and when they were all manufactured in this fashion, they were brought to another establishment, which worked only as an assembling place. It is true that in all these small establishments bicycle was nowhere manufactured but a part of it only was made. But all these parts together turned it into a bicycle in the assembling shop quite alright. This is the method as to how Japan has been working on a small scale and still producing the cheapest article in the world. Everybody will admit that the establishment which only produces one part of a bicycle is far better fitted than a very big factory which tries to pro-

duce an entire bicycle at one place. These small cottages are the best example of the division of labour and this specialised skill must produce the cheapest and best article than from the point of view of those who consider everything in a mass production manner. When parts are cheaply and separately built, their assembling must remain cheap cannot be doubted. Thus these industries working separately in number of places with a small number of workers can produce a far cheaper article than the biggest factory trying to make the same article at one and the same place. It must be conceded that the cost of supervision is entirely eliminated. Locking up capital to a big extent is not needed and as the workman himself remains the proprietor of the establishment, there is no exploitation and no cost of supervision has to be added to it. Further a man who works for this own self must put in the maximum amount of work in the shortest period and he must produce things far better than he would have done if he would have worked for another. In a place where the worker himself is the proprietor of the establishment and earns the entire benefit that comes out of that manufacture, the work is done cheaper and more efficiently.

The only objection that can be pointed out against this method of working is that the purchase of raw material will be expensive as the proprietor, being a small man, will be purchasing in a small quantity, and secondly that the man who assembles these parts into a bicycle is likely not to pay a reasonable price for the articles produced. In order to meet both these objections Japanese Government has made co-operative societies or associations of all these workers and their working is supervised by the Government officials. They try to eliminate all types of unreasonable demands either of the producer or of the assembler. Prices of different raw materials are fixed and the shops dealing in those articles cannot sell these articles at a higher rate than

fixed by the Government. In this way both the profit of the dealers in raw materials as well as the prices of the articles produced are fixed and thus there is no danger of exploitation, nor unreasonable demand possible. There is a further safeguard provided by the Government inasmuch as when the bicycles are exported to foreign countries, and profits are obtained, the assembler as well as the manufacturer of parts are assigned proportionate share of the profits, so that the profit of exporting an article is also shared by the whole lot of the producers and assemblers.

There does not seem to be any flaw in the above arrangement. It is different whether our Government or our people would like to be governed by the same type of laws or rules. We do not see there is anything intrinsically wrong to agree to such a procedure. If we make a co-operative society of all the workers manufacturing different parts, as well as the dealers and the assemblers, and decide the prices of different articles beforehand, we can create an organisation of this type in the country. In this way we may fix up the lowest prices at which bicycles of a certain type should be sold. But if there comes a demand for a higher price, the profit of it should be shared amongst all workers and similarly if there is a fall in prices, everybody should suffer accordingly. Such a procedure in no case will bring about any restrictions of trade nor it will be detrimental to public interest. Let a co-operative society be started on these lines.

We are glad that in some cities a few parts of bicycle are being manufactured by very small establishments. All this can serve as a nucleus for a big organisation.

Mechanical Toys—There is hardly any person who has not seen the most attractive toys that Japan was selling before the War. It may be correct to say that they practically monopolised the entire trade of the world. In 1934 Japan exported metal toys to the

extent of 80 lacs of yens and that of celluloid 30 lacs. Rubber toys of 64 lacs; glass toys and other types of toys are besides the above. The secret of the sale of toys lies in their varieties. If a shop tries to sell only one variety of toy, it is likely not to make much profit out of it. But if several types of toys are sold in a shop, children going to that shop like one or the other and the dealer will have a brisk sale. On this principle the export market of Japan was built. Different manufacturers were organised separately and their toys were purchased and exported after reserving a reasonable profit for the man exporting. The amount of profit, if any, after sale goes back to the manufacturers. There was organised an association of the toy manufacturers for the whole of Japan, wherein the manufacturers would discuss their difficulties and give their own suggestions to overcome them. In order to cheapen the toys, special attention was paid to the waste material coming out of the different factories. These toys are generally made out of the waste material from different tin factories. In India we are in the habit of dumping this valuable waste in manure pits where it does not easily decompose and as such is not even a good manure. In Japan Government officials, connected with the organisation, of toy makers, collect all this material and place it before their association, so that everyone of them will decide for which part of the toy that material could be utilised and to what extent. When the raw material is obtained from the waste and mechanical power is available at cheap rates, the readers can at once visualise that a most complicated and beautiful toy can be produced for a song and any price given for it will be a profit to the maker. You require only a few suitable punches with a few dies.

Buttons—The preparation of buttons from different materials is simply a mechanical process. If pro-

per type of machine is produced or evolved, many people will be able to manufacture different types of buttons from different materials available in the country. Leather, horn and metals are even now utilised for this purpose. There are a few people making buttons but we can employ many more in this important industry. If we organise button makers and give them new designs and acquaint them with the fashion as well as the requirements of the consumer, we can expand this trade on a large scale. The import of buttons in India from foreign countries is quite a decent one. Mysore Government has done quite a good work in this line.

Nibs—The manufacture of nibs does not require very much of skill, if proper type of material is available. We require sheets of different types of alloys, which may be utilised for this purpose. If we use iron sheet nibs some type of annealing may be necessary. Very crude attempt has been made in India in the manufacture of nibs. There are no good types so far evolved in this line.

Stationery Articles—Under this heading we can include number of articles which can easily be made with a very small equipment. The manufacture of envelopes may be mentioned as an instance. It requires only a small machine with different types of dies. After all we do not see why the making of envelopes should not pay provided we make study of the type of paper required for this purpose and the manufacturer gets paper at a cheap rate. In certain cases waste paper, blank on one side, can easily be utilised. The import of envelopes is a sufficiently big one. Different types of letter papers, etc., are articles which can easily be manufactured and can give employment to many of our people.

Blotting paper, pads, calendars, diaries, etc., are many articles which can easily be manufactured. Clips for stitching and holding is another useful line.

Pencils—Are another important line. Nuremberg

and Bavaria are the main centres in Germany for the manufacture of pencils. The machinery required for this purpose is very small. The manufacture of lead must remain a special art. If people are trained in it, there should be no difficulty in their manufacture in India. We are sorry to say that the attempts made so far are very crude, and the manufacturers have not cared to learn this art in more details as they ought to have done. India must produce its own pencils in all their shades.

Fountain Pens—The manufacture of good fountain pens is a very easy method. We have seen in Japan people producing fountain pens in very small cottages and they could afford to sell their pens at as low a price as As. -/4/- each. A friend purchased two gross at that rate. Nobody will believe that the manufacturer would be making a gain from such cheap pens. Hollow round pipes of plastics and celluloid in different beautiful mixtures of colours are available or can be imported till the time we manufacture them ourselves. The only work that an artisan has to do is to cut the same in different sizes and prepare them to shape and then assemble it into a fountain pen. Nibs are available in the market and they can be purchased or manufactured.

We saw quite a good attempt in Cawnpore and the golden nibs were their speciality. We were struck by the design of small inexpensive machines made by the proprietor himself for the purpose.

Rubber Goods—Manufacture of rubber is an easy process from raw rubber to sheets or to different forms. Vulcanizing does not require very much money. Since the time Dunlop tyres are manufactured in India many people in Calcutta and other places have started the manufacture of rubber goods and they find no difficulty in manufacturing them. We shall take the subject under 'Chemical Industries' but here we should like to point out that rubber sheets can be purchased and turned into different types of articles. They can be turned into different thickness of threads. Similarly the ebo-

nite rods or rubber rods can be utilised for the manufacture of different articles.

Manufacture of Harmonium, Gramophones and Flutes—Quite good harmoniums are made in India at different places. But still we are importing a large number of them. If we specialise in the details there is no reason why good harmoniums cannot be produced in the country.

Easier is the course of the manufacture of gramophones. With the use of a few punches, gramophones can be produced and in certain cases at half the price at which they are sold to-day.

Flutes and other musical instruments can be manufactured in the same way. People have done very good trade in musical instruments during the War days, and we are sure this industry will be stabilised for all times to come.

Electro Plating—This is an art which requires both mechanical and chemical knowledge. Though there are intelligent, illiterate people doing this trade quite successfully yet if we really want to develop this industry, it is but necessary that the chemists should take to it, and we are sure most of them will be getting more money than they are otherwise likely to earn in service. Since the time chrome plating has been introduced, even iron articles, cutlery, knives, etc., can be electroplated and sold. They are liked even better than silver articles. The manufacture of spoons, forks, etc., can easily be done from iron sheets by small punches. If people take to the manufacture of these articles and they are electro-plated at one central place, many people can get their living and we can stop the imports in these articles altogether. If chemists take to this art, all types of salts and chemicals needed can easily be manufactured in the country. Equipment is very simple and this too can be manufactured locally. However, there is no harm if in the beginning we import the best sets

from foreign countries and then try to improve upon them.

Small Machines—There is a big scope for the sale of small machines. Some firms in Bombay and Calcutta have taken their manufacture, but they have not concentrated upon the accuracy or the material used in these machines. Unless we concentrate upon these two important factors, we shall not produce a favourable impression amongst our own countrymen. Punches, machinery for wire drawing, confectionery, envelopes, etc., can easily be manufactured, and do not require very heavy equipment. Our ordinary mistris are quite capable of manufacturing these machines and tools provided there is some encouragement and organisation behind them. If we just try to stop the imports of hardwares and small machines thousands of small foundries can be started with profit in the country.

Files—The manufacture of files appears to be a special art but we have seen their manufacture in Japan in very small cottages. Japan could afford to sell their files at even less than half the price at which the other makes were sold in India. The entire machinery equipment was sold for Rs. 1,400 before the War and Japanese were willing to teach the art if anybody purchased their equipment. It is not a big amount, and there is no reason why people should not take up this industry. Some machines have already been imported into India and the work has been started. In order to manufacture a good or bad type of files, we require a good or bad steel for the purpose.

Fittings for Houses—This is a very big line and it requires only a few machines to do all these things. A few establishments have been started to do this work but the right type of machinery has not been installed. Further attempts for its reorganisation must be made.

Electric Goods—Many articles are being consumed in the country in electric trade. Most of these articles

can easily be made with the help of cheap tools and machinery. Though some work is being done but still the line is very big and many articles are not even tried. We wish that a systematic investigation be made and all such articles be manufactured in the country.

Shoes and Other Leather Goods—In China we saw small outfit for making shoes and other leather goods. There is no reason as to why such a small outfit cannot be imported in the country and utilised.

Sheet Metal Work—Thousands of articles are made from sheet metal with the help of small punches. If we examine the articles we consume every day, we shall be startled as to why such small things should not be manufactured in the country. Cans, buckets, utensils, etc., can be cheaply manufactured and they can find a ready sale. Aluminium wares are well known in this line and in Poona and other places brass sheets are also being turned in different articles.

Wire Articles—Pins, nails, screws, etc., are all made from iron wires. You simply require a small machine to do the job. These are not expensive machines. We have seen attempts being made during the War even to make these machines. Though good automatic machines are not made yet the attempts were quite successful and ingenious.

Tapes, Cotton Braids, Strings—Ropes, etc., are other lines in which we have mostly depended upon foreign countries. During the War some people did try these lines and they could make some money for their troubles but it is desirable that gains of War must be retained and proper arrangement for suitable machinery be made.

Watches and Clocks—In Switzerland watches are well-known cottage industry. There is no reason as to why both watches and clocks cannot be profitably made in the country. We require small gear-cutting machines for the purpose and good mechanics to assemble the parts into a watch or a clock.

Metal Sprays—Many articles can be usefully made by spraying other articles on them. Instead of silvering or tinning brass and copper we can make cheap articles from iron and give tin or silver spray over them. Chemical Industry is suffering a great deal for want of utensils which may not be acted upon by acids or alkalis. Here is a good solution for our problem. Many cottage workers with a very little equipment can take to this work with a little training.

Wire Knitting—We are glad that both in iron and brass wire knitting has started in many places. But this industry is not likely to survive unless proper type of equipment is imported and modified according to our requirements. We hope and trust that this industry will establish itself in peace time. There is a big scope for wire netting and gauges of centrifugals and laboratories.

Wire Drawing—Copper, brass, silver and gold wires are now being manufactured in the country by manual labour or by small machines run by small motors. Silver and gold thread is an old important industry. It is necessary that up-to-date methods be employed and suitable alloys be manufactured for number of other types of wires required by trade.

Rolled Iron—Tata Iron Works first started this industry on a big scale. It was taken up on a small scale in Cawnpore and since then the industry has spread throughout the country. It does not require big outfit. Scrap iron is the raw material which is easily available. Squares, flats and rounds are all rolled in different places. The work requires a bit of organisation and patronage to establish the industry.

Lanterns—The manufacture of lanterns, as anybody will see in places where these are being manufactured, is nothing else but the use of punches and the assembling of parts.

There are thousands of other articles, which can be manufactured with proper types of tools without

any special skill required in their details.

We can add to this list any number of other articles and still the list will not be complete. We have given only a small list above simply to convince the readers the very big line available to us, if proper organisation and suitable investigation be made.

The best thing for us to do will be to send a few good engineers and industrialists to China and Japan and to purchase suitable machines to start these industries at once. We made this suggestion to Government of India and we are sure now there will be no difficulty to send our delegation there. Copying is always cheaper in the long run than evolving the machine ourselves. We wish that full advantage of the world conditions and the helplessness of Japan be utilised and full use of the availability of these machines be employed. Perhaps it will be worth while to have our young and bright demobilised soldiers trained in Japan for different mechanical industries as it neither requires much skill nor much time to master the details.

CHEMICAL INDUSTRIES

Before the War everybody felt that the chemicals are difficult to be manufactured. This idea was due mostly to the fact that though chemical education of the highest order was imparted in our Universities, yet the chemists kept themselves aloof from the manufacturing side. Fortunately, during the War the Government found itself to be in difficulty in the supply of chemicals and they were forced to utilise the eminent chemists of the country to be placed in charge of the Supply Directorates. They were asked to study the possibilities of the manufacture of different chemicals in India and they creditably did their job and produced sufficiently a long list which could be manufactured in India with the indigenous raw material. Many of the chemists made full use of this opportunity and made attempts to manufacture many articles which were im-

ported before. The margin of price between the raw material and the manufactured goods was sufficiently high and it was the main impetus to start these new lines. Many small factories were started and many chemicals began to be manufactured. The chemists made money and also supplied the needs of the Government.

Institutions like Institute of Science, Bangalore and Universities also asked their chemists to do some useful work in this connection. The Government also approached factories, as well as Universities, to place chemists on the manufacturing side. Suggestions were made sometimes, and whole details of the processes were given, and things were started. It is true that the start was a haphazard one. It is also true that the margin of profit between the sale price and their manufacture was enormously high. These conditions will no more continue and many of these attempts will not survive yet many new ventures are already established and must continue.

We know from our own experience that many things can easily be made, provided our chemists wait patiently for their opportunity and persistently tackle their difficulties. We are sure that their labour will not go in vain. There is a big chance for manufacturing chemicals, and we hope the margin of profit will always remain sufficiently remunerative.

We are glad that the Association of the Manufacturers of Chemicals has been formed and mutual discussions have begun. But this does not seem to be sufficient. Before anybody can succeed, the question of the utilisation of by-products will have to be solved. Besides cut-throat competition amongst the manufacturers will have to be avoided. If the chemists can frankly talk amongst themselves and concentrate upon the utilisation of by-products we are sure, we can hold our own. We believe a systematic method of dividing the country into different zones for the of manufacture

different articles is absolutely necessary so that the unhealthy competition may be avoided as far as possible. If a Syndicate for the sale of chemicals, consisting of all the manufacturers together be made, the competition may be easily avoided. If the Government comes to our help there should be no difficulty. We can make other chemists statutory members of a co-operative association of all the manufacturing concerns, and their manufactured goods may be pooled together for sale through a central syndicate. If such syndicate is evolved, it can easily raise the prices in certain localities, which can bring down the prices in others so as to compete successfully with the imported goods. Such a syndicate can also move the Government machinery for imposition of import duty.

Most of the chemicals can easily be manufactured in small establishments and with small capital. We have not only seen this done in Japan, but we have seen it done with our own eyes during the War. Dr. Krishna Gopal, D.Sc., F.I.C. has started the writing of an important book on 'Chemicals' which can be manufactured on a cottage scale with small capital and small equipment. We wish him every success and we hope his labours will be available to the public within a short period.

Before we suggest names of some of the chemicals, that can easily be made, let us point out one very important thing. During the course of manufacture we have felt that there are two drawbacks in the manufacture of different chemicals. First is the cost of coal or fuel for processing where heat is essential. Our furnaces are generally not well designed and the transport charges of coal are very high. Building of a furnace is highly technical and is based on experience. Engineers, who have made a specialised study of this branch, should come to the help of the chemists. Also, some of the chemists should go out and study the technique of furnace construction in detail, so that most economic

use of fuel may be made. In certain cases, introduction of rotary furnaces may be of some use. Electric furnaces may remove this difficulty where energy is provided cheap for this purpose.

Unfortunately, in India coal is on one side of the country. Unless freight charges on railways for coal are reduced considerably, cost of fuel is bound to remain high. It may be worth while that Railways may start coal depots at different stations in the country and give special rates up to those places. This will give them more freight and the coal will be distributed at considerably cheap rates throughout the country. The next solution of this difficulty may be found in the utilisation of cheap energy for heat. This, again, will require the manufacture of electric furnaces. In any case electric furnaces will be required in abundance, and it is but necessary that some people should take to it now. The possibilities of replacing energy for fuel must be studied in detail and it must be found out as to the rate of energy at which it is likely to compete against coal at the best possible centre. The transport of coal may be expensive while transport of energy will be comparatively cheap, though initial cost may be high.

The second point necessary for investigation in the development of chemical industries is the question of right type of raw material to be used for the manufacture of furnaces as well as utensils and tanks for processing.

We require special investigations into this question. Importing ready-made articles from abroad may not be desirable, as, in that case, the investment made in these articles might not over capitalise the cottage industry.

Below we give a few chemicals which can be manufactured on a small scale.

Turpentine and Rosin—Before the War Turpentine used to be imported and all of our requirements were

not supplied from our factories. There are huge plantations yet untapped in our forests. Some of these places are inaccessible. If tappers are trained in distillation and if small but cheap equipments are provided to them, we can import our turpentine and rosin from the forests instead of gum. This will give some more money to the tappers and supply will thus be considerably increased.

Turpentine is a source of artificial camphor in other countries and if it is so utilised consumption of turpentine may increase. Russian method of distillation from twigs may also be tried with advantage. Distillation does not require much skill and its details can easily be mastered.

Hydrochloric and Nitric Acids—Are already manufactured in the country on a very small scale, and we do not see any reason as to why the small manufacturers should be afraid of the big manufacturers, provided sulphuric acid is made available at reasonable rate. There are good many factories manufacturing sulphuric acid, but all of them do not manufacture hydrochloric and nitric acids and it will not be in their interest to raise the price of sulphuric acid. We think sulphuric acid is a chemical which will be required in the manufacture of thousands of other chemicals. Its price should not be allowed to go beyond a certain maximum, and must be controlled. We hope there will soon be a few factories manufacturing concentrated sulphuric acid and most of these establishments will not be interested in the manufacture of hydrochloric and nitric acids. This small-scale industry must be encouraged.

Sodium Silicate—It is manufactured at number of places and it is just as good as the imported articles. We have seen very ingenious methods of its manufacture. If the industry is encouraged we shall soon be able to meet our entire demand in India.

Sulphite and Sodium Sulphide—Sodium sulphate is a

by-product of hydrochloric acid and it is as well a by-product of salt manufacture. There are huge deposits of sodium sulphate at Jodhpur. It is also prepared in number of places simply by leaching. Thus there is no dearth for the raw material. From sodium sulphate to sodium sulphide or sulphite only is a small step.

Manganese and Barium Salts—India is very rich in the ores of manganese and barytes. Most of the salts in both these metals are not difficult to be made on a small scale. If Indian chemists master the technique and utilise the fuel economy we can become a first-rate country in supplying these salts. Instead of exporting the ores for a song we shall then be able to sell finished products and there will be a chance of developing number of industries in which these salts are utilised.

Coal Tar Products—Before the War there was no demand for chemicals which are the by-products of coal tar distillation. During the War the importance of these chemicals and other intermediaries has been brought home in India. There is likely to arise a set of industries utilising tar products. We envisage a time when India like Germany will be importing coal tar for preparing these chemicals and there will soon be established an industry on sound basis in these products. Most of these chemicals, which depend more on technique rather than on organisation and equipment, will easily be prepared in cottages.

In the above details we have given only an indication of the types of chemical industries which can be started on a cottage scale. We do not want to enter into more details simply because the details will look boring to the ordinary reader not interested in chemicals. However, we can mention quite a long list in this connection. In Japan dyes are manufactured in small houses, who purchase the intermediaries from big concerns. However, we mention only a few chemical industries, which are of general domestic use.

Cosmetics—It is quite a big line consisting of hair oils, soaps-washing toilet—ordinary and medicated—snows, lipsticks, etc. Most of these articles are made even now in cottages, but the efficiency, required in the manufacture of these commodities, is not of a high order, as the work is done by very ordinary people.

Pigments—Both lake, as well as, direct is a cottage industry in Japan. We see no reason as to why manufacture of pigments should require a big establishment. A good chemist with a sufficient chemical material in hand and with a few tanks some arrangement to provide steam can easily cover the entire line of pigments in all their shades.

Paint and Varnishes—Is similarly not difficult to manufacture. Proper type of mixing and grinding can be done on a small scale. It will always be the technique which will govern the secret rather than anything else.

Synthetic Drugs and Chemicals—This is a very big line and covers thousands of articles under it. If India becomes industrialised most of the intermediaries will be available at competitive prices and then for a good chemist it should no more be difficult to manufacture synthetic drugs and other synthetic chemicals. A good deal of technique is required for the success of these articles, but as far as the equipment and machinery is concerned, we need not invest very large amount nor will have to employ large number of workmen.

Fermentation Industries—Vinegar, yeast, marmite are some of the products of bio-chemistry. A good deal of technique of bio-chemistry as well as a method of control may be required in their successful working, but as far as the number of people employed and the machinery needed is concerned, one may be assured that they will never be much.

Celluloid, Cellophane and Artificial Silk—In India we consider that a very large amount of money is needed

for the manufacture of these articles. In 1935 in Japan the total production of Rayon was worth 14,92,01,000 yen out of which 2,25,23,000 yen of goods were produced in small establishments employing not more than 9 labourers. From the perusal of the annual reports we find that the number of small establishments in this line were daily increasing. If Rayon can be manufactured in Japan in small establishments, employing not more than 9 persons, why should there be any difficulty in doing the same in India.

Celluloid and cellophane are far easier to be made than Rayon. Of course, simple moulding of celluloid articles is a child's play.

Enamelled Wares—Out of the total number of establishments 22% consisted of those which employed less than 9 labourers. The industry requires more skill and knowledge of technique and a suitable furnace for annealing.

Plastics—Both the manufacture of plastic material as well as plastic goods require less of labour but more of technical skill and knowledge, and these things can easily be done in small establishments.

Without going into more details the readers must be convinced that barring heavy chemicals or big industries like fertilisers and all others which we mentioned above, practically all the articles can be manufactured on a small scale. Matches which were practically monopolised by the Swedish combine before the War are all manufactured in small establishments in Japan. It must be admitted that Japan could flood the foreign markets with their cheap matches.

Rubber Goods—Manufacture of rubber goods is both a mechanical and a chemical process. We have seen very small establishments consisting of very ordinary machines wherein latex is mixed with different chemicals and turned into sheets and then these sheets are manufactured in number of useful articles. These machines are quite handy and effective in working.

Thousands of rubber articles are manufactured with the help of these machines. We see no reason as to why such articles cannot be manufactured in our country. Rubber impregnated cloth (water proofing) is another line of these goods. Rubber belting is another.

During the War artificial rubber has found a good hold in the chemical world. India is full of raw material for artificial rubber and some of the processes do not require large investments.

AGRICULTURAL INDUSTRIES

After giving small description of chemical and mechanical Industries we only describe a few agricultural industries.

India needs small machinery like ploughs, chaff cutters, harrows, cultivators, centrifugals, hand pumps and the like in millions and all these can profitably be manufactured in small establishments, provided the right type of machinery is installed and the man knows his job.

Quite small establishments are working for the manufacture of chaff cutters in Punjab. Other articles have not yet been taken up as there has been no encouragement, but we have no doubt that these small establishments will be able to hold their own against big establishments. It is the minute study of the requirements of the agriculturists rather than the big investment necessary to manufacture these articles. If a proper study of the requirements is made and good type is evolved the manufacture of the same will not be difficult.

Dairy Products—It is a pity that every profitable line in agriculture is being monopolised by the capitalists and industries quite suitable to the farmers are being usurped one by one. Agriculture is the least paying industry in the world but when we deprive the farmer of all connected industries, we make him poorer still. Dairying is an allied industry to agriculture but

the farmer is only made either to sell his milk to the middle man or to manufacture Ghee. Dairy is one of the industries whose profits begin to dwindle the more you take to processing. Milk fetches the highest price, while cream fetches less, butter still less and ghee gives the least. But in all remote villages poor man is forced to prepare ghee and sell it against cheap adulterated hydrogenated oil. Adulteration is rampant in the entire business and honest man has no place. Government will do nothing to stop dishonest dealings and without it no improvement in business can be made.

If we prepare condensed milk or milk products we can get far better prices than turning milk into ghee. Condensing of milk is not a difficult process. We saw quite a small outfit consisting of a small vacuum pan only to prepare condensed milk. It was being run only with the help of a few men. Such establishments, if started, must add some money to the income of the agriculturists. Milk foods specially for children and invalids will be only a small step from condensed milk. We can stop all imports in that line. We are aware that Dr. Wright has recommended that we should not manufacture these products but we beg to differ from him for the simple reason that anything which gives us more money must be adopted in place of highly wasteful method of ghee manufacture.

Cheese making is another line. Soft cheese is already known in the country and it is the base for all Bengali sweets. Soft cheese cannot be kept for long. In other countries good cheese is made by the farmer specially in Italy and Holland. The method is quite simple. Even if we take objection to the use of animal product for curdling milk there are number of vegetable products which can be quite usefully employed in its manufacture. There is need both for investigation and organisation, but once this line is started useful material for human food will be saved.

Casein was manufactured in number of places and sent to Germany before the War. Its use in plywood as glue and as coating for art paper are very well known. The manufacture is not a complicated one. In remote places wherefrom milk cannot be easily transported its manufacture may serve quite a useful line.

Butter and cream are manufactured in Aligarh and many other places in quite small establishments. But all these shops are owned by the non-agriculturists. The farmer is simply exploited by the middleman. We wish that this work may be done in the homes of the producer himself so that he may get a few coppers more from this business.

Food Products —Are quite a big line. As we have stated in Part II during the War the Government encouraged the manufacture of number of food articles, a brief description of which we have already given. The list mentioned there is not at all exhaustive. A simple survey of food products that come to the market from foreign countries will convince the readers of the huge possibilities of this line.

Dried sweet potatoes are common feature in Formosa, where sweet potatoes are cut into small pieces by a treadle machine and they are simply dried in the sun. This least expensive method can be easily introduced in place of highly expensive dehydrating factories. Similarly, potatoes can be cut and dried and we are sure they keep better than those prepared in dehydrating factories. Of course the little profit in that case will go to the producer and not to the capitalist. Carrots can similarly be dried and be made into flour, if necessary.

Dried vegetables were very well known in the country and quite a large number of vegetables were preserved in that respect. If proper organisation be made, we can give a side industry to the agriculturist.

Sauce, Pickles and Achars—This industry is quite common in every home in India. But the farmer never cared to make money out of this industry. Articles prepared are both tasty and cheap. In this commercial age perhaps there is need to organise the growers into manufacturing these articles. The experience is already there, it is only the training in proper packing and the arrangement for sale which is required.

Thousands of maunds of mango in its different stages go to waste every year and are sold for a song. If a proper arrangement for its utilisation be made we shall be adding to our food resources on the one hand and to the income of the cultivator on the other.

Wild fruit and herbs—There are number of wild fruits and herbs which are utilised for the purpose. There may be huge potentialities in their development. The only thing required is to give people a proper training and make them money-minded. Of course, proper packing material will have to be provided.

Vinegar—This is a very old industry of the country. But since no exploitation of this source was ever thought of, small lots were prepared and locally utilised. Good flavour vinegar was manufactured in the crude manner possible but now synthetic vinegar is the order of the day. People purchase acetic and mix it with water and add artificial flavours. Sometimes fruits or their juices are mixed and kept in the sun for a few days to acquire flavour. If this practice is stopped, a brisk trade can be done by the farmer in this line. Vinegar can be prepared from cane juice and many other juices besides jaggery. Though with a little training village method of manufacture can be easily improved yet there will be no difficulty in giving training in the scientific method of vinegar manufacture.

Starch Making—Is really a cottage industry. In Cheeba prefecture of Japan starch from sweet potato is manufactured in many a small establishments. This industry can easily be established where sweet pota-

toes grow well, specially in Assam and Central Provinces. In America more starch-producing varieties have been evolved and we can successfully introduce these strains.

Tapioca can be grown in number of places and this can serve as a starch-producing plant. It gives the finest and purest starch.

With a small equipment consisting of stone grinders (ordinary chakki) and a few sieves one can take to the preparation of starch specially when grains like jowar and maize are employed for the extraction of starch. Main beauty of making starch in villages is that no by-product of it will be wasted and all the waste material can be utilised as cattle or human feed.

Fibre Industries—Though for ordinary cordage fibre is produced in every village but no attempt has been made in stabilising this industry. Method of retting and extraction must be improved. There are simple machines both for extracting fibre as well as for turning the fibre into ropes and strings. Such equipments can be introduced with advantage.

Citric and Tartaric Acid—Manufacture of both these acids is an agricultural industry in other countries but we import quite a lot of these acids. There is no reason why these acids be not manufactured in the country.

Salt, Sodium Carbonate, Sodium Sulphate, Potassium Nitrate, Sajji Matti—Are some of the articles which are being manufactured from time immemorial. But these industries have got a set-back due to the ignorance of the manufacturers in up-to-date methods as well as due to the nasty excise laws. The matter requires a proper looking into to establish these industries on their old basis.

We can add to the above list a large number of industries but do not propose to do so inasmuch as that once a proper incentive is given many new industries will suggest themselves. The only thing required is the interest to be taken in cottage industries by the

leaders of public opinion and the Government. We would refer the readers to go through our Hindi book on the economic development of Japan, wherein they will get into the details of organisation and functioning of these industries in that country.

