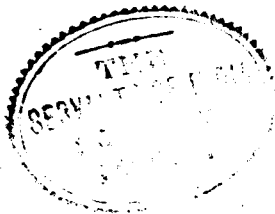


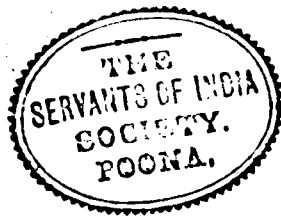
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ECONOMICS OF KHADDAR

Economics of Khaddar



By
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PUBLISHER, TRIPLICANE, MADRAS.

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APPENDIX A

CHARKHA AS THE ONLY COTTAGE INDUSTRY *

"In order to understand properly what the Charkha movement means, one must first have a clear idea of all that it does not mean. For instance, handspinning does not,—it is not intended that it should,—compete with, in order to displace, any existing type of industry; it does not aim at withdrawing a single able-bodied person, who can otherwise find a more remunerative occupation, from his work. To compare, therefore, the remuneration that handspinning offers with the earnings offered by any other occupation, to measure its economic value in terms of returns and dividends can only serve to mislead. In a word, handspinning does not claim to satisfy the economics of 'getting rich.' The sole claim advanced on its behalf is that it alone offers an immediate, practicable, and permanent solution of that problem of problems that confronts India, viz. the enforced idleness for nearly six months in the year of an overwhelming majority of India's population, owing to lack of a suitable supplementary occupation to agriculture and the chronic starvation of the masses that results therefrom. There would be no place for the spinning wheel in the national life of India, comparatively small as the remuneration that can be derived from it is, if these two factors were not there. A proper appraisal of the economic value of the Charkha would therefore involve a consideration of the almost incredible poverty of the Indian masses, and partly of its causes, inasmuch as the remedy is to be sought in the removal of the causes.

The gradual extinction of all of India's principal indigen-

*Two articles by Mr. Gandhi published in *Young India* for Oct. 21 and 28, 1926. Also parts of two other articles by him on the handloom and Charkha as supplementary industries.

ous industries, without any new ones arising to take their place; the steadily growing ruralisation of the country; the deterioration of the existing stock of cattle; scarcities and famines following in quick succession—"one year's failure of rain producing an acute famine where three years of deficient rainfall were necessary to bring about a famine"*; the progressive pauperisation of the agriculturist, rendering him incapable of making any improvement in the little bits of his minutely subdivided holding, which are in their turn unfit for the application of new implements and improved methods of agriculture; the control over agriculture of the money-lending agencies driving the agriculturist to concentrate on cotton and aggravating the evil of high prices of food-stuffs; all these and many other factors have combined to make poverty and unemployment the stupendous problem of today. The middlemen of the town and city, dumping manufactured cloth from Lancashire into the villages deprived of their life-giving handicrafts, and the mills which the example of the West has taught us to erect on the ruin of the handicrafts have rendered the solution of that problem more acute by entangling it with the new one of excessively unequal distribution of wealth.

There are Dr. Buchanan's and Montgomery Martin's surveys of Northern India during the first quarter of the nineteenth century to bear eloquent testimony to the villages and towns smiling with plenty, to the vast voluntary organisation that was at work in every town and village, keeping millions of spinners, tens of thousands of weavers, and thousands of dyers, bleachers, carpenters, smiths and smaller handicraftsmen busy throughout the districts, all the year round, and bringing millions of rupees and distributing them equably in Bihar, Bengal, U. P. and Mysore. If official testimony were needed for the contrast the picture of the present day India bears to

* Digby

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that of those days, enough is to be had in the Census Reports. Look at the average size of an agricultural holding in the various provinces:

The average size of a holding in the various provinces.

Province	Size of a holding (in acres)	Province	Size of a holding (in acres)
Assam	2.96	C. P. and Berars	8.48
Bengal	3.12	Madras	4.91
Bihar & Orissa	3.09	N. W. F. Province	11.22
Bombay	12.15	Punjab	9.18
Burma	5.65	U. P.	2.51

(Census Report for 1921—Vol. I.)

It is on these impoverished holdings that 72 per cent. of the population is supposed to subsist. This, says the Census Report, "utilises to the full neither the energy of the worker nor the productivity of the soil." Mr. Thompson, the Census Commissioner for Bengal says: "The number of actual workers in cultivation . . . in British Bengal is 11,060,629. This means 2.215 acres per worker. It is in such figures as these that the explanation of the poverty of the cultivator lies. The cultivation of less than 2¼ acres of land cannot employ a man for more than a comparatively small number of days in the year. The cultivator works fairly hard for a few days when he ploughs his land and puts down his crops and again when he harvests them, but for most of the year he has little or nothing to do." "The acreage per worker," says the same writer, is very much larger in all the great wheat-producing countries of the world." Mr. Edye (U. P. Census) describes the agriculture of the Province as involving "very hard work for certain short periods. . . . and almost complete inactivity for the rest of the year. These periods of inactivity are spent in idleness." Thus Mr. Houghton (C. P. Census): "The Kharif crop which is

raised at the end of the rains is the only crop of importance that is grown, and when this crop is gathered there is a scarcity of employment until shortly before the break of the next monsoon." Mr. Calvert, in his book *The Wealth and Welfare of the Punjab* estimates "that the work done by the average cultivator in the Punjab does not represent more than about 150 days' full labour for 12 months." When this is the state of things in a province where the average size of a holding is comparatively very large (9.18 acres), and where the percentage of irrigated area (which keeps the agriculturist better employed than dry areas) is the second highest in India, the state of other provinces can well be imagined.

It is thus clear that all these officials are unanimous on the point that the whole of the agricultural population remains without work for at least half of the year, and one or two have made pointed reference to that fact as the sole cause of the poverty of the agriculturist. When even in Lancashire with an acreage of 21 per peasant it is thought that "it would be a great boon if in bad weather and winter the agriculturists had something to do in their homes of a remunerative character as in days past", * and in Italy with an important textile trade of its own, "the peasant women of almost every district where mulberry trees can be grown are fully occupied with spinning", † the importance of a subsidiary cottage industry connected with agriculture in a country of the vast magnitude of India should need no argument.

But what exactly that subsidiary industry should be has been the subject of much argument—ever since, and only since the inception of the Charkha movement, as let us hope even the critics of the Charkha will recognise. Let us hope that they will recognise that it was the Charkha that first set them

* Green—*Rural Industries of England*.

† Bombay Mill-owners' statement to the Tariff Board.

athinking. Once they recognise it, one might humbly submit to them the fact that the Charkha is no new invention like *e. g.*, Ford's motor-car; it is a re-discovery, like the discovery of its own mother by a strayed child. The critic must not forget that the child here is a vast multitude of people, the most conservative in the world, and scattered over a continent nineteen hundred miles long and fifteen hundred miles broad, and the mother the handicraft that gave them all warmth and sustenance.

Once this fact is understood, no one will seriously press the claims of any other industry. Industries there are enough and to spare. Why not try dairying? Well, India is not Denmark which easily possesses 40 % of the butter trade of England. In 1900 Denmark received 8 million pounds from England for butter and 3 million for bacon, the raising of pigs being an important adjunct of the dairy industry. But India cannot find a bigger India to export its dairy products. And no one will ask the India of Hindus and Mussalmans to engage in the bacon-curing Industry. Poultry-rearing and bee-keeping may also be dismissed on the same score, if not on the ground of their novelty and their necessitating technical skill. India cannot today develop her agriculture and increase the one acre per inhabitant that it has today; for India is not Ireland which has its wonderful Department of Agriculture organising numerous colleges and placing numerous experts at the disposal of County Councils. Nor will any one suggest that the vast mass of people can take up sock-knitting, or cane-work, or basket-making. These do not and cannot command the ready and permanent market that yarn always does. Even today in parts of Bengal and Madras the old tradition of yarn markets continues. Why not have a jute-mill in the jute areas of Bengal, suggests a Bengal Civilian, with unconscious humour. Possibly he is wondering why none of his brother Civilians has suggested the establishment of more cotton mills in cotton

areas. He forgets the jute mills employ today not more than 250,000 labourers, impoverish the jute grower and fatten a few capitalists and middlemen. After 70 years of cotton industry and having some 50 crores of capital the cotton magnates* claim to have given their daily bread only to nearly 1½ million souls representing the families of 370,000 millhands employed by them, and a handful of clerks and superior staff.

But, it is objected, spinning affords only a miserable pittance and is thus an economic waste. It is forgotten that spinning has never been put forward as a principal occupation. It is offered to those who would otherwise waste their time in idleness. Whether two annas per day, or let us say an anna per day, or Rs. 24 yearly is a miserable pittance, is a matter that can be judged by one who has seen the 'chill penury' of the masses with his own eyes. This is no place to discuss the income per head in India. The Indian Economic Enquiry Committee cited estimates of no less than 15 authorities taken at different times. Ever since Dadabhai Naoroji started the chase of that golden hind, a number of others have pursued it, no one yet being recognised as having captured it. But assuming even what appears to be an estimate farthest wide of the mark as the correct one, viz., that of Rs. 116 by Mr. Findlay Shirras, one may like to know if Rs. 24 is not a substantial addition to that income!

Whereas handspinning presents the following special features which render it pre-eminently suitable as a remedy for India's present economic distress:

- I. It is immediately practicable, because
 - (a) It does not require any capital or costly implements to put it into operation. Both the raw material and the implements for working it can be cheaply and locally obtained.

*Bombay Mill-owners' statement to the Tariff Board.

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(b) It does not require any higher degree of skill or intelligence than the ignorant and poverty-stricken masses of India possess.

(c) It requires so little physical exertion that even little children and old men can practise it and so contribute their mite to the family fund.

(d) It does not require the ground to be prepared for its introduction afresh, as the spinning tradition is still alive among the people.

2. It is universal and permanent, as next to food, yarn alone can be sure of *always* commanding an unlimited and ready market at the very doorsteps of the worker, and thus ensures a steady regular income to the impoverished agriculturist.

3. It is independent of monsoon conditions and so can be carried on even during famine times.

4. It is not opposed to the religious or social susceptibilities of the people.

5. It provides a most perfect ready means of fighting famine, as we shall see in Section 2.

6. It carries work to the very cottage of the peasant and thus prevents the disintegration of the family under economic distress.

7. It alone can restore some of the benefits of the village communities of India now well-nigh ruined.

8. It is the backbone as much of the hand-weaver as of the agriculturist, as it alone can provide a permanent and stable basis for the hand-loom industry which at present is supporting from 8 to 10 million people and supplies about one-third of the clothing requirements of India.

9. Its revival would give a fillip to a host of cognate and allied village occupations and thus rescue the villages from the state of decay into which they have fallen.

10. It alone can insure the equitable distribution of wealth among the millions of inhabitants of India.

11. It alone effectively solves the problem of unemployment, not only the partial unemployment of the agriculturist, but of the educated youth aimlessly wandering in search of occupation. The very magnitude of the task requires the marshalling of all the intellectual forces of the country to guide and direct the movement.

What it has actually achieved and promises to achieve must be considered in a separate section."

II

WORK ACHIEVED

"In this section we shall consider how far the claims advanced in the first section on behalf of the Charkha have been realised. This involves a history of the Charkha movement since its inception in 1920, but we shall attempt no such thing. The salient features may be noticed :

1. Organisation ;
2. Work ;
3. What Charkha has done in individual cases and in famine areas.

1. *Organisation.* Instead of the scattered efforts of the beginning, we have a regular organisation with branches in every province and with something like a capital of 15 lakhs, collecting assets and distributing loans, publishing reports of production and sales in the various provinces month by month, collecting and publishing all valuable data ; making experiments in improving the Charkha, the carding bow and the handgin, and popularising them ; receiving yarn from voluntary spinners, accurately testing its quality and directing so far as is possible the various producing centres in the matter of improving the yarn and cloth ; training workers in all the technical processes

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from the picking of cotton to the final weaving and dyeing of cloth and making it ready for the market; and organising a Khadi Service.

2. *Work*—The concrete work of the All India Spinners' Association may be noticed under several heads :

(i) Production and sales, effective marketing of the products by hawking and exhibitions (ii) Improvement in the quality of yarn and cloth ; (iii) Reduction in the cost and price.

(i) The figures of production cover only that done under the supervision of the Board. They do not represent such production as has been traditionally in existence in parts of Assam, Rajputana, Punjab, and Andhra, independent of the Charkha movement.

The figures for production for the year 1924-25 total Rs. 1,903,034 as against 949,348 in 1923-24 *i. e.*, more than double. It is not necessary to give the figures for sales as they represent those for production, practically every yard of Khaddar that is produced being sold. Rs. 1,903,034 worth of cloth means 3,806,068 yards of cloth (the average price of a yard being as. 8) which in its turn represents nearly 1,522,427.2 lb. of yarn. Taking 5 yards as the average daily production of a weaver (in view of the temporary inferiority of the handspun yarn in the beginning) and 300 as the number of his active working days in the year 3,806,068 yards production means the labour of nearly 2537 weaver families. Now taking 25 lb. as the average yearly production of yarn of a spinner, (spinning three hours and giving an hour to ginning and carding) 1,552,427.2 lb. means the labour of nearly 60,897 spinners. This is nothing in proportion to the millions for whom we have to find work, but it must be remembered that it is the fruit of only five years' effort, or rather two years' concentrated effort.

These figures, however, are for 1924-25. *The current year* has shown a great advance on the previous year as will

appear from the following comparative figures of work in three principal centres :

TAMIL NADU—MADRAS

(October to February)

	1923-24	1924-25	1925-26
	Rs.	Rs.	Rs.
Production	1,84,000	1,96,000	4,10,000
Sales	1,41,000	2,15,000	3,40,000

KHADI PRATISHTHAN

	6 months	4 months	6 months	4 months
	July to	Jan. to	July to	Jan. to
	Dec.'24	April'25	Dec'25	April'26
Production	30,000	30,000	1,80,000	90,000
Sales	10,000	40,000	30,000	90,000

COMILLA—ABHAY ASHRAM

	1924	1925
Production	21,013	80,000
Sales	21,822	74,620

PUNJAB

	1924—'25	1925—'26
Production	23,634	51,437
Sales	29,551	45,060

The detailed Khadi statistics being published in *Young India* every other week during the last two or three months are eloquent of the work of the spinning wheel. To take only the important centres, the Khadi Pratishthan (Bengal) regularly gives work to 10,000 spinners and 750 weavers, serving scores of villages; the Ashram at Tiruchengodu (South India) finds work for 2,241 spinners and about 150 weavers, serving 115 villages; the Kathiawar Khadi Depots employ 2,313 spinners

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and 120 weavers, serving 121 villages; the Abhay Ashram, Comilla, serves 10,000 spinners and 150 weavers, and about 20 groups of villages. Figures for Bihar and Andhra are not yet available, but the number of spinners can be imagined from the amount of about Rs 60,000 distributed by the Bihar Branch (A. I. S. A.) and Malkhachak Kutir to them; and in the Ongole Taluka alone of the Guntur District (Andhra) there were, in 1925, 9,900 spinners who earned an average daily wage of as. 2, having worked during their spare hours.

(ii) *Improvement in the quality of yarn and cloth and (iii) Decrease in the cost and price* may be considered together.

Whereas five years ago yarn of high counts was a rarity not only Andhra but Bihar and Bengal both produce it now. The quality of ordinary yarn is being daily more and more standardised—15 to 20 counts being the usual quality spun everywhere except in Gujarat. Not that we have yet been able to completely perfect the yarn, but the defective yarn may be regarded as a passing phase as is evidenced by the rapid improvement shown as a result of 10 weeks' intensive effort at Satyagrah ashram, Sabarmati. In the first week only 3 spinners out of 100 spun passable yarn of over 50% test, only 3 of them spinning over 70%. The fourth week showed 64 spinners securing over 50 per cent test, 23 of them over 60%, 2 over 70%, and 1 over 80%; the ninth week showed 104 (out of 111 spinners) securing over 50%, 30 of them over 60%, 29 over 70%, 17 over 80%, 4 over 90%, and 2 over 100%. It should be noted that corresponding yarn of 20s, of Calico Mills (Ahmedabad) was of 90% test, Shahpur Mills (Ahmedabad) 85% test, and Commercial Mill 69%.

This is not a solitary instance. All Khaddar Depots are now testing the yarn they receive and have practically decided not to accept yarn under a standard test.

Now as to the prices. Effective decentralisation and integ-

ration of processes is the keynote of the economics of hand-spinning, just as centralisation and the division of processes is the law in large-scale production. Thus in Gujarat where ginning, carding and spinning are done by different persons, the cost of production of yarn was Rs. 0-9-4½ per lb; in Tirupur where the spinner cards for himself, the cost was Rs. 0-6-10½; in parts of Bengal ginning and carding are both done by the spinner bringing down the cost to Rs. 0-5-6.

The result of efforts in this direction has been a remarkable decrease in the cost of production in all provinces except perhaps in Gujarat. The cost and price in Tamil Nadu, in Andhra and in the Punjab show today a 50% reduction over what they were in 1920; 25% over what they were in 1922. In Bengal the Khadi Pratishtan prices still rule high, though they are lower than they were three years ago, but the Abhay Ashram, Comilla has achieved a record reduction. A pair of dhoties (8 × 44") which cost Rs. 7-8-0 in 1921, cost Rs. 6 in 1922, Rs 5 in 1925 and Rs. 3-12-0 in January 1926; so much so that the Ashram bids fair now to quote prices lower than the Banga Laxmi Cotton Mills. It may be remarked in this connection that the reduction of the price to the extent of 50% is really to the extent of 100% inasmuch as the quality of cloth is certainly 50% better than it was 5 years ago, though we recognise that the reduction is partly due to a fall in the price of cotton during the last two years.

One more thing may be noted. A final stage in the development of the economics of handspinning is reached when the spinner not only performs all the preliminary processes, but begins to stock his own cotton. This was done with wonderful results in Kathiawar last year. They not only had good cotton, but saved a lot of waste, and spun better quality of yarn. At the present time, the whole cotton crop is controlled by middlemen or agents of the mill-owners who take away the cream of

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the harvest leaving only indifferent cotton behind, which is mostly the cotton used by the handspinners, and which partly explains the inferior quality of yarn. When the handspinning agriculturist understands his own interest better, as soon he must, he would automatically stock his own cotton, and spin for personal use— not for wages.

2. What Charkha has done in individual cases and in famine areas.

i. *Individual cases* : Treatment of the Charkha from a purely economic point of view precludes one from describing the moral revolution it has brought about in many an individual case. But the temperance and freedom from indebtedness that have come in the wake of the Charkha are as much economic as moral results. This has happened everywhere, but the results have been on an extensive scale in parts of Gujarat. *Young India* for August '26 describes in an article entitled "A Successful Experiment" the reforming influence of the Charkha in Kaliparaj areas in Surat District and mentions no less than 26 agriculturist families who had holdings of 9 to 34 acres and who were therefore engaged in agricultural operations for a large part of their time, found time to spin during the year 20 to 60 lbs. of yarn. That, by the way, is an indication of the potentialities of the Charkha.

ii. *In Famine Areas* : It is difficult to indicate in brief the way in which Charkha came to be adopted as a relief measure in famine areas. Famines, some might say, occurred in the days of the Charkha too. Indeed they did, but with nothing like the frequency that they have occurred since 1864. The famine of 1777 was more a scourge of God than a famine, but for years after there was no famine. Ever since there have been commissions on commissions which have only emphasised the essential difficulty of State relief. There is reluctance of those unaccustomed to famine to seek relief, there is eagerness of

those accustomed to famine to accept relief; there is demoralisation that follows when families are broken up and half-starved masses become a moving multitude. "The maintenance of the village system is the only means of saving life by preserving order" said Sir Edward Caird. By nothing could this be maintained so well as by taking the means to earn relief to the very door of the famine-stricken *vis*, the Charkha. That is the only work which can be done by young and old, decrepit and infirm, day and night, and without any strain.

Dr. Ray first tried paddy-husking and other forms of relief in the flood and famine areas of West Bengal in 1923-24, found that they were to no avail, and tried the Charkha which worked to perfection. The amount given as spinning, weaving, and ginning charges in the four centres *vis*, Talora, Champapur, Durgapur and Tilakpur was Rs. 38,000. But that is nothing. What can be called a signal achievement is that the Charkha has now made a permanent home in those areas, enabling the people to supplement their slender means and to resist crop failures and floods more effectively than ever before.

But before proceeding to speak of the potentialities of the movement, we may briefly deal with what is represented to be a great obstacle in its progress.

III

IS MACHINE-MADE CLOTH AN OBSTACLE ?

So far we have considered the actual work achieved. That work in itself should contain the promise of its future possibilities. But, it is said, we are not reckoning with the competition of the machine-made cloth. Is it, however, fair to say that there is a competition between the home-made and the machine-made cloth? There can be competition between mills and mills, say foreign mills and indigenous mills, mills driven by steam-power and those driven by electric power. But how can there

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be, or rather why should there be, any competition between one which is an essentially vital industry and another which is not? We shall make our meaning clear. Among the most crying needs of the day is relief from the economic distress of the millions of the peasantry—removal of the partial unemployment of the agricultural classes. We have seen in the foregoing chapters that the spinning wheel is the only industry that can give such relief and such employment. We have seen that fifty crores of capital that the mills have sunk can give their daily bread to only $1\frac{1}{2}$ million souls representing the families of 3,70,000 mill-hands who are largely drawn from the agricultural classes. Now supposing that the mill industry expands to the extent of the total cloth consumption of India, will the matter be any the better so far as the starving millions who are badly in need of a subsidiary industry are concerned? Let us see. Our cloth consumption today is 4,661 million yards (1789 mill production plus 1769 imports plus 1103 hand-loom production.*) To produce 4,661 million yards about 1,165 million pounds of yarn is needed according to Coubrough's calculation. Now in the year 1922-23, 239 mills with a spindle equipment of 7,245,119 produced 705 million lb. of yarn with the labour of about 350,000 operatives. Therefore to have 1165 million pounds of yarn it would be necessary to have about 11 million spindles, and to convert the yarn into cloth a corresponding number of looms i.e., 215,655 looms. To work these 11 million spindles and 215,655 looms, the number of operatives will at an outside estimate be 6,00,000. This means that 2,500,000 men at the most can find their living from the industry. And these men are largely lost to the soil. Therefore the mill industry at best can tear from their homes so many agriculturists. It cannot give a single one of them a supplementary industry. The mills

* Figures of mill production and imports are for 1924-25, and hand-loom production are for 1922-23.

and the spinning wheel are therefore dissimilars admitting of no comparison.

Let us now see how many souls the same amount of cloth produced by our home-mills can find employment for. 4,661 million yards of cloth means 1,165 million lb. of yarn. Adopting the same computation as the one we have done in the second section, production of 1,165 million lb. of yarn would require at least 46,600,000 wheels producing 25 lb. a year. This means that 46,600,000 spinners would supplement their income by spinning. Add to these 46,600,000, thousands of ginners, carders, sizers, dyers, carpenters, smiths, and educated organisers and 3,107,033 weavers necessary for the maintenance of the industry. This means about half of the adult agricultural populations of India deducting 61.4 million children under 10 from the total 224 million agricultural people.

And whereas the mills would need an extra 40 to 50 crores of capital very little would be required in the present case i.e., only the money needed for stocking cotton where it is not grown, and for the remuneration of workers occupied in organising the industry. The reasons are obvious. There are already lakhs and lakhs of wheels in the country lying idle which simply need a little dusting and brushing up. The Census Report for 1921 has an incomplete list of the number of handlooms in each province. But the total which does not include the looms in U. P., Bombay, C.P. and Mysore is 1,938,066. The actual number is therefore likely to be as great as, if not greater than, that needed for our total consumption.

Now we have seen in the second section that so far as the consumer is concerned, it has been possible to secure his response to this vital industry and it has been possible for the industry to meet his wants in increasing proportion, for a progressive improvement in quality and cheapness has been steadily maintained. The industry is vital because its conception is based

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as we have seen on economics founded upon life. 'Nations,' says a writer, 'must have an economy that enables them to live'. Here is an industry which will enable the nation not only to live but to live as a nation, to live as a nation producing wealth which is real and equitably distributed, not wealth which in Ruskin's picturesque language "may in verity be only the gilded index of far reaching ruin; a wrecker's handful of coin gleaned from the beach to which he has beguiled an argosy."

Is it too much to expect the State to protect such a life-giving industry? Is it too much to expect them to extend it their exclusive protection even as it is extended to a vital service like, for instance, the Postal service? It is quite usual in some countries to protect the "market rights" of municipalities. And in protecting our "market rights" in respect of Khaddar, Government will but expiate for the sins of their predecessors who strangled the one vital industry of the land.

But assuming that the Government continues to maintain an indifferent attitude, and the home industry has to fight its way under the so-called free-trade conditions, and the buyer is called upon to choose between Khaddar and mill-cloth, let us see how far Khaddar has to compete with millcloth. Let us compare the cost of manufacture of a lb. of cloth by a cotton mill and by the home-organisation.

*Cost of manufacture of a lb. of mill-cloth.	Pies	Cost of manufacture of a lb. of hand-made cloth.
Coal	10'09	Carder's wage 0-1-0
Stores	14'46	Spinner's „ 0-3-0
Labour	39'69	Weaver's „ 0-7-6
Office & supervision.	3'41	Depreciation in materials 0-0-6
Fire Insurance	1'67	
Municipal and other taxes.	1'57	
Interest	5'66	
Commission on cloth	4'60	
Agent's Commission	0'83	
Income tax & Super tax	1'94	
	83'92	
	<i>i. e.</i> , 0-7-0	0-12-0
Difference		As. 5.
Difference per yard		As. 2.

We see from the above that though we save to the extent of 4 as by the elimination of charges for fuel, stores, commissions and taxes etc., we lose 6 as. extra on the operatives' wages. Thus the consumer who is a pure consumer *i. e.*, who does not card his cotton or spin his yarn has to pay an extra as. 2 for a yard of cloth. As soon, however, as the consumer becomes his own carder and spinner, he saves four annas and the prices of a yard of homespun and a yard of mill cloth are nearly equalised. A final stage in the development of the economics of handspinning is reached when the spinner not only gins and cards for

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himself but stocks his own cotton as he once used to do, and as during the last two years a number of agriculturists were induced to do. We have nearly ten million agriculturists growing cotton, if we may take the percentage of the cotton area to the total area under cultivation. If these agriculturists themselves stock their own cotton, as is the objective sought to be attained in the near future, they will have the cloth not only for the weaver's wage, but even cheaper *i. e.* cheaper than the mill cloth, as they will not have to pay any charges for transport as well as the charges for "breaking" and "opening up" bales of cotton when it arrives in the mills, and the middlemen's profits on the purchase of cotton. Nay more. For to an agriculturist growing cotton, the price of a few lbs. casually picked for home consumption before the harvest is marketed, will be of no consequence, and he will therefore have this cloth just for the weaver's wage. This has actually happened in many individual cases.

There are other factors, besides, which, as the industry progresses, will count in the economics of hand-spinning.

i. The cost of manufacture of mill cloth is always bound to fluctuate inasmuch as the industry is not on a philanthropic but on a commercial basis. Thus for instance, in 1924, the cost was double that in 1914. It is likely to increase in the near future, if only because the mill-owners will expect to cover the successive losses during the past three years. Whilst so far as the hand-weaver is concerned his wage is bound to remain stable if not to decrease, as it is not unlikely. For take the case of Tadpatri (South India) where the following reductions in the rates for weaving have been made:

16s	from	0	5	0	per yard	to	0	3	3
12s	"	0	3	0	" "	to	0	2	3
10s	"	0	2	0	" "	to	0	1	3

ii. Another factor is the improvement in the quality of

cotton by the release of agriculturist from the control of the exporter's agent who at present takes away the pick of the harvest.

iii. A third factor is the control on his yarn of the spinner who can go on improving the count and economise the raw material.

iv. The spinner can spin up to 40s and 50s from indigenous varieties of cotton like *roseum*, while the mills cannot spin that count from the variety and will have to fall back on foreign cotton which is dearer.

v. A handloom weaver can introduce special patterns each time he prepares a new warp, for his warp is only about 10 to 30 yards long whereas the mill-warp has to be at least 500 yards and no order for a special pattern can be undertaken unless for hundreds of such pieces.

vi. The handloom weaver can easily introduce various new and variegated weft designs in the end or the border of the cloth, which it is not easy to do in the case of a power-loom.

Whilst we are speaking of handlooms it may be well to dispel a doubt that is often expressed: 'You may not count on handlooms. They must and they will prefer to depend on the mills for their yarn.' that the bulk of the handlooms depend today on mill-yarn is true, for we have not yet reached the perfection in the production of yarn that can easily attract a handweaver. But to argue with Marshall, as a Census Commissioner has done, that textile materials are especially adapted for machine treatment, is to fly in the face of the history of the old Indian textile industry. We have of course yet to reach the "fineness and utility" of the Dacca yarn that was declared by a special Commission in 1864 to be superior to mill-yarn in every respect. But as indicated in the preceding section improvement has been rapid in the direction and still continues.

However that may be, the handlooms must remain partially

idle and the weavers must starve if hand-spinning does not come to their aid. In 1923, 1,103 million yards of cloth was the yield of 19,38,072 handlooms, which gives an average of only a third of its productive capacity or an income of less than Rs. 6 for the weaver, taking 2 annas as the rate of each yard woven. If instead of depending on the limited supply of mill yarn they had a sufficient supply of handspun yarn, such as it is, so that they could increase their average output to even 4 yards a day they would easily get Rs. 15 per mensem.

But the interesting fact to note is that the handloom weaver is being driven day by day to the handspinner. For the mill is "also a rival weaver of cloth and well aware of it." It cannot afford to supply him with yarn to an unlimited extent. "During the war," said the Bombay Millowners' Secretary's letter to Sir Charles Innes, dated September 15th 1925, "there was no increase in spindles, but new looms have been installed at the rate of 5,000 a year. The average annual output per loom has also been increased.....*The result is that the industry which in the early years of the century was largely a spinning one, is now very largely a weaving industry.*" It does not require much argument to see that any system of production that depends for its supplies on a rival system can continue its existence only on the latter's sufferance. As handloom weaving becomes more and more popular and universal, the present competition is bound to become fierce and deadly, and all who insist on encouraging the growth of handloom industry in India, without making provision for the supply of yarn to them from spinning wheels, should beware. They might drive the handloom weavers headlong to ruin and expose themselves to the charge of dishonesty. Handloom weaving presupposes for its existence that of handspinning. They stand or fall together. A Charkha in every home and a loom in every village should be the formula of the new dispensation.

However in the transition stage, a lot of educative propaganda will have to be done. We have to stimulate clean and healthy motives amongst the people, we have to awaken them to livelier consciousness of the fact that cloth made out of yarn spun by the hands of the daughters and sons of the land can never be too dear for them. So long as the mills continue to produce cheaper cloth by exacting a subsidy from the nation in the shape of 'drawing on its capital stock by deteriorating the physique, intelligence and character of the operatives,'* the patriotic citizen must continue to pay the generous subsidy of a restraint in his tastes, of his patriotism, and willingness to pay a higher price."

HANDLOOM v. SPINNING WHEEL †

BY M. K. GANDHI

"It seems now to be generally recognized that India, having more than 71 per cent of her population as agriculturalists, more of whom are idle for nearly six months in the year, needs a supplementary industry and that that industry to be universal can only be hand-spinning. But some contend that hand-weaving is better because it is more remunerative and therefore a better proposition.

"Now let us understand this argument in some detail. It is said that hand-weaving gives about eight annas per day as against one anna from hand-spinning. Therefore if a person works for only two hours per day, he will earn from hand-weaving two annas against one pice in the same time from hand-spinning. It is added that one pice would be no economic attraction to anybody and that if hand-weaving could be

* Sidney Webb.

† *Young India*, Nov. 11, 1926.

presented to the people, it would be wrong to ask them to do hand-spinning *instead*. The protagonists of the handloom contend further that there is no difficulty about getting as much mill-spun yarn as may be required for India's needs, and finally they say that even for the sake of keeping alive hand-weaving which has hitherto defied the competition of weaving mills, it should be pushed with vigour and determination. Some of the protagonists of hand-weaving even go so far as to say that the hand-spinning movement is mischievous in that it turns people's attention away from the possibility of hand-weaving and misleads them into supporting an impossible industry which has died of its own inherent weakness.

"Let us test this specious looking argument.

"In the first instance, hand-weaving is not a practicable proposition as a supplementary industry, because it is not easy to teach, it has never been universal in India, it requires several hands to work at, it cannot be done during odd moments. It has been and can only be generally an independent occupation and is in the majority of cases the sole occupation like shoemaking or smithy.

"Moreover hand-weaving cannot be universal in the same sense that hand-spinning can be. India needs 4,661 million yards of cloth per year. A weaver weaves on an average three quarters of a yard per hour of rough khaddar. Therefore if all foreign, indigenous or mill-made cloth could be excluded, at the most, nine million weavers working at the rate of two hours per day would be required to produce the whole of our annual requirements. If it be contended that not so many weavers but so many families be occupied, then the two annas for two hours would have to be distributed among many, thus materially reducing the earning of the individual per day.

"Now let us consider the possibilities of spinning. We

know that it was at one time *the universal* supplementary industry of India. Millions have not yet forgotten the art, and tens of thousands have even now spinning wheels in their homes. Hand-spinning is therefore capable of immediate and limitless extension. And as it has been found that ten spinners supply one weaver, against nine million weavers ninety million spinners would be able to add to their earnings what to them will be a material and welcome addition, i.e. at least 25 per cent of their income. I have assumed the very high figure of 40 rupees per year per head to be the average income. Unlike weaving, spinning may be interrupted any moment and therefore it can be done during all odd moments. Spinning is learnt easily and quickly and the spinner begins to draw some thread from the very commencement.

“Moreover, it is wrong to rely upon an unfailling supply of mill yarn. Hand-weaving and mill-weaving are not complementary propositions. They are mutually antagonistic, the tendency of weaving mills, like all machinery, always being to displace the product of the hand. If, therefore, hand-weaving could become a supplementary industry on a large scale, it would have to be solely dependent on mills which would naturally squeeze the last pie from the weaver for the supply of yarn and would scrap it at the first opportunity.

“On the other hand, handspinning and handweaving are mutually complementary as can be today proved from the experience of the existing spinning depots. Even as I write, I have letters from co-workers saying that in their centres they have to send away weavers for want of yarn. It is little known that a vast number of weavers of mill yarn are in the hands of sowcars, and they must be, so long as they rely upon the mill product. The village economy demands that the weaver should receive his yarn not from the middleman but from his fellow-worker the farmer.

“Again, so far as can be ascertained there are at present some twenty lakhs of weavers at work. Every additional loom means an outlay of at least Rs. 15. Every additional wheel need not mean more than Rs. 3½. The Khadi Pratisthan pattern costs only Rs. 2½. And at a pinch, even an improvised *takli* which need not cost anything can be impressed into service.

“Thus the spinning wheel appears to be the only foundation on which satisfactory village life can be constructed. It is the centre round which alone it is possible to build up village reorganization.

“But it is said that one pice per two hours is no economic attraction to even the poor villager. In the first place, the wheel is not meant for, it is not now presented to, any person who has a more remunerative employment. How is it that thousands of women are today walking a few miles daily or weekly to receive raw cotton and the few pice for the yarn they deliver? If a loom were suggested to them, they would not take it up they would not have the time or the ability for it. Town dwellers have no notion of the gnawing poverty of the masses of India. Let us not talk of the machine age in their case. The machinery of Manchester has robbed them of the butter to their bread which the wheel was, for it has been replaced by nothing else equal to it or better. For these, therefore, the spinning wheel is their only hope.

“I do not here examine the more ambitious but chimerical proposals for agricultural improvements. There is room enough for them I have no doubt. But that is a matter of time and education, whereas the ever growing poverty demands an immediate remedy which the wheel alone supplies. The wheel does not displace or disregard possibilities in the shape of such improvements. It is a prelude to them. Wherever it has gone, it is affecting the lives of villagers in a variety of ways, and it

enables the townspeople to establish a living contact with the villagers and their villages.

"If hand-spinning is all you say, how is it that it has not already been universally adopted? asks the critic. The question is quite fair. The answer is simple. The message of the wheel has to be carried to a people who have no hope, no initiative left in them and who would if left to themselves, starve and die rather than work and live. Such was not the case before, but long neglect has made laziness a habit with them. That laziness can only be removed by the living contact and example of men of character and industry playing the wheel before them and by gently showing them the way. The second great difficulty is the absence of a ready market for khaddar. I confess that it cannot for the time being compete with mill-cloth. I will not engage in any such killing competition. The capitalist may for capturing the market sell his calico for nothing. The manufacturer whose only capital is labour cannot afford to do so.....Khaddar is a live thing. But India has lost her eye for the real art and is therefore satisfied with the glossy exterior. Revive the healthy national taste for khaddar and you will find every village a busy hive. As it is, the resources of khaddar organizations are taxed to the utmost, in order to create a market for the article. The marvel is that in spite of heavy odds against it, the movement is making headway. Over twelve lakhs worth of khaddar was sold only last year. But it is nothing to boast of when one thinks of what needs to be done.

"I have thus summarized the case for the spinning wheel as a supplementary industry as against the hand loom. Let there be no confusion of thought. I am not against the hand loom. It is a great and thriving cottage industry. It will progress automatically if the spinning wheel succeeds. It will be bound to die if the wheel fails."

THE FALLACY OF HANDLOOM WEAVING *

Replying to an address at Madras, Mr. Gandhi said, in part:

“You ask me to encourage hand-weaving even through foreign yarn or mill-made yarn inasmuch as, so you say in your address, it is not possible to day to find hand-spun yarn of the fineness you require and in the quantity you require. Now I shall tell you, as a fellow weaver, why I cannot possibly endorse your recommendation. If I endorse your recommendation I hope to be able to show you that it would be bad for you and bad for the class which I have in view and which you also should have in view. You should, as keen and shrewd business men as some of you are, understand that every weaver who weaves yarn which is supplied by foreign mills or even by mills of India places himself at the disposal of and at the tender mercy of the mills. You as weavers should realize that this hand-weaving which you are today controlling to a certain extent will in time to come slip away from your hands as soon as the mills of the world or the mills of India are ready to weave the pattern that you are today exclusively weaving. Let me inform you, if you do not know the fact already, that various able mill-owners of the world are making experiments in order to weave the patterns which are today your monopoly. It is no fault of the mill-owners or the mill industry that that mill industry is endeavouring day after day to take away the monopolies and take this trade into its own hands. To make continuous improvements in its machinery and to make continuous encroachments upon the handicrafts of the world is really the objective and the ideal of these great industrialists. Indeed, it is the condition of their very existence that they should try to take this trade also from off your hands. What has befallen the industry of

* *Young India*, October 13th, 1927.

spinning will most decidedly befall the industry of hand-weaving also if the weaver will not take a leaf out of my book.

.....“If you will study the history of the hand-weaving movement in India you will discover that at the present moment several thousands of weavers, have simply been obliged to abandon their trade. Weavers, all of your own trade, Saurashtras, are to day working in Bombay as scavengers. Weavers in the Punjab are some of them hired soldiery and some of them have taken to the butchers trade. And so you will understand why I cannot possibly endorse your recommendation.....I venture to suggest to you that it is to your interest not to ask me to mix up this mill-spun yarn weaving together with this movement which I am leading in all humility. And it is equally to your interest to support this movement so that if it becomes stable, prosperous and immovable, every one of you would find a respectable living.”

APPENDIX B

EXTENT OF RURAL UNEMPLOYMENT IN INDIA

The following quotations on this topic are taken from some of the leading Governmental officials entitled to speak from their own investigations, together with other competent authorities. Concurring opinions could be cited almost indefinitely. The only contrary opinion discovered is also quoted and discussed.

Census of India, 1921, Vol. I, Ch. XII, pp. 244-245.

Mr. Thompson, Census Officer for Bengal, wrote :—

.....“ This means only 2.215 acres per worker. It is in such figures as these that the explanation of the poverty of the cultivator lies. The cultivation of less than $2\frac{1}{4}$ acres of land cannot employ a man for more than a comparatively small number of days in the year. The cultivator works fairly hard for a few days when he ploughs his land and puts down his crops and again when he harvests them, but for most of the year he has little or nothing to do.....Such figures as these make it very clear that the Bengali cultivator has not nearly as much work to do as will fill his time.....In Bengal the holdings have been so minutely subdivided that there is not enough work for the cultivators, but on the other hand there is no other work to which they can turn their hand. The very rights which the cultivator has in his land and which it has been the object of the tenancy legislation to preserve to him, stand in the way of an adjustment between the supply and demand for labour in this Province. He cannot be expected to sacrifice these rights and go in search of work in industrial centres except in the last extremity, and the only amelioration of present conditions in Bengal that seems possible, is by

bringing work within reach of the cultivator near his own village."

p. 245. "The economic relation between man power and cultivated area has also been discussed in full in Mr. Calvert's recently published book *The Wealth and Welfare of the Punjab*. He estimates that the work done by the average cultivator in the Punjab does not represent more than about 150 days full labour in the twelve months and that even in the occupied days the idea of the Indian cultivator of what constitutes a full day's task is well below that prevalent in more progressive western countries."

p. 270. Mr. Tallents, Census Officer for Bihar and Orissa, says, in reference to hand-weaving:—

"There are periods in the cultivator's year when all the members of his family are busy in the fields, but there are also periods when this is not the case, and when the family are idle. At such times there is much labour running to waste and ample scope for some form of secondary occupation."

p. 271. Mr. Edye, Census Officer for the United Provinces, speaking of cottage industry as ancillary to agriculture, writes:—

"The bulk of the population is agricultural, and agriculture here means ordinarily the growing, harvesting and disposal of two crops in the year, and not the mixed farming familiar in England. Agriculture of this kind involves very hard work for certain short periods—generally two sowings, two harvests, an occasional weeding in the rains, and three waterings in the cold weather—and almost complete inactivity for the rest of the year. In precarious tracts inactivity may be unavoidable for a whole season, or even for a whole year. These periods of inactivity are, in the great majority of cases, spent in idleness. Where the cultivator pursues some craft which will employ himself and his family at times when they are not required in the

fields—a craft in which continuity of employment is not essential—the proceeds of that craft are a saving from waste, and therefore a clear gain. The most typical of such crafts,...and the one which is most widely pursued, is the production of homespun cloth.”

p. 274. Mr. Roughton, Census Officer for the Central Provinces, writing of general labour, remarks :—

“Agriculture, on which a majority of the population depends for its living, does not employ labour all the year around. There are large portions of the province in which the *khari* crop, which is reaped at the end of the rains, is the only crop of importance which is grown, and when this crop is gathered, there is a scarcity of employment until shortly before the break of the next monsoon.”

India in 1923—24, edited by Rushbrook Williams, Director of Public Information, Government of India. An Annual Statement to Parliament, required by Statute. (Central Publication Branch, Government of India, Calcutta,) p. 197.

“The cultivator in many provinces of India is obliged by climatic reasons to remain idle for more than one-third of the total working days of the year.”

Wealth and Welfare of the Punjab by H. Calvert, Registrar of Government Co-operative Department, Punjab. Oxford University Press, London.

“The work done by the average cultivator in the Punjab does not represent more than 150 days full labour for 12 months.”

Economic Life of a Bengal District by J. C. Jack, late Land Settlement Officer, Government of Bengal. Oxford University Press, London, 2d. printing, 1927, p. 39 :—

“The time-table of the cultivator, therefore, when his land is unfit for jute, shows three months hard work and nine months idleness; if he grows jute as well as rice, he

will have an additional six weeks work in July and August."

Some South Indian Villages—by Gilbert Slater, Professor of Economics, Madras University. Oxford University Press, London, 1918. p. 16.

"As in the Madras Presidency, on one-crop land the agriculturalist works for only about five months in the year, and on two-crop land only for about eight months." (He then states that this same condition prevails also in Mysore and all the rest of South India).

p. 245. "At present a condition of chronic under-employment does exist on a very large scale in South India."

Rural Economy in India—by R. Mukerjee, Professor of Economics, Lucknow-University, Longmans Green, 1926.

p. 73. *Waste of Labour in India*—"A very careful estimate of Prof. Bhalla shows, on the other hand, that the cultivator in the Punjab works for 278 days only, taking a normal day of 10 hours. His estimate of work refers, however, to the cultivation of a plot of 13.54 acres. But the holdings often are much smaller and give proportionately less work to the cultivator.....In the United Provinces, assuming that the average holding for a family of five is $2\frac{1}{2}$ acres in the medium stiff soil, if the cultivator sows two acres with early rice followed by peas, and half an acre with cane, by working alone he would have enough to occupy him for 250 days in the year. In the light soil, if he sowed *kado* and *arhar*, rotating with barley, on the whole $2\frac{1}{2}$ acres, he would have to work on the average only 150 days in the year. (Report of the Revision of Settlement in the Gorakhpur District, 1918, p. 21). According to Dr. Slater, taking the land of South India all around there is agricultural work for the cultivator only for five-twelfths of his possible working time."

The Indian Rural Problem, unsigned article by "a practical

agriculturalist who has spent many years in contact with it," *The Round Table*, London, June, 1925, p. 533.

"Another great disability is that owing to the inadequate size of village agricultural holdings there is not enough work to occupy the time of either the farmer or his oxen. There is work for a few weeks at ploughing time, at seed time and at harvest. There is also work for some members of the family in guarding the growing crops, but for a great part of the year the farmer has no way of properly filling his day. In a good many parts of India, 50 per cent of the agricultural labourers' time is spent in enforced idleness."

"*The Economic Life of a Punjab Village* by E.D. Lucas, Principal of Forman Christian College, Lahore, published, Lahore, 1922,

....."An ordinary zemindar of Kalimpur (Punjab) with, say, three or four acres of land, and ten hours the normal length of his day, we find that he works about 157 days in the year."

Problems of Rural Life in India, by Prof. N.N. Gangulee, a member of the Royal Commission on Agriculture in India, *Asiatic Review*, July, 1925. p. 431.

"In the absence of any organized rural industries, chronic unemployment has become one of the striking characteristics of Indian rural life."

Wastage of India's Man Power, by R. K. Das, the *Modern Review*, Calcutta, April, 1927. p. 399 (After quoting from Calvert)

"The present writer's investigation in the United Provinces and Bengal in 1925 also showed that the average peasant or artizan does not have work for more than 7 months in the year."

Similar conditions of unemployment are reported for practically all provinces of India by the following authorities, from whose books I unfortunately failed to copy the pertinent pages at the time when I had access to them.

Land and Labour in a Deccan Village, by H. H. Mann, Agricultural Advisor to Bombay Presidency, Study I, 1917; Study II, 1921, Oxford University Press, London.

The Punjab Peasant in Prosperity and Debt, by M.L. Darling Oxford University Press, 1925.

Wealth of India, by Wadia and Joshi, Macmillan, London, 1925.

Economic Organization of Indian Villages, Vol. I, Deltaic Villages, Andhra Economic Series, Andhra University, 1926.

Statement Exhibiting the moral and material Progress and Condition of India. 1923-24, (official) P. S. King and Sons London.

Technically, this condition of the peasants might perhaps be more accurately described as great under-employment. But the difference of name does not alter the phenomenon. This difference of terms, however, seems to be the only satisfactory explanation for the extraordinary statement in *India in 1925-26*, edited by Mr. Coatman, Director of Public Information, Government of India. (p.239). that "With the exception of the Anglo-Indian community, and the educated middle classes whose case has already been discussed, there is, broadly speaking, no unemployment problem in India." Yet the term "under-employment" is not used in the context, and the whole passage is very vague and open to diverse interpretations. If he means to refer only to cities, he should have so stated. He does not cite any authority for the opinion. Since the time when the other authorities, above quoted, made their investigations there has been no change in Indian rural conditions sufficient to wipe out or even appreciably ameliorate the unemployment then disclosed. We cannot accept Mr. Coatman's "broad speaking."

APPENDIX C

PROVIDING CLOTH FOR ONE VILLAGE AND ONE FAMILY *

SUPPLYING CLOTH FOR ONE VILLAGE

"The following things are needed for the manufacture of cloth: raw cotton, a ginning-wheel, a carding-bow, a spinning-wheel and a hand-loom. And in connection with these things we need the following persons: a cultivator, a ginner, a carder, a spinner and a weaver.

"There are only a few places in the country which do not produce cotton. Parts which do not produce cotton may obtain it from other parts of the country which do.

"If there is a good crop, an acre of land yields about 200 pounds of cotton. But the average yield per acre of cotton in India is about 100 pounds.

"One man working on a hand-gin can gin 10 pounds of cotton every day, or 3000 pounds in a year, 300 being taken as the number of working days in the year.

"Similarly a carder can in a year card and sliver 3000 pounds of cotton.

"Working 4 hours a day, one man can spin in a year 50 pounds of cotton into yarn of ten counts.

"One weaver with a family can weave in one year 750 pounds of cloth 27 inches wide.

"If we take 10 pounds of cloth as the annual average requirement of one person, a village with a population of 300 souls can become self-contained in respect of its clothing as

* From an article by Lakshmidas Purushottam in *Young India* October 6 and 13, 1921.

soon as it puts 30 acres of its land under cotton cultivation and gets hold of ginner, carder, 60 spinning-wheels working four hours per day, and 4 weaver families. The needs of bigger villages and towns can be calculated accordingly.

	Rupees
Cultivation charges on 30 acres under cotton, at 10 rupees per acre	300
Revenue assessment on the same at 2 rupees per acre.	60
Cost of carding and slivering 3000 pounds of cotton at 2 annas a pound	375
Cost of spinning the same at 6 annas per pound	1,125
Cost of weaving the same at 8 annas a pound	1,500
	Total Rs. 3,360

"We have excluded the ginning charges which are provided for by the sale of cotton seed.

"Thus the village gets 3000 pounds of cloth by a total outlay of Rs. 3,360. This works out at about 1 rupee 4 annas per pound.

"If an enterprising man devotes 2 hours a day to these operations, he will spend no more on his clothing than what he pays for the cotton itself.

"If finer cloth is wanted, there will be an increase in spinning and weaving charges, and there must be more spinning wheels and more looms. And then the cloth produced will naturally be proportionately more costly."

(Since 1921 there have been great improvements in quality and speed of output and lowering of prices, so that the above figures would call for favourable modification. Nevertheless they give a concrete example of decentralized, small-scale, cloth production in India.)

SUPPLYING CLOTH FOR ONE FAMILY*

"Charkha yarn, as it is now being spun, is much coarser than mill yarn. Although there is no doubt that hand-spun yarn will be finer as the spinners get accustomed to the work, yet I shall suppose that average yarn at the moment to be only of 10 counts. In the Indian Mills the counts mostly made are between 11 and 20. The largest quantity of yarn of any single count is 20s. The woven goods made in the mills work out on an average 4 yards to 16 ounces. But with Charkha yarn the present average is 4 yards per 20 ounces or 5 ounces per yard.

ANNUAL YARN REQUIREMENT OF A FAMILY OF FIVE
IS EQUIVALENT TO TWO HOURS DAILY SPINNING
BY ANY SPINSTER IN THE FAMILY

"5 Persons in a family requiring 12 yards per head per year ; the total clothing for the family	...	60 Yds.
Monthly requirement of the family on above basis	...	5 "
Equivalent yarn to 5 yards cloth at 5 ounces of 10 counts per yard of cloth	...	25 ozs.
Working 25 days in the month, yarn daily required is	...	1 oz.
2½ Tolas being equivalent to one ounce, number of tolas of yarn for daily production	...	2½ Tolas.
Equivalent yards at 210 yards per tola of No. 10 as basis	...	530 Yds.
Spinning at the rate of 260 yards per hour, daily requirement spun in	...	2 hours.
For carding and other processes approximately	...	½ hour.

* Quotation from *Cotton (Khadi Manual, Vol. II., Part IV)* by Satis Chandra Das Gupta, Khadi Pratisthan, 15, College Square Calcutta, 1924, pp. 131, 133.

Total labour required in the family per day
 for meeting entire clothing needs ... 2½ hours.
 Or half hour per day per head.

"If a family will seriously entertain the idea of being independent of the mills of foreign yarn then it is only necessary that the family will have spun 2 hours daily—a single sister putting this labour or others dividing the work with her. It must be remembered that the average family is taken into consideration. It cannot be supposed that a luxurious family living in towns and wearing superfluous cloth will need spin only half an hour per head per day to be independent of the mills. But the average family in the country does not use more than 60 yards per year. At -/8/- per yard it comes to Rs. 30/-. I believe the average family of 5 does not and cannot spend even thirty rupees per year for clothing. The average is overstated for the unit family of five of a cultivator. The average of 12.3 yards includes the luxurious dress of rich and also includes all the trade requirements for cloth such as the sails for boats, the covering for umbrellas, the yardage used for book binding, for the tents and for the kit of the army. The actual average per family of the cultivators and country people is considerably less than 12.3 yards. It is so simple to clothe our whole population from the yarn out of the Charkha that it is a wonder that we are still not fully alive to its significance."

p. 133. "For meeting the normal demand of 12 yds. cloth per head per annum only 2 cottahs of land is necessary." (A cottah of land in Bengal measurement is equal to 1/60th of an acre.)

APPENDIX D
BIBLIOGRAPHY ON INDIAN HAND-SPINNING
AND HAND-WEAVING AND THE KHADDAR
MOVEMENT

(Only books in English are noted)

PUBLISHED BY INFORMATION DEPARTMENT, ALL INDIA
SPINNERS' ASSOCIATION, SATYAGRAHASHRAM, SABARMATI,
B. B. & C. I. RY.

1. *Khaddar Work in India in 1922*. Report by the Khadi Department of All India Congress Committee.
2. *Khadi Bulletins*, 1923.
3. *Report of All India Khadi Board*, 1924.
4. *All India Khadi Guide*, June 1924.
5. *A Khadi Tour*, 1924.
6. *Report of All India Khadi Board Work*, by All India Spinners' Association for 1924-25.
7. *Khadi Guide*, August, 1925.
8. *Report of All India Spinners' Association for 1925-26*.
9. *Charkha Shastra*, Part I, by Maganlal K. Gandhi. (translated from the Gujarati).
10. *Hand-Spinning and Hand-Weaving* an Essay, by S. V. Puntambekar and N. S. Varadachari, 1926.
11. *The Takli Teacher*, by Maganlal K. Gandhi and Richard B. Gregg, 1926.

PUBLISHED BY KHADI PRATISTHAN, 15, COLLEGE
SQUARE, CALCUTTA

- I. *Khadi Manual*, Two vols. by Statis Chandra Das Gupta, 1924.

2. *Message of Khaddar*, by Sir P. C. Ray. Address at the opening of Khadi Exhibition at Coconada, 1923. (pamphlet).
3. *Charkha* by Satis Chandra Das Gupta. Introduction by Sir P. C. Ray. (pamphlet).
4. *Deshi Rang* by Sir P. C. Ray. (Indigenous dyes and dying).

BY PRIVATE PUBLISHERS

1. *Young India 1919-22*, and Supplements to 1926. A very full collection of leading articles from Mr. Gandhi's paper of that name, including many special articles on hand-spinning, hand-weaving, charkha, and the khaddar movement. Publisher S. Ganesan Triplicane, Madras.
2. *The Wheel of Fortune*, by Mahatma Gandhi, 1922. Selected articles from Young India. Ganesh and Co., Madras.
3. *Art and Swadeshi*, by A. K. Coomaraswami, Ganesh and Co., Madras.

PUBLISHED BY INDIAN PROVINCIAL OR STATE GOVERNMENTS

1. Bihar and Orissa. Superintendent of Government Printing, Bihar and Orissa, Patna.
 - (a) Bulletin No. 2. *A Note on Hand-Loom Weaving in India*, by K. H. Rao.
 - (b) Bulletin No. 3. *Proceedings of the Conference of Director of Industries and Textile Experts and Assistants*.
 - (c) Bulletin No. 8. *The Hand-Spinning of Cotton*, by K. S. Rao.
 - (d) Bulletin No. 9. *A Warping and Sizing Set Suitable for Cottage Weavers*, by K. S. Rao.

- (e) *A Second Note on Hand-Loom Weaving in India* by K. S. Rao.
2. Bombay Presidency. Superintendent, Government Printing and Stationery, Bombay.
- (a) *Notes on the Indian Textile Industry with Special Reference to Hand Weaving* by R. D. Bell.
3. Madras Presidency. The Superintendent, Government Press, Mount Road, Madras, S. C.
- (a) Department of Industries Bulletins.
- No. 17. *Pattern Weaving.*
- No. 20. *Solid Border Slays.*
- New Series.
- No. 15. *Blanket Industry in the Ceded Districts of the Madras Presidency.*
- No. 16. *Woolen Pile Carpet Industry.*
- No. 21. *Development of Cotton Printing and Painting Industry.*
- No. 22. *Dèveloppement of the Madras Handkerchief and Lungy or Kaily or Industry.*
- (b) *Monograph on the Carpet Weaving Industry of South India* by H. T. Harris, 1908.
- (c) *Cotton Painting and Printing in the Madras Presidency* by W. S. Hadaway, 1917.
- (d) *Handloom Weaving in the Madras Presidency*, by D. M. Amalsad, 1925.
4. Bengal. Bengal Secretariat Book Depot, Calcutta.
- (a) *A Summary of the Cottage Industries in the Districts of Bengal*, 1923.
- (b) *Report on the Survey of the Cottage Industries of Bengal, 1924.* (Out of stock).
- (c) *Supplementary Report on the Survey of Cottage Industries in Bengal for the Districts of Mymensingh, Nadia and Faridpur.*

- (d) *Technical and Industrial Instruction in Bengal, 1888-1908.* by J. G. Cumming. Part II of Special Report gives a general review of all factory, manufacturing, mining, artistic, and economic industries in Bengal.

MISCELLANEOUS PUBLICATIONS.

1. *Young India* edited by M. K. Gandhi, Published by Swami Anand, Navajivan Press, Sarkhigaran Vadi, Sarangpur, Ahmedabad. A weekly journal.
2. *The Charkha Yarn*, by Muntazin Bahadur V. A. Talcherkar, 1925. Published by the author, Topiwala's Mansions, Sándhurst Road, Bombay, 4.
3. *The Basis for Artistic and Industrial Revival in India*, by E. B. Hayell. Publ. by The Theosophist Office, Adyar, Madras, 1912.
4. *The Bengal Civil Service and the Cottage Industries of Bengal*, by Mukherjee. Calcutta University Press, 1927.
5. *The Indian Craftsman*, by A. Coomaraswamy.
6. *Hand Loom Weaving*, by H. H. Ghose. R. Cambray & Co., College Square, Calcutta., 1906.
7. *The Advancement of Industry*, by H. H. Ghose. One chapter on hand-loom weaving. R. Cambray & Co., 1910. Calcutta.
8. *Art Manufactures of India*, by T. N. Mukherjee.
9. *Industrial Arts of India*, by Sir G. Birdwood, 1880.
10. *Arts and Manufactures of India*, by Dr. J. F. Royle, A Lecture on the Results of the Great Exhibition of 1851, First Series.
11. *Survey of the Customs and Textile Manufactures of India*, by Forbes Watson.

12. *Industrial Evolution of India*, by D. R. Gadgill, Oxford Univ. Press, 1924, Some pages on textiles.
13. *Economics of Khadi* by Rajendra Prasad. Publ. by the Secretary, Bihar Charkha Sangha, Muzzaffarpur, Bihar, 1927.
14. Catalogues issued by various khadi sales depots.

ADDITIONAL BOOK REFERENCES TO GO IN THE FOOTNOTES
ON PAGES 4 & 5.

- Shah and Khambatta—*Wealth and Taxable Capacity of India*—Taraporevala, Bombay, 1925.
- N. Ranga—*The Deltaic Villages on the East Coast, Bewada*, 1926 ;
- S. G. Panandilsar *Wealth and Welfare of the Bengal Delta*—Calcutta University Press, 1925 ;
- Sir Theodore Morrison—*Economic Organisation of an Indian Province*,—John Murray, London, 1906. .

APPENDIX E

LIMITATION OF MACHINERY

In a pamphlet entitled *Indian Home Rule* written in 1908, Mr. Gandhi said, "Machinery is the chief symbol of modern civilization: It represents a great sin." In the introduction to its 1921 edition he qualified his remarks on machinery as follows:—"Still less am I trying to destroy all machinery and mills. It requires a higher simplicity and renunciation than the people are to-day prepared for."

In an article in *Young India* for January 19, 1921 he wrote, "I would not weep over the disappearance of machinery or consider it a calamity. But I have no design upon machinery as such. What I want to do at the present moment is to supplement the production of yarn and cloth through our mills, save the millions we send out of India, and distribute them in our cottages." His Presidential address at the National Congress at Belgaum (reported in *Young India* for Dec. 26, 1924) contained this passage: "I wish, too, you would dismiss from your minds the views attributed to me about machinery. In the first instance, I am no more trying to present for national acceptance all my views on machinery, than I am presenting the whole of my belief in non-violence".

Again, in *Young India* for November 5, 1925 he wrote, "Machinery has its place: it has come to stay. But it must not be allowed to displace the necessary human labour. An improved plough is a good thing. But if by some chance one man could plough up the whole of the land of India and control all the agricultural produce, and if the millions had no other occupation, they would starve, and being idle, they would become dunces, as many have already become. There is hourly

danger of many more being reduced to that unenviable state. I would welcome every improvement in the cottage machine, but I know that it is criminal to displace the hand labour by the introduction of power-driven spindles unless one is at the same time ready to give millions of farmers some other occupation in their homes." In the same paper for September 17, 1925 he stated,—“The movement of the spinning wheel is an organized attempt to displace machinery from that state of exclusiveness and exploitation and to place it in its proper state.” In the issue of June 17, 1926, in reply to a correspondent's question, “Are you against all machinery?”, he wrote, “My answer is emphatically, No. But I am against its indiscriminate multiplication. I refuse to be dazzled by the seeming triumph of machinery. I am uncompromisingly against all destructive machinery. But simple tools and instruments and such machinery as saves individual labour and lightens the burden of the millions of cottagers I should welcome.”

Still more recently, in an article in *Young India* for March 12, 1927, he remarks,—“I do not believe that multiplication of wants and machinery contrived to supply them is taking the world a single step toward its goal.....It (the charkha) does not seek to destroy all machinery but it does regulate its use and check its weedy growth. It uses machinery for the service of the poorest in their own cottages. The wheel is itself an exquisite piece of machinery.”

His attitude for all practical purposes, then, is that the use of machinery ought to be limited.

Inasmuch as these views have laid Mr. Gandhi open to much adverse criticism and even ridicule, and thereby raised doubts in some minds as to the validity of the rest of his economic thinking, it may be desirable to examine their possible reasonableness more closely.

It is indisputable that the modern extensive use of machin-

ery depends upon ample supplies of power,—chiefly coal and oil. It is also indisputable that Western nations are facing a gradual decrease in their fuel supplies. In England and Wales there has been since 1883 a gradual increase in cost of mining coal. In Europe the output of coal has been practically stationary for some years.

“The evidence shows that Europe is approaching the actual point of increasing costs of energy, if indeed she has not passed it.....”

“Though the day of ultimate exhaustion is measured in hundreds or thousands of years, the day of increasing costs and failing supplies in our (U.S.) Eastern centres of production is measured in scores of years....”

“At the present rate of mining a generation will see the end of the Pittsburgh coal in Pennsylvania.”*

“The present supply of energy in the United States is derived chiefly from fuel, the contribution from water power and

* F. G. Tryon and Lida Mann, of Division of Mineral Resources, U. S. Geological Survey, *Mineral Resources for Future Populations*; being Chap. VIII of *Population Problems*, edited by L. I. Dublin Houghton Mifflin & Co., Boston, U. S. A., 1926., pp. 131, 134, 135.

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other sources being relatively small. The several sources of power and heat in 1923 yielded energy as follows:—

	British Thermal Units (in trillions)	per cent of total
Coal	17,300	65
Domestic oil	4,400	16
Natural gas	1,080	4
Imported oil	490	2
Water power	1,140	4
Work animals	850	3
Firewood	1,500	6
Windmills	20	0·1
Total	26,780	(approx) 100

.....“Eighty-seven per cent of our energy is supplied by the mineral fuels. Although the United States has a third of the developed water power of the world, we derive from water but four or five per cent of our total supply of energy.....The price of fuel oil over long periods is also controlled by the price of coal....The day of increasing costs in this our most convenient source of energy is imminent. Daniel White goes so far as to predict a world shortage of petroleum in twenty years. Not the least important result will be to throw increased burdens upon coal.”*

“Nor do the substitute sources of energy promise to furnish power and heat on such easy terms as coal. The water power of the United States is sufficient to meet only a part of the burden

* Ibid.

already carried by coal. The tides and winds can no doubt be drawn upon, but so far as we now know, only at great cost, in which one unit of labour and capital yields fewer units of energy than now."

"It may be possible to harness directly the energy of sunlight; yet, so far, no man-made engine can do this as cheaply as the living plant. But we need the plants for materials and food, and our whole corn crop would not make alcohol enough to replace gasoline. The energy in an entire year's production of human foods in the United States is equal to only three per cent of that in our annual output of fuels.

"There remains the possibility of utilizing the energy locked up in the atom.—(Then follows a quotation from Rutherford, the great British physico-chemist, to show that this is a fading hope). "To count upon atomic energy to support our future population is an act of faith. The realities of the world as we now know it leave us dependent on coal.

"As far as the minerals are concerned, the evidence forecasts in the not distant future a period of diminishing abundance and rising costs, in which—barring some revolutionary discovery of science that will free men from dependence on fuel and water power—it will be harder to maintain even our present population at present standards of living." *

As to the dangers of rapid exhaustion of fuels there is some difference of opinion among the authorities. For example, see the article by James O. Lewis, late Chief of Petroleum Division of U. S. Bureau of Mines, in *The Literary Digest* (New York), Sept. 4, 1926; also Anton Mohr—*The Oil War*, published by Martin Hopkinson, London, 1926, the last

* *Ibid*, pp. 135, 137. See also preliminary Report of the Federal Oil Conservation Board, Sept., 1926; Superintendent of Government Printing, Washington, D. C., U. S. A. Parts are quoted in *Literary Digest*, (New York) for Sept. 25, 1927.

chapter. But there seems to be no dispute as to the increasing costs of power. Indeed, nowadays, a part of the expense of the armies and navies of the United States and Great Britain may fairly be included in estimating the costs of petroleum. (Cf. Anton Mohr—*The Oil War*; La Travaye—*The World Struggle for Oil*—Allen & Unwin, London; R. P. Arnot—*The Politics of Oil*, Labour Publishing Co., London 1927). The situation is doubtful enough at least to make the idea of limitation of machinery in a country like India not unreasonable.

If these things be so, Mr. Gandhi's idea of limiting machinery does not appear so fantastic. He merely proposes to do voluntarily now that which others will eventually be forced to do. True, his reasons are different, but that does not diminish the wisdom of his proposal. *

Those to whom such a prospect seems dismal may find comfort in the fact that "The glory of Greece did not rest upon coal, and there are many worse things than a reduction in the standard of living." †

We need to correct our perspective. As James Fairgrieve in his *Geography and World Power* remarks (p. 349):—

"Stores of coal and petroleum are of the nature of capital which has been accumulated long ages past, and in using them we are not really accumulating energy at all; they are on a somewhat different footing from the energy which man makes his own, in almost the only way possible till 130 years ago, by eating food which has grown by the sun's energy within a few days or months of its consumption. The use of coal energy is something in the nature of an incident. In the midst of the changes which the Industrial Revolution has brought, we are

* It is interesting to note that the old Indian law-giver, Manu, condemned the ownership and operation of large machines by private individuals as a minor crime. (Manu XI, 63, 64, 66).

† Tryon and Mann, above cited.

in danger of forgetting that it is an incident, and that solar radiation is the final source of by far the greatest amount of energy available on the earth's surface, and especially that vegetation now growing supplies the energy in the most convenient forms; culture of the soil, horticulture and agriculture and arboriculture, whether it be the oldest trade or not, is certainly the most fundamental."

Machinery is one mode of using solar energy. Handicrafts are another. Machinery uses more energy than handicrafts, but not necessarily for finer or higher purposes or with better aesthetic or moral results. After all, science itself by one of its most recent developments,—the theory of relativity,—teaches us that mere size or quantity or speed are only relative and nothing to be especially proud about. They are wholly a matter of the position or attitude or movement of the observer, and probably do not count as ultimate values.

Machinery has in itself defects as well as advantages. Most of these defects are very ably explained by Mr. Austin Freeman in his *Social Decay and Regeneration*, referred to earlier in this book. One such weakness which he does not discuss is the heavy "overhead" burden of expense for machine repair, maintenance, depreciation, obsolescence, insurance, interest, and taxes. In conjunction with capitalistic control this burden tends to create financial instability and very great concentration of economic power. As a tendency to the avoidance or mitigation of such evils, ideas as to the limitation of machinery may not be altogether foolish or repugnant.

Limitation of machinery seems desirable to Mr. Gandhi on both economic and moral grounds. Formerly I fully agreed,* but on further thought it seems to me that most of the evils involved, or those which are most serious, are due more to

* See my article "The Morals of Machinery", in *Current Thought*, Madras, for July, 1926.

capitalism than to machinery. Doubtless the power working through machinery makes the evils greater, more widespread and glaring. But the intrinsic evil is in men, not in externals*. Part of the harm arises also simply because people do not really understand what are the real full implications and results of the uses of machinery and its connections with capitalism and the institution of property.

Of course nobody is so silly as to imagine that one man can put an end to machinery or industrialism, but nevertheless, history has often shown that man may focus and express the inarticulate attitude of millions of his contemporaries, and may voice the posture and tendency of otherwise unnoticed social or economic forces. It is conceivable that Mr. Gandhi, through an unusual intuitive sensitiveness, is expressing the peasants' instinctive recognition of the soundness of utilizing annual solar energy income to the utmost; or is stating an Asiatic preference in favour of a decentralized social life and culture and those things which make it possible; or is giving shape to a selective tendency in favour of some new type of integration of social and economic units which may promote a more organic wholeness among mankind. Presumably machinery will run its course in America, at least. Asia may not put an end to industrialism even in her own house, but she may divert its course or manner of action sufficiently to make it of more

* Mr. Gandhi incisively criticises this idea by pointing out that when something lends itself more readily to evil than to good uses, as in the case of distilled liquor, it may be fairly called an evil thing. But I think that if capitalism as a motive and mode of industry should cease to exist, much machinery would disappear also, and what remained would no longer lend itself more readily to evil than to good. Ultimately perhaps one's philosophic concepts and attitudes determine one's position on this point.

service to ultimate human values. Simple peasant conservatism is sometimes more profoundly wise than we realize.

Whatever modification or limitation thus may come about would of course not be by moral or legislative fiat, but by the positive actual development and widespread use of other methods of transforming solar power and of distributing the results, and the organization of both.

If the use of machinery or power ought to be controlled or restricted, it is very difficult to see what principle to follow. To me the surest basis would seem to be on the assumption of some sort of a symbiosis or mutual support and aid between man and Nature, and the recognition of a far closer symbiosis between man and man than is implied in capitalism. This may of course be stated in purely moral or spiritual terms also. Machinery and power must be subordinated to the true welfare of humanity. Such a concept would involve dropping the idea of man's "conflict with Nature," of his "conquest of Nature", and developing instead an active belief in an actual unity and harmony with Nature and matter, and between men of all nations. Such an idea is quite acceptable to Indian thought, however strange or absurd it may seem to Western readers who have not followed closely the most recent developments of science.*

It is because of this failure in symbiosis or of balancing energy accounts that machinery, with its unrestrained use of stored-up power, may be said, in terms understandable in the West, to "represent a great sin" (mistake), as Mr. Gandhi has said. † The creation of unemployment in both England and

* See A. N. Whitehead—*Science and the Modern World*—Cambridge Univ. Press, 1926, and J. C. Bose—*Plant Autographs and Their Revelations*,—Longmans Green, London, 1927.

† In this connection it is interesting to note that in the original Greek of the Christian New Testament, the word which in

India by machinery and the actually greater inefficiency of power-driven machinery in terms of total units of solar energy consumed (as explained in the foregoing chapters) may also represent mistakes.

“What is, humanly speaking, profitable may involve a dead natural loss, and this loss, may inflict great injury to the community or the race as a whole in the long run. In the interests of the solidarity of the race itself, man has his obligations to Nature as the matrix of the community, and such obligations involve the social use of the gifts of the earth (*munera terrae*) and socialized satisfactions, which alone can satisfy the lofty ideal of communalism,—the participation of every man in the common inheritance of the earth and the fruits of humanity.” *

“A permanent civilization must learn to balance its energy budget, to collect each year from the inexhaustible sources of water, wind and sun as much power as it expends.” †

It may well be that the great stability of the civilizations of China and India has rested upon their closer approximation to such a balance of energy resources or to a symbiosis with Nature than there was or is in the case of other civilizations, together probably with their decentralized, small-scale, loosely integrated economic and social organizations. Even in matters of economics Europe and America may yet find that they have much to learn from Asia. ‡

* R. Mukerjee—*Principles of Comparative Economics*, P. S. King & Son, London, 1921, Vol. I, pp. 88 et seq..

† Tryon and Mann, Chap. VIII of *Population Problems* ed. by Dublin, above cited.

‡ See F. H. King—*Farmers of Forty Centuries*—Harcourt, Brace & Co. New York, 1927.

the English version has been translated as “sin” meant literally “to miss the mark,” or “to err”.

APPENDIX F

TWO ASPECTS OF FUTURE RELATIONS BETWEEN ORIENT AND OCCIDENT

In every part of Asia there are the multitudinous problems involved in the meeting and partial fusion of two cultures,—the Eastern and the Western. It would be easy to recite and to grow indignant and sorrowful over the mistakes, wrongs and injustices done and still being done in this contact. But this book is not the place for that.

The situation makes a very troubled period, yet history tells us that out of such meetings, where there has been strength on both sides and an organic selection and blending, greater and finer civilizations have arisen.

All lovers of humanity, whether of the East or West, desire to have their respective nations purged of dross, correct their mistakes and march on to a nobler future. Each of these two great cultures believes that it has something great and fine which the other needs. Each, despite aversions, resentments, hatreds or prides, is aware of weaknesses within itself, yet doubts whether the other can help it.

The problem for both East and West is, how can we avoid the mistakes of the other; what portions of the experience of the other are universally valid; and how can we make a wise selection and application thereof, so as to have them become an organic part of our culture without destroying that part of our heritage which we wish to preserve?

A number of critics believe that Western civilization has now begun to decay. Whether or not this is true is perhaps not a matter of ultimate and absolute importance; for after all, civilizations and institutions are group habits, and humanity

marches on despite changes of habits ; and the spirit of the best achievements of each group is not lost. Indeed, whenever the spirit of men becomes hampered either by rapid growth of itself or by hardening of a temporal shell, the shell must perish in order that the spirit may live. "Except a grain of wheat fall into the ground and die, it abideth by itself alone ; but if it die, it beareth much fruit." Think, for instance of the spirit of ancient Greece. The Roman Empire died, but the descendants of the peoples who composed it are still active. The greater question, then, is what each civilization can best give to the rest of the world and to the future.

The West has very much to learn from the East,—much more than it even dreams of at present. But I am not fitted to discuss that.

Many men of both East and West believe that capitalistic industrialism and commercialism are a mistake, and not a good thing for any part of Asia to try to incorporate within its culture. The author is one of these. Yet he does not endorse Socialism, however fine its motives. But many do believe that Western science, aside from certain of its applications, is a great gift to the world and worthy of adoption by all cultures and civilizations, provided certain controls or correctives are applied. Such modifications might come from the philosophy of Aurobindo Ghose, the poetry and music of Tagore, the love and humility of Gandhi, and from certain qualities which the Chinese and Japanese can best contribute. That is, science needs to be supplemented by finer, more subtle, more profound and more completely integrated and unified perception and understanding of mental, moral and spiritual orders, and the translation thereof into all the details of daily life and sharing of life.

In the last very few years, by the work of men culminating in Einstein, Weyl, Eddington, Whitehead, Russell, Haldane

and Bose, science has been largely shorn of its false pride, purged of its materialistic philosophy, broadened, rendered more humane, tolerant and ready to accept the truths of poetry, art, religion and mysticism. *

The present attitude and position of science will make it much more acceptable to India than it was formerly. Indeed, certain of the philosophical implications of the most recent mathematical physics are in astonishing harmony with many of the ideas of the old seers of the Upanishads.

Yet in view of the doubts of many of the fine minds of India as to the value of science, we would like to quote from one of her clearest observers and profoundest thinkers. Sri Aurobindo Ghose, in an essay on "Materialism", † which seems to us the best estimate of that subject ever written, says in part:—

"Examine impartially its results. Not only has it immensely widened and filled in the knowledge of the race and accustomed it to a great patience of research, scrupulosity, accuracy,—if it has done that only in one large sphere of inquiry, it has still prepared for the extension of the same curiosity, intellectual rectitude, power for knowledge to other and higher fields,—not only has it with unexampled force and richness of

* See A. N. Whitehead *Science and the Modern World*-Cambridge Univ. Press, 1926; G. N. Lewis-*The Anatomy of Science*-Yale University Press, New Haven, U. S. A., 1926; A. S. Eddington-*Space, Time and Gravitation*, Cambridge Univ. Press, 1923; Lloyd Morgan-*Emergent Evolution*, and "*Life, Mind, and Spirit*." J. W. N. Sullivan-*Aspects of Science, Second Series*-Collins, London, 1926, also his *Tyranny of Science*-Kegan, Paul, London, 1927; J. C. Bose-*Plant Autographs and their Revelations* Longmans Green, London, 1927; J. Arthur Thompson-*Outline of Science*, J.P. Putnam's Sons, London, 1922; H. Poincare *Science and Method*.

† In a pamphlet entitled *Evolution* Published by Sarat Chandra-Guha, Arya Publishing House, College St. Market, Calcutta.

invention brought and put into our hands, for much evil, but also for much good, discoveries, instruments, practical powers, conquests, conveniences which, however, we may declare their insufficiency for our higher interests, yet few of us would care to relinquish; but it has also, paradoxical as that might at first seem, strengthened man's idealism. On the whole, it has given him a kindlier hope and humanized his nature. Tolerance is greater, liberty has increased, charity is more a matter of course, peace, if not yet practicable, is growing at least imaginable.....

"Humanity is not the highest godhead; God is more than, humanity; but in humanity too we have to find and to serve him. The cult of humanity means an increasing kindliness, tolerance, charity, helpfulness, solidarity, universality, unity, fullness of individual and collective growth, and toward these things we are advancing much more rapidly than was possible in any previous age, if still with sadly stumbling footsteps and some fierce lapses."

"Progress is the very heart of the significance of human life for it means our evolution into greater and richer being..... Outward progress was the greater part of its aim and the inward was more essential? but the inward too is not complete if the outward is left out of account. Even if the insistence of our progress fall for a time too exclusively on growth in one field still all movement forward is helpful and must end by giving a greater force and a larger meaning to our need of growth in deeper and higher provinces of our being.....No doubt, again, the essential is an inner freedom; but if without the inner realization the outer attempt at liberty may prove at last a vain thing, yet to pursue an inner liberty and perpetuate an outer slavery or to rejoice in an isolated release and leave mankind to its chains was also an anomaly that had to be exploded, a confined and too self-centered ideal.".....

“Science is a right knowledge, in the end only of processes but still the knowledge of processes too is a part of the total wisdom and essential to a wide and clear approach toward the deeper Truth behind..... We can now see too how it was bound to escape from itself by the widening of the very frame of knowledge it has itself constructed.

.....“Man does need to develop firmly in all his earthly parts, to fortify and perfect his body, his life, his outwardgoing mind, to take full possession of the earth his dwelling place, to know and utilize physical nature, enrich his environment and satisfy by the aid of a generalized intelligence his evolving mental, vital and physical being. That is not all his need, but it is a great and initial part of it and of human perfection. Its full meaning appears afterwards ; for only in the beginning and in the appearance an impulse of his life, in the end and really it will be seen a need of his soul, a preparing of a fit environment for a diviner life. He has been set here to serve God's ways upon earth and fulfil the Godhead in men, and he must not despise earth or reject the basis given for the first powers and potentialities of the Godhead.

.....“Adhering still to the essential rigorous method of science, though not to its purely physical instrumentation, scrutinizing, experimenting, holding nothing for established which cannot be scrupulously and universally verified, we shall still arrive at supraphysical certitudes.....

.....“Three things will remain from the labour of the secularist centuries ; truth of the physical world and its importance, the scientific method of knowledge,—which is to induce Nature and Being to reveal their own way of being and proceeding, not hastening to put upon them our own impositions of idea and imagination, *adhyaropa*,—and last, though very far from least, the truth and importance of the earth life and the human endeavour, its evolutionary meaning. They will remain, but wil,

turn to another sense and disclose greater issues. Surer of our hope and our labour, we shall see them all transformed into light of a vaster and more intimate world-knowledge and self-knowledge."

A POSSIBLE MODIFICATION OF CAPITALISM

In regard to capitalism, one of the most brilliant of British economists, Mr. J. M. Keynes (editor of *The Economist and of the Nation and Athenaeum*) writes in his little book, *The End of Laissez Faire**:—

"For my part I think that Capitalism, wisely managed, can probably be made more efficient for attaining economic ends than any alternative system yet in sight; but that in itself it is in many ways extremely objectionable. Our problem is to work out a social organization which shall be as efficient as possible without offending our notions of a satisfactory way of life.

"The next step forward must come, not from political agitation or premature experiments, but from thought. We need by an effort of the mind to elucidate our own feelings. At present our sympathy and our judgment are liable to be on different sides, which is a painful and paralyzing state of mind. In the field of action reformers will not be successful until they can steadily pursue a clear and definite object with their intellects and their feelings in tune. There is no party in the world at present which appears to me to be pursuing right aims by right methods. Material poverty provides the incentive to change precisely in situations where there is very little margin for experiments. Material prosperity removes the incentive just when it might be safe to take a chance. Europe lacks the means, America the will, to make a move. We need a new set

* The Hogarth Press, London, 1926.

of convictions which spring naturally from a candid examination of our own inner feelings in relation to the outside facts."

To me, Mr. Keynes' assumption that capitalism can be wisely managed appears fundamentally and ultimately impossible. The principle of capitalism as defined by Mr. Keynes himself, viz., "the dependence upon an intense appeal to the money-making and money-loving instincts of individuals as the main motive force of the economic machine", is contrary to the fundamental spiritual and moral unity of mankind. That is why capitalism troubles our hearts, as Mr. Keynes admits in the above quotation. That which is intrinsically false cannot be wisely managed.

But it seems quite possible to me that something like Mr. Gandhi's programme, together with decentralized, small-scale social and economic units, integrated on some other basis than that of existing States, might well prove the basis for the next step forward. Under his programme it seems possible to "pursue a clear and definite object with their intellects and feelings in tune." In this book I have tried to show the real import of outside facts whose relation to Mr. Gandhi's and perhaps our own inner feelings has provided for him and will perhaps provide for others a new set of convictions, such as Mr. Keynes urges. Just as in the early history of the world, forms of marine animal life are said not to have developed lungs and means of living in the air on land till they were forced in sheer desperation to do so by the attacks of more powerful enemies, so it is possible that India, out of the desperation of her poverty, may develop for the world a new mode of social and economic life superior to that which has gone before.

APPENDIX G
A NOTE ON EFFICIENCY

Proponents of Western machine production have urged that its superiority over hand production does not lie so much in the greater amount of power which it uses, as in its efficiency in the use of power.

The matter of efficiency has been considered at several places in this book, but it may be well to recapitulate briefly in order to re-emphasise the answer to this criticism.

I have tried to show that when all the power units which enter into the manufacture, transportation, setting-up, housing and operation of large-scale machinery are taken into account, it is less efficient, mechanically, than small hand-operated machines such as are common in the Orient. Further, I have stated that the real point at issue is not one of mere mechanical efficiency but rather of economic efficiency. In respect to this it has been pointed out by Mr. Chase in his book *The Tragedy of Waste*, previously cited, how enormous are the wastes involved in production, distribution and consumption in the United States. Presumably they exist also in large measure in other Western countries. Moreover, it must be clear that Western economic modes and methods, largely because of their speed, large scale, labour-saving, and labour specialisation, have resulted in much harm and loss to individual and social values, through such matters as slums, ill health due to overcrowding and excessive hours of work, break up of normal village and rural life, unemployment, strikes, class animosities, national commercial rivalries and wars, etc.*

* See also G. Ferrero—*Ancient Rome and Modern America*—G. P. Putnam & Sons, London.

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A true estimate of economic efficiency must consider these direct and indirect economic losses as well as the advantages.

When all these factors are duly considered, the claims of the West as to its superior efficiency will have to be considerably modified. The East can greatly improve its efficiency, but even now it need not be disheartened.

