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BY P. KROPOTKIN.

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FIELDS, FACTORIES,
AND
WORKSHOPS

OR

INDUSTRY COMBINED WITH AGRICULTURE
AND BRAIN WORK WITH MANUAL WORK

BY

P. KROPOTKIN

ILLUSTRATED AND UNABRIDGED

SIXTH LARGE IMPRESSION OF THE POPULAR EDITION

NEW YORK: G. P. PUTNAM'S SONS
LONDON: SWAN SONNENSCHN & CO., LTD

1909

PREFACE.

UNDER the name of profits, rent, interest upon capital, surplus value, and the like, economists have eagerly discussed the benefits which the owners of land or capital, or some privileged nations, can derive, either from the under-paid work of the wage-labourer, or from the inferior position of one class of the community towards another class, or from the inferior economical development of one nation towards another nation. These profits being shared in a very unequal proportion between the different individuals, classes and nations engaged in production, considerable pains were taken to study the present apportionment of the benefits, and its economical and moral consequences, as well as the changes in the present economical organisation of society which might bring about a more equitable distribution of a rapidly accumulating wealth. It is upon questions relating to the right to that increment of wealth that the hottest battles are now fought between economists of different schools.

In the meantime the great question—"What have we to produce, and how?" necessarily

remained in the background. Political economy, as it gradually emerges from its semi-scientific stage, tends more and more to become a science devoted to the study of the needs of men and of the means for satisfying them with the least possible waste of energy, that is:—a sort of physiology of society. But few economists, as yet, have recognised that this is the proper domain of economics, and have attempted to treat their science from this point of view. The main subject of social economy, *i.e.*, the *economy of energy required for the satisfaction of human needs*, is consequently the last subject which one expects to find treated in a concrete form in economical treatises.

The following pages are a contribution to a portion of this vast subject. They contain a discussion of the advantages which civilised societies could derive from a combination of industrial pursuits with intensive agriculture, and of brain work with manual work.

The importance of such a combination has not escaped the attention of a number of students of social science. It was eagerly discussed some fifty years ago under the names of "harmonised labour," "integral education," and so on. It was pointed out at that time that the greatest sum total of well-being can be obtained when a variety of agricultural, industrial and intellectual pursuits are combined in each community; and that man shows his best when he is in a position to apply his usually-varied

capacities to several pursuits in the farm, the workshop, the factory, the study or the studio, instead of being riveted for life to one of these pursuits only.

At a much more recent date, in the seventies, Herbert Spencer's theory of evolution gave origin in Russia to a remarkable work, *The Theory of Progress*, by M. M. Mikhailovsky. The part which belongs in progressive evolution to *differentiation*, and the part which belongs in it to an *integration* of aptitudes and activities, were discussed by the Russian author with depth of thought, and Spencer's differentiation-formula was accordingly completed.

And, finally, out of a number of smaller monographs, I must mention a suggestive little book by J. R. Dodge, the United States' statistician (*Farm and Factory: Aids derived by Agriculture from Industries*, New York, 1886). The same question was discussed in it from a practical American point of view.

Half a century ago a harmonious union between agricultural and industrial pursuits, as also between brain work and manual work, could only be a remote desideratum. The conditions under which the factory system asserted itself, as well as the obsolete forms of agriculture which prevailed at that time, prevented such a union from being feasible. Synthetic production was impossible. However, the wonderful simplification of the technical processes in both industry and agriculture, partly due to an ever-

increasing division of labour—in analogy with what we see in biology—has rendered the synthesis possible ; and a distinct tendency towards a synthesis of human activities becomes now apparent in modern economical evolution. This tendency is analysed in the subsequent chapters—a special weight being laid upon the present possibilities of agriculture, which are illustrated by a number of examples borrowed from different countries, and upon the small industries to which a new impetus is being given by the new methods of transmission of motive power.

The substance of these essays was published in 1888-1890 in the *Nineteenth Century*, and of one of them in the *Forum*. However, the tendencies indicated therein have been confirmed during the last ten years by such a mass of evidence that a very considerable amount of new matter had to be introduced, while the chapters on agriculture and the small trades had to be written anew.

I take advantage of this opportunity to address my best thanks to the editors of the *Nineteenth Century* and the *Forum* for their kind permission of reproducing these essays in a new form, as also to those friends and correspondents who have aided me in collecting information about agriculture and the petty trades.

P. KROPOTKIN.

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APPENDIX.

A.—FRENCH IMPORTS.

ABOUT one-tenth part of the cereals consumed in France is still imported; but, as will be seen in a subsequent chapter, the progress in agriculture has lately been so rapid that even without Algeria France will soon have a surplus of cereals. Wine is imported, but nearly as much is exported. So that coffee and oil seeds remain the only food articles of durable importance for import. For coal and coke France is still tributary to Belgium and this country; but it is chiefly the inferiority of organisation of coal extraction which stands in the way of the home supply. The other important items of imports are: raw cotton (about £8,000,000 of net imports), raw wool to the same amount, and raw silk (about £5,000,000), as well as hides and furs. The exports of manufactured goods were £80,000,000 in 1890 and about £74,000,000 in subsequent years. Exports of textiles, exclusive of yarn and linen, £29,800,000 in 1890, and £25,500,000 in 1891-4. Imports of all textiles, £6,900,000 in 1890, and £4,800,000 in 1891-4.

B.—GROWTH OF INDUSTRY IN RUSSIA.

The growth of industry in Russia will be best seen from the following:—

	1880-1. Cwts.	1893-4. Cwts.
Cast iron	8,810,000	25,450,000
Iron	5,770,000	9,700,000
Steel	6,030,000	9,610,000
Railway rails	3,960,000	4,400,000
Coal	64,770,000	160,000,000
Naphtha	6,900,000	108,700,000
Sugar	5,030,000	11,470,000
Raw cotton, home grown	293,000	1,225,000

Cottons, spinning	£7,410,000	1889. £18,760,000
" weaving	9,970,000	22,230,000
" printing and dyeing	6,110,000	7,280,000

C.—IRON INDUSTRY IN GERMANY.

The following tables will give some idea of the growth of mining and metallurgy in Germany.

The extraction of minerals in the German Empire, in metric tons, which are very little smaller than the English ton (0.984), was:—

	1883. Tons.	1893. Tons.
Coal	55,943,000	76,773,000
Lignite	14,481,000	22,103,000
Iron ore	8,616,000	12,404,000
Zinc ore	678,000	729,000
Mineral salts (chiefly potash)	1,526,000	2,379,000

	1874.	1894.
Pig iron	1,906,260	5,382,170
Half finished and finished iron and steel	489,000	5,825,000
Imports of iron and steel	757,700	349,160
Exports of same	546,900	2,008,760
Total home consumption of pig iron, iron and steel	2,117,080	3,772,570

	Eng. lb.	Eng. lb.
Do. per head of population	115	161
Production of same per head of population	103	232

For the Grand Duchy of Luxemburg the proportion is still more striking:—

	1868. Tons.	1893. Tons.
Iron ore raised	722,000	3,352,000
Pig iron produced (1871)	93,400	558,300
Steel, begun to be produced in 1886 only	20,554	129,120
Workmen employed	3,508	7,087

(From the *Journal of the Iron and Steel Institute*, vol. xlviii., 1895, p. 6.)

D.—MACHINERY IN GERMANY.

The growth of the productive powers in Germany is best illustrated by the development of machinery. In the year 1879 Prussia had 29,985 standing engines (887,780 horse-power), 5442 moving engines (47,100 horse-power), and 623 engines on ships (50,310 horse-power). Total, 35,960 engines (985,190 horse-power). Fifteen years later the respective figures were:—57,224 standing (2,172,250 horse-power), 14,425 moving (147,130 horse-power), and 1726 on ships (219,770 horse-power). Total, 73,375 engines (2,539,150 horse-power).

Same increase in Bavaria. In 1879, 2411 standing engines (70,680 horse-power), 892 moving (5520 horse-power), and 98 on ships (2860 horse-power). Total, 3401 engines (79,060 horse-power). In 1889 there were 3819 standing engines (124,680 horse-power), 2021 moving (13,730 horse-power), and 38 on ships (4370 horse-power). Total, 5868 engines (142,750 horse-power).

For the German Empire Prof. Lexis estimated the total of all engines in 1879 at 65,170 engines, 4,510,640 horse-power. In 1892 the aggregate horse-power was 7,200,000, namely, 2,500,000 horse-power in standing engines, 4,200,000 in moving, and 500,000 on ships (Schmoller's *Jahrbuch*, xix., i., p. 275).

The rapid progress in the fabrication of machinery in Germany is still better seen from the growth of the German exports as shown by the following table:—

	1890.	1895.
Machines and parts thereof . . .	£2,450,000	£3,215,000
Sewing-machines and parts thereof . . .	315,000	430,000
Locomotives and locomobiles . . .	280,000	420,000

Every one knows that part of the German sewing-machines and a considerable amount of tools find their way even into this country, and that German tools are plainly recommended in English books.

E.—COTTON INDUSTRY IN GERMANY.

Dr. G. Schulze-Gaewernitz, in his excellent work, *The Cotton Trade in England and on the Continent* (English translation by Oscar S. Hall, London, 1895), calls attention to the fact that Germany has certainly not yet attained, in her cotton industry, the high technical level of development attained by England; but he shows also the progress lately realised. The cost of each yard of plain cotton, notwithstanding low wages and long hours, is still greater in Germany than in England, as seen from the following tables. Taking a certain quality of plain cotton in both countries, he gives (p. 151, German edition) the following comparative figures:—

	England. 9 hours	Germany. 12 hours
Hours of labour	9 hours	12 hours
Average weekly earnings of the operatives	16s. 3d.	11s. 8d.
Yards woven per week per operative	706 yards	466 yards
Cost per yard of cotton	0.275d.	0.303d.

But he remarks also that in all sorts of printed cottons, in which fancy, colours and invention play a predominant part, *the advantages are entirely on the side of the smaller German factories.*

In the spinning mills the advantages, on the contrary, continue to remain entirely on the side of England, the number of operatives per 1000 spindles being in various countries as follows (p. 91, English edition):—

	Per 1000 spindles.
Bombay	25 operatives.
Italy	13 "
Alsace	9½ "
Mulhouse	7½ "
Germany, 1861	20 "
" 1882	8 to 9 "
England, 1837	7 "
" 1887	3 "

For the last ten years considerable improvements have taken place. "India shows us, since 1884, extraordinary developments," Schulze-Gaewernitz remarks, and "there is no doubt that Germany also has reduced the number of

operatives per 1000 spindles since the last Inquest". "From a great quantity of materials lying before me, I cull," he writes, "the following, which, however, refer solely to leading and technically distinguished spinning mills:—

	Per 1000 spindles.
Switzerland	6.2 operatives.
Mulhouse	5.8 "
Baden and Württemberg	6.2 "
Bavaria	6.8 "
Saxony (new and splendid mills)	7.2 "
Vosges, France (old spinning mills)	8.9 "
Russia	16.6 "

The average counts of yarn for all these are between twenties and thirties.

The progress realised in Augsburg between 1875 and 1891 appears as follows:—

	1875.	1891.
Per spindle, lb. yarn	32.6	35.9
Counts	34	34
Per spindle, lb. cotton	39.3	42.4
Operatives, per 1000 spindles	9.7	7.8
Hours of labour, per week	72	66

Wages have been raised everywhere."

F.—MINING AND TEXTILES IN AUSTRIA.

To give an idea of the development of industries in Austria-Hungary, it is sufficient to mention the growth of her mining industries and the present state of her textile industries.

The value of the yearly extraction of coal and iron ore appears as follows:—

	1880.	1893.
Coal (Austria)	£1,611,000	£2,796,000
Brown coal (Austria)	1,281,300	2,837,400
Raw iron (Austria-Hungary)	1,749,000	3,015,800

At the present time the exports of coal entirely balance the imports.

As to the textile industries, Austria alone, already in 1890, had 1970 steam-engines, of 113,280 horse-power, employed in

the fabrication of textiles. For cotton spinning she had 153 establishments, with 2,392,360 spindles, employing 33,815 work-people, while for cotton weaving she had 194 establishments, with 47,902 power-looms.

The imports of raw cotton attained, in 1894, the respectable sum of £4,333,000 (cotton yarn, £1,375,000); of wool, £3,000,000 (woollen yarn, £1,775,000); of silk, £1,560,000; while her exports of woollen goods quite balanced the imports of the same.

G.—MR. GIFFEN'S AND MR. FLUX'S FIGURES CONCERNING
THE POSITION OF THE UNITED KINGDOM IN INTER-
NATIONAL TRADE.

A few remarks concerning these figures may be of some avail.

When a sudden fall in the British and Irish exports took place in the years 1882-6, and the alarmists took advantage of the bad times to raise the never-forgotten war-cry of protection, especially insisting on the damages made to British trade by "German competition," Mr. Giffen analysed the figures of international trade in his "Finance Essays" and in a report read in 1888 before the Board of Trade Commission. Subsequently, Mr. A. W. Flux analysed again the same figures, extending them to a later period. He confirmed Mr. Giffen's conclusions and endeavoured to prove that the famous "German competition" is a fallacy.

Mr. Giffen's conclusions, quoted by Mr. A. W. Flux ("The Commercial Supremacy of Great Britain," in *Economical Journal*, 1894, iv., p. 457), were as follows:—

"On the whole, the figures are not such as to indicate any great and overwhelming advance in German exports in comparison with those of the United Kingdom. There is greater progress in certain directions, but, taken altogether, no great disproportionate advance, and in many important markets for the United Kingdom Germany hardly appears at all."

In this subdued form, *with regard to German competition alone*—and due allowance being made for figures in which

no consideration is given to what sort of goods make a given value of exports, and in what quantities—Mr. Giffen's statement may be accepted. But that is all.

If we take, however, Mr. Giffen's figures as they are reproduced in extended tables (on pp. 461-467 of the just quoted paper), tabulated with great pains in order to show that Germany's part in the imports to several European countries, such as Russia, Italy, Servia, etc., has declined, as well as the part of the United Kingdom, all we can conclude from these figures is, that there are other countries besides Germany, namely, the United States and Belgium, which compete very effectively with England, France, and Germany for supplying what manufactured goods are still taken by Russia, Italy, Servia, etc., from abroad.

At the same time such figures give no idea of the fact that where manufactured metal goods were formerly supplied, coal and raw metals are imported now, for the home manufacture of those same goods; or, where dyed and printed cottons were imported, only yarn is now required. The whole subject is infinitely more complicated than it appears in Mr. Giffen's calculations; and, valuable as his figures may have been for appeasing exaggerated fears, they contain no answer whatever to the many economic questions involved in the matters treated by Mr. Giffen.

H.—COTTON MANUFACTURE IN INDIA.

The views taken in the text about the industrial development of India have been confirmed by a mass of evidence. One of them, coming from authorised quarters, deserves special attention. In an article on the progress of the Indian cotton manufacture, the *Textile Recorder* (15th October, 1888) wrote:—

“No person connected with the cotton industry can be ignorant of the rapid progress of the cotton manufacture in India. Statistics of all kinds have recently been brought before the public, showing the increase of production in the country; still it does not seem to be clearly understood that this increasing output of cotton goods must seriously lower

the demand upon Lancashire mills, and that it is not by any means improbable that India may at no very distant period be no better customer than the United States is now.

"In former times, Manchester goods were to be found in the most remote villages on the banks of the Ganges and the Brahmaputra, and even in the far distant bazaars of Assam, Sylhet and Cachar. But now," the *Recorder* wrote, "a change is taking place. Indian cotton piece goods are coming to the front, and displacing those of Manchester.

"Unbiased persons having a thorough knowledge of the resources of the country, and having watched the growth of the cotton industry during the last ten years, do not hesitate to say that in a limited period of time the output of all the plainer classes of goods will be sufficient to meet the Indian demand without the supply of goods from Lancashire."

One hardly need add at what price the Indian manufacturers obtain cheap cottons. The report of the Bombay Factory Commission which was laid before Parliament in August, 1888, contained facts of such horrible cruelty and cupidity as would hardly be imagined by those who have forgotten the disclosures of the inquiry made in this country in 1840-42. The factory engines are at work, as a rule, from 5 A.M. till 7, 8, or 9 P.M., and the workers remain at work for twelve, thirteen, fourteen hours, only releasing one another for meals. In busy times it happens that the same set of workers remain at the gins and presses night and day with half an hour's rest in the evening. In some factories the workers have their meals at the gins, and are so worn out after eight and ten days' uninterrupted work that they supply the gins mechanically "three parts asleep".

"It is a sad tale of great want on one side, and cruel cupidity on the other" the official report concludes. However, it would be absolutely erroneous to conclude that Indian manufactures can compete with the British ones as long as they continue the terrible exploitation of human labour which we see now. Forty years ago the British manufactures offered absolutely the same terrible picture of cruel cupidity. But times will come when Indian workers will restrain the cupidity of the capitalists, and the manufactures

of Bombay will be none the worse for that in the competition with the British manufactures.

I.—IRRIGATED MEADOWS IN ITALY.

In the *Journal de l'Agriculture* (2nd Feb., 1889) we find the following about the *marcites* of Milan:—

"On part of these meadows water runs constantly, on others it is only left running for ten hours every week. The former give six crops every year; since February—80 to 100 tons of grass, equivalent to twenty to twenty-five tons of dry hay, being obtained from the hectare (eight to ten tons per acre). Lower down, thirteen tons of dry hay per acre is the regular crop. Taking eighty acres placed in average conditions, they will yield fifty-six tons of green grass per hectare, that is, fourteen tons of dry hay, or the food of three milch cows to the hectare (two and a half acres). The rent of such meadows is from £8 to £9 12s. per acre."

For Indian corn, the advantages of irrigation are equally apparent. On irrigated lands, crops of from seventy-eight to eighty-nine bushels per acre are obtained, as against from fifty-six to sixty-seven bushels on unirrigated lands, also in Italy, and twenty-eight to thirty-three bushels in France (Garola, *Les Céréales*).

As to the ways in which agriculture is ruined in Italy we can best see them from the work of Mr. Beauclerck (*Rural Italy*, London, 1888). Speaking of the Milan province, he remarks that we find there "one of the densest agricultural populations in the world, congregated in a country, of which half is occupied by arid mountains" (416 inhabitants to the square mile). "Flanders alone equals Milan in density of population. The soil is not naturally fertile, and an immense expenditure of capital and labour has alone produced the richness of the land." But "the taxation is fabulously high," as it attains 2620 francs per square kilometre of the cultivated area. Altogether, Mr. Beauclerck considers that rural Italy pays 300,000,000 francs of direct taxes, out of returns not exceeding 1,000,000,000 francs, not to mention the salt tax, the tax on personal property and the indirect taxation.

J.—THE CHANNEL ISLANDS.

The excellent state of agriculture in Jersey and Guernsey has often been referred to in the agricultural and general literature of this country, so I need only refer to the works of Mr. W. E. Bear (*Journal of the Agricultural Society*, 1888; *Quarterly Review*, 1888.; *British Farmer*, etc.) and to the exhaustive work of D. H. Ansted and R. G. Latham, *The Channel Islands*, third edition, revised by E. Toulmin Nicolle (London, Allen, 1893).

Many English writers, certainly not those just named, are inclined to explain the successes obtained in Jersey by the wonderful climate of the islands and the fertility of the soil. As to climate, it is certainly true that the yearly record of sunshine in Jersey is greater than in any English station. It reaches from 1842 hours a year (1890) to 2300 (1893), and thus exceeds the highest aggregate sunshine recorded in any English station by from 168 to 336 hours (exclusively high maximum in 1894) a year; May and August seeming to be the best favoured months.* But, to quote from the just mentioned work of Ansted and Latham:—

“There is, doubtless, in all the islands, and especially in Guernsey, *an absence of sunheat* and of the direct action of the sun’s rays *in summer*, which must have its effect, and a *remarkable prevalence of cold, dry, east wind in late spring, retarding vegetation*” (p. 407). Every one who has spent, be it only two or three weeks in late spring in Jersey, must know by experience how true this remark is. Moreover, there are the well-known Guernsey fogs, and “owing also to rain and damp the trees suffer from mildew and blight, as well as from various aphides”. The same authors remark that the nectarine does not succeed in Jersey in the open air “owing to the absence of autumn heat”; that “the wet autumns and cold summers do not agree with the apricot,” and so on.

If Jersey potatoes are, on the average, three weeks in advance of those grown in Cornwall, the fact is fully explained by the continual improvements made in Jersey in view of

* *Ten Years of Sunshine in the British Isles*, 1881-1890.

obtaining, be it ever so small, quantities of potatoes a few days in advance, either by special care taken to plant them out as soon as possible, protecting them from the cold winds, or by choosing tiny pieces of land naturally protected or better exposed. The difference in price between the earliest and the later potatoes being immense, the greatest efforts are made to obtain an early crop, and it would seem that the potatoes begin to be grown earlier and earlier, so that three or perhaps even four weeks have been won within the last ten years.

The following table shows when the exporting season began and what prices were realised per cabot (= $\frac{1}{8}$ of a ton) on the very first day of export:—

	s.	d.	s.	d.	
1883, May 22	12	0	to	14	0
1884, " 6	6	6	"	8	0
1885, " 19				6	0
1886, June 2	6	0	"	7	0
1887, May 24	3	0	"	10	0
1888, " 29	8	0	"	10	0
1889, " 14	8	0	"	10	0
1890, " 6	9	0	"	10	0
1891, " 1	12	0	"	15	0
1892, " 17	12	0	"	14	0
1893, April 24	8	3	"	8	6
1894, " 26				11	6

The decline of prices per ton is best seen from the following:—

	1887.	1888.	1889.	1894.
Week ending:—				
May 5 . . . . .	...	...	...	£18 2 6
" 12 . . . . .	...	...	...	11 9 2
" 19 . . . . .	...	...	...	9 3 4
" 26-28	£22 10 7	£20 12 6	£17 6 8	6 9 2
June 2 . . . . .	...	...	...	7 13 4
" 9-11	10 14 7	10 14 7	6 14 4	6 13 4
" 16 . . . . .	...	...	...	6 15 5
" 23 . . . . .	...	...	...	8 6 8
" 30 . . . . .	...	...	...	...
July 2	9 15 6	4 7 6	5 17 0	6 17 6
" 7 . . . . .	...	...	...	9 3 4
" 14-16	5 12 7	2 10 0	2 18 6	6 17 6
" 30	6 11 9	2 8 11	2 12 0	...
Aug. 20	6 7 6	2 10 0	2 12 0	...

As to the fertility of the soil, it is still worse advocacy, because there is no area in the United Kingdom of equal size which would be manured to such an extent as the area of Jersey and Guernsey is by means of artificial manure. In the seventeenth century, as may be seen from the first edition of Falle's *Jersey*, published in 1694, the island "did not produce that quantity as is necessary for the use of the inhabitants, who must be supplied from England in time of peace, or from Dantzic in Poland". In *The Groans of the Inhabitants of Jersey*, published in London in 1709, we find the same complaint. And Quayle, who wrote in 1812 and quoted the two works just mentioned, in his turn complained in these terms: "The quantity at this day raised is quite inadequate to their sustenance, apart from the garrison" (*General View of the Agriculture and the Present State of the Islands on the Coast of Normandy*, London, 1815, p. 77). And he added: "After making all allowance, the truth must be told; the grain crops are here foul, in some instances execrably so". And when we consult the modern writers, Ansted, Latham and Nicolle, we learn that the soil is by no means rich. It is decomposed granite, and easily cultivable, but "it contains no organic matter besides what man has put into it".

This is certainly the opinion any one will come to if he only visits thoroughly the island and looks attentively to its soil—to say nothing of the Quenvais where, in Quayle's time, there was "an Arabian desert" of sands and hillocks covering about seventy acres (p. 24), with a little better but still very poor soil in the north and west of it. The fertility of the soil has entirely been made, first, by the *vraic* (sea-weeds), upon which the inhabitants have maintained communal rights; later on, by considerable shipments of manure, in addition to the manure of the very considerable living stock which is kept in the island; and finally, by an admirably good cultivation of the soil.

Much more than sunshine and good soil, it was the conditions of land-tenure, and the low taxation which contributed to the remarkable development of agriculture in Jersey. First of all, the people of the Isles know but little of the

tax-collector. While the English pay, in taxes, an average of 50s. per head of population; while the French peasant is over-burdened with taxes of all imaginable descriptions, and the Milanese peasant has to give to the Treasury full 30 per cent. of his income—all taxes paid in the Channel Islands amount to but 10s. per head in the town parishes and to much less than that in the country parishes. Besides, of indirect taxes, none are known but the 2s. 6d. paid for each gallon of imported spirits and 9d. per gallon of imported wine.

As to the conditions of land-tenure, the inhabitants have happily escaped the action of Roman Law, and they continue to live under the *coutumier de Normandie* (the old Norman common law). Accordingly, more than one-half of the territory is owned by those who themselves till the soil; there is no landlord to watch the crops and to raise the rent before the farmer has ripened the fruit of his improvements; there is nobody to charge so much for each cart-load of sea-weeds or sand taken to the fields; every one takes the amount he likes, provided he cuts the weeds at a certain season of the year, and digs out the sand at a distance of sixty yards from the high-water mark. Those who buy land for cultivation can do so without becoming enslaved to the money-lender. One-fourth part only of the permanent rent which the purchaser undertakes to pay is capitalised and has to be paid down on purchase (often less than that), the remainder being a perpetual rent in wheat which is valued in Jersey at 50 to 54 *sous de France* per cabot. To seize property for debt is accompanied with such difficulties that it is seldom resorted to (*Quayle's General View*, pp. 41-46). Conveyances of land are simply acknowledged by both parties on oath, and cost nearly nothing. And the laws of inheritance are such as to preserve the homestead notwithstanding the debts that the father may have run into (*ibid.*, pp. 35-41).

After having shown how small are the farms in the islands (from twenty to five acres, and very many less than that)—there being "less than 100 farms in either island that exceed twenty-five acres; and of these only about half a dozen in

Jersey exceed fifty acres"—Messrs. Ansted, Latham and Nicolle remark:—

"In no place do we find so happy and so contented a country as in the Channel Islands. . . ." "The system of land-tenure has also contributed in no small degree to their prosperity. . . ." "The purchaser becomes the absolute owner of the property and his position cannot be touched so long as the interest of these [wheat] rents be paid. He cannot be compelled, as in the case of mortgage, to refund the principal. *The advantages of such a system are too patent to need any further allusion.*" (*The Channel Islands*, third edition, revised by E. Toulmin Nicolle, p. 401; see also p. 443.)

The following will better show how the cultivable area is utilised in Jersey:—

	1893. Acres.	1894. Acres.	
Corn crops	{ Wheat	1526	1709
	{ Barley and bere	109	113
	{ Oats and rye	286	499
	{ Beans and peas	12	16
Green crops	{ Potatoes	7594	7007
	{ Turnips and swedes	126	111
	{ Mangolds	219	232
	{ Other green crops	382	447
Clover, sainfoin and grasses under rotation	{ For hay	2604	2842
	{ Not for hay	2563	2208
Permanent pasture or grass	{ For hay	989	1117
	{ Not for hay	3120	3057
	<hr/>	21,428	21,252

In 1889 there were under:—

	Acres.
Small fruit	2487
Orchards	156
Market gardens	83
Nursery gardens	30

Living Stock.

	1893.	1894.
Horses used solely for agriculture	2300	2252
Unbroken horses	103	83
Mares solely for breeding	14	16
	<hr/>	<hr/>
Horses	2417	2351

Cows and heifers in milk or in calf	1893. 7004	1894. 6709
Other cattle :—		
Two years or more	760	864
One year to two years	2397	2252
Less than one year	2489	2549
Total cattle	12,650	12,374
Sheep, all ages	335	332
Pigs, including sows for breeding	5587	6021

Exports.

Bulls	1887. 102	1888. 100	1889. 92
Cows and heifers	1395	1639	1629

Potatoes exported :—

	Tons.	
1887	50,670	434,907
1888	60,527	242,110
1889	52,700	264,153
1890	54,110	293,681
1891	66,840	487,642
1892	66,332	376,535
1893	57,762	327,366
1894	60,605	462,895

The areas under potatoes having been for the last two years respectively 7599 and 7007 acres, the export value *per acre* attained £27 6s. in 1893, and £66 1s. in 1894.

As regards greenhouse culture, a friend of mine, who has worked as a gardener in Jersey, has collected for me various information relative to the productivity of culture under glass. Out of it the following may be taken as a perfectly reliable illustration, in addition to those given in the text :—

Mr. B.'s greenhouse has a length of 300 feet and a width of 18 feet, which makes 5400 square feet, out of which 900 square feet are under the passage in the middle. The cultivable area is thus 4500 square feet. There are no brick walls, but brick pillars and boards are used for front walls. Hot water heating is provided, but is only used occasionally, to keep off the frosts in winter—the crops being early potatoes (which require no heating), followed by tomatoes. The latter are Mr. B.'s speciality. Catch crops of radishes, etc., are taken. The cost of the greenhouse, without the

heating apparatus, is 10s. per running foot of greenhouse, which makes £150 for one-eighth of an acre under glass, or a little less than 7d. per glass-roofed square foot.

The crops are: potatoes, four cabots per perch, *i.e.*, three-quarters of a ton of early potatoes from the greenhouse; and tomatoes, in the culture of which Mr. B. attains extraordinary results. He puts in only 1000 plants, thus giving to his plants more room than is usually given; and he cultivates a corrugated variety which gives very heavy crops but does not fetch the same prices as the smooth varieties. In 1896 his crop was four tons of tomatoes, and so it would have been in 1897—each plant giving an average of twenty pounds of fruit, while the usual crop is from eight to twelve pounds per plant.

The total crop was thus four and three-quarter tons of vegetables, to which the catch crops must be added—thus corresponding to 85,000 lb. per acre (over 90,000 lb. with the catch crops). I again omit the money returns, and only mention that the expenditure for fuel and manure was about £10 a year, and that the Jersey average is three men, each working fifty-five hours a week (ten hours a day), for each acre under glass.

K.—PLANTED WHEAT.

The Rothamsted Challenge.

Sir A. Cotton delivered, in 1893, before the Balloon Society, a lecture on agriculture, in which lecture he warmly advocated deep cultivation and planting the seeds of wheat wide apart. He published it later on as a pamphlet (*Lecture on Agriculture*, 2nd edition, with Appendix. Dorking, 1893). He obtained, for the best of his sort of wheat, an average of "fifty-five ears per plant, with three oz. of grain of fair quality—perhaps sixty-three lbs. per bushel" (p. 10). This corresponded to ninety bushels per acre—that is, his result was very similar to those obtained at the Tomblaine and Capelle agricultural stations by Grandeau and F. Dessprèz, whose work seems not to be known to Sir A. Cotton. True,

Sir A. Cotton's experiments were not conducted, or rather were not reported, in a thoroughly scientific way. But the more desirable it would have been, either to contradict or to confirm his statements by experiments carefully conducted at some experimental agricultural station. This is, in fact, what was expected from the veteran head of the Rothamsted experimental farm, Sir John Lawes, even though the author of the pamphlet may have been hard upon the general lines followed in the Rothamsted experiments. Sir John Lawes took, however, another course, and inserted in the *Echo* a letter (reproduced in an Appendix to Sir A. Cotton's lecture), in which we read the following:—

“There are, obviously, two important questions to consider, first—whether so much as from 100 to 120 bushels of wheat can be grown per acre on ordinary arable land? And secondly, whether, if a crop of this magnitude can be grown, it can be done at a cost which will give profit to the farmer? If Sir A. Cotton, or any one else, will grow 1000 *bushels on ten acres* of fairly average wheat land, spending as much as he likes on the cultivation, I will give him £250. Further, in order to ascertain whether our country can grow sufficient wheat to feed our population, and even, perhaps, for export besides, upon from 2,000,000 to 3,000,000 acres, I will give £1000 to Sir A. Cotton, or any one else, who will grow 100 bushels of wheat per acre, *on ten separate acres of wheat land, one in each of the ten English counties* growing the largest acreage of wheat at the present time; the cost of production being less than the value of the crop, so as to prove that such crops could be grown profitably by our farmers.”

I reprint this letter almost in full (italics are mine) because I have already had letters from correspondents, and seen public affirmations to the effect that Sir John Lawes had offered £1000 to the person who would grow 100 bushels to the acre, but that no one had answered his challenge. Every one may see now that actually no such challenge has ever been made.

The fact is this. All Rothamsted experiments were carried on on plots of two-thirds and one-third of an acre. And, from experiments on such a scale, the far-reaching

conclusion in agriculture as to the limits of profitable manuring was arrived at at Rothamsted. The highest *average* crop ever attained at Rothamsted on such plots, by any amount of manuring, was thirty-six and a quarter bushels, and the *maximum* crop obtained in the best season was fifty-six bushels. Now Sir A. Cotton claims that as much as from 80 to 100 bushels to the acre can be obtained by means of deep cultivation and planting wide apart in addition to proper manuring, that is, nearly three times as much as the Rothamsted average was for the best-manured plots. The only fair challenge which could be made with reference to such an assertion would be, in my opinion, to propose to grow an average of 80 or 100 bushels (instead of the Rothamsted thirty-six and a quarter) for several years in succession (bad and good seasons) *on plots of the same size as the Rothamsted plots, i.e., one-third and two-thirds of an acre*; under the condition, of course, that full account be kept, as it was at Rothamsted, of the manure used and the labour required. But such a challenge was *not* made, and it was proposed, instead, to grow 1000 bushels on ten acres, in ten different counties, in the second part of the challenge. To make a challenge under such conditions—Sir John Lawes must well know it himself—amounts to *no challenge at all*. Let us hope, however, that some day the experiments of Hallett, Cotton, Grandeau and Dessprèz will be repeated at Rothamsted as well, and that Sir John Lawes will give them as brilliant a confirmation as he gave some time ago to Hellriegel's work on nitrification.

L.—REPLANTED WHEAT.

A few words on this method which now claims the attention of the experimental stations may perhaps not be useless.

In Japan, rice is always treated in this way. It is treated as our gardeners treat lettuce and cabbage; that is, it is let first to germinate; then it is sown in special warm corners, well inundated with water and protected from the birds by strings drawn over the ground. Thirty-five to fifty-five days

later, the young plants, now fully developed and possessed of a thick network of rootlets, are *replanted* in the open ground. In this way the Japanese obtain from twenty to thirty-two bushels of *dressed* rice to the acre in the poor provinces, forty bushels in the better ones, and from sixty to sixty-seven bushels in the best lands. The average, in six rice growing states of North America, is at the same time only nine and a half bushels.*

In China, replanting is also in general use, and consequently the idea has been circulated in France by M. Eugène Simon and the late M. Toubeau, that replanted wheat could be made a powerful means of increasing the crops in Western Europe.† So far as I know, the idea has not yet been submitted to a practical test; but when one thinks of the remarkable results obtained by Hallett's method of planting; of what the market gardeners obtain by replanting once and even twice; and of how rapidly the work of planting is done by market gardeners in Jersey, one must agree that in replanted wheat we have a new opening worthy of the most careful consideration. Experiments have not yet been made in this direction; but Prof. Grandeau, whose opinion I have asked on this subject, wrote to me that he believes the method must have a great future. Practical market gardeners (Paris *marai*cher) whose opinion I have asked, see, of course, nothing extravagant in that idea.

With plants yielding 1000 grains each—and in the Capelle experiment they yielded an average of 600 grains—the yearly wheat-food of one individual man (5.65 bushels or 265 lbs.), which is represented by from 5,000,000 to 5,500,000 grains, could be grown on a space of 250 square yards; while for an experienced hand replanting would represent no more than ten to twelve hours' work. With a proper machine-tool, the

* Dr. M. Fesca, *Beiträge zur Kenntniss der Japanesischen Landwirthschaft*, Part ii., p. 33 (Berlin, 1893). The economy in seeds is also considerable. While in Italy 250 kilogrammes to the hectare are sown, and 160 kilogrammes in South Carolina, the Japanese use only sixty kilogrammes for the same area. (Semler, *Tropische Agrikultur*, Bd. iii., pp. 20-28.)

† Eugène Simon, *La cité chinoise* (translated into English); Toubeau, *La répartition métrique des impôts*, 2 vols., Paris (Guillaumin), 1880.

work could probably be very much reduced. In Japan, two men and two women plant with rice three-quarters of an acre in one day (Ronna, *Les Irrigations*, vol. iii., 1890, p. 67 *seq.*). That means (Fesca, *Japanesische Landwirthschaft*, p. 33) from 33,000 to 66,000 plants, or, let us say, a minimum of 8250 plants a day for one person. The Jersey gardeners plant from 600 (inexperienced) to 1000 plants per hour (experienced).

M.—IMPORTS OF VEGETABLES TO THE UNITED KINGDOM.

That the land in this country is not sufficiently utilised for market gardening, and that the largest portion of the vegetables which are imported from abroad could be grown in this country, has been said over and over again within the last few years.

It is certain that considerable improvements have taken place lately—the area under market gardens, and especially the area under glass for the growth of fruit and vegetables, having largely been increased of late. Thus, instead of 38,957 acres, which were given to market-gardening in Great Britain in 1875, there were, in 1894, 88,210 acres, exclusive of vegetable crops on farms, given to that purpose (*The Gardener's Chronicle*, 20th April, 1895, p. 483). But that increase remains a trifle in comparison with similar increases in France, Belgium, and the United States. In France, the area given to market gardening was estimated in 1892 by M. Baltet (*L'horticulture dans les cinq parties du monde*, Paris, Hachette, 1895) at 1,075,000 acres—four times more, in proportion to the cultivable area, than in this country, and the most remarkable of it is that considerable tracts of land formerly treated as uncultivable have been reclaimed for the purposes of market gardening as also of fruit growing.

As things stand now in this country, we see that very large quantities of the commonest vegetables, each of which could be grown in this country, are imported.

Lettuces are imported—not only from the Azores or from the south of France, but they continue until June to be imported from France, where they are mostly grown—not in

the open air, but in frames. Early cucumbers, also grown in frames, are largely imported from Holland, and are sold so cheaply that many English gardeners have ceased to grow them.* Even beetroot and pickling cabbage are imported from Holland; and while onions were formerly largely grown in this country, we see that in 1894, 5,288,512 bushels of onions, £765,049 worth, were imported from Belgium (chief importer), Germany, Holland, France, and so on.

Again, that early potatoes should be imported from the Azores and the south of France is quite natural. It is not so natural, however, that more than 50,000 tons of potatoes (58,060 tons, £521,141 worth, on the average during the years 1891-4) should be imported from the Channel Islands, because there are hundreds if not thousands of acres in South Devon, and most probably in other parts of the south coast too, where early potatoes could be grown equally well. But besides the 88,200 tons of early potatoes (£710,586 worth) which are imported to this country, no less than 54,100 tons of late potatoes, for which £441,300 are paid every year, are imported from Holland, Germany and Belgium. And, moreover, this country imported, during the same three years, all sorts of green vegetables, for the sum of £1,027,411 (as against £467,290 in 1885) from different countries,† while thousands of acres lie idle, and the country population is driven to the cities in search of work, without finding it.

Every one knows how well potatoes succeed in this country, and what admirable sorts of potatoes have been bred by the British growers. But the rent and the middleman absorb the best profits of the grower. I could produce striking facts to prove this last assertion concerning the middleman; but similar facts having already been produced in heaps, it would be useless to swell by more figures an evidence already overwhelming.‡

* *The Gardener's Chronicle*, 20th April, 1895, p. 483.

† *Ibid.*

‡ Cf. W. Bear's *British Farmer and His Competitors*, p. 151.

N.—MARKET GARDENING IN BELGIUM.

In 1885 the superficies given to market gardening in Belgium was 99,600 acres. Now, a Belgian professor of agriculture, who has kindly supplied me with notes on this subject, writes:—

“The area has considerably increased, and I believe it can be taken at 112,000 acres (45,000 hectares), if not more.” And further on: “Rents in the neighbourhood of the big towns, Antwerp, Liège, Ghent and Brussels, attain as much as £5 16s. and £8 per acre; the cost of instalment is from £13 to £25 per acre; the yearly cost of manure, which is the chief expense, attains from £8 to £16 per acre the first year, and then from £5 to £8 every year”. The gardens are of the average size of two and a half acres, and in each garden from 200 to 400 frames are used. About the Belgian market-gardeners the same remark must be made as has been made concerning the French *marailleurs*. They work awfully hard, having to pay extravagant rents, and to lay money aside, with the hope of some day being able to buy a piece of land, and to get rid of the blood-sucker who absorbs so much of their money returns; having moreover every year to buy more and more frames in order to obtain their produce earlier and earlier, so as to fetch higher prices for it, they work like slaves. But it must be remembered that in order to obtain the same amount of produce under glass, in greenhouses, the work of *three men only*, working fifty-five hours a week, is required in Jersey for cultivating one acre of land under glass.

O.—PETTY TRADES IN THE LYONS REGION.

The neighbourhoods of St. Etienne are a great centre for all sorts of industries, and among them the petty trades occupy an important place. Iron works and coal mines with their high smoking chimneys; noisy manufactories; roads blackened by coal, and a poor vegetation, give the country the well-known aspects of the “Black Country”. In certain

towns, such as St. Chamond, one finds numbers of big factories in which thousands of women are employed in the fabrication of *passementerie*. But side by side with the great industry the petty trades also maintain a high development. Thus we have first the fabrication of silk ribbons, in which no less than 50,000 men and women were employed in the year 1885. Only 3000 or 4000 looms were located then in the factories; while the remainder—that is, from 1200 to 1400 looms—belonged to the workers themselves, both at St. Etienne and in the surrounding country.* As a rule the women and the girls spin the silk or make the winding off, while the father with his sons weave the ribbons. I saw these small workshops in the suburbs of St. Etienne, where complicated ribbons (with interwoven addresses of the manufacture), as well as ribbons of high artistic finish, were woven in three to four looms, while in the next room the wife prepared the dinner and attended to household work.

There was a time when the wages were high in the ribbon trade (reaching over ten francs a day), and M. Euvert wrote me that half of the suburban houses of St. Etienne had been built by the *passementiers* themselves. But the affairs took a very gloomy aspect when a crisis broke out in 1884. No orders were forthcoming, and the ribbon weavers had to live on casual earnings. All their economies were soon spent: 'How many,' M. Euvert wrote, "have been compelled to sell for a few hundred francs the loom for which they had paid as many thousand francs." What an effect this crisis has had on the trade I could not say, as I have no recent information about this region. Very probably a great number of the ribbon weavers have emigrated to St. Etienne, where artistic weaving is continued, while the cheapest sorts of ribbon must be made in factories.

The manufacture of arms occupies from 5000 to 6000 workers, half of whom are in St. Etienne, and the remainder

* I am indebted for these figures and the following information to M. V. Euvert, President of the Chamber of Commerce of St. Etienne, who sent me, while I was in the Clairvaux prison, in April, 1885, a most valuable sketch of the various industries of the region, in reply to a letter of mine. I avail myself of the opportunity for expressing to M. Euvert my best thanks for his courtesy.

in the neighbouring county. All work is done in small workshops, save in the great arm factory of the State, which sometimes will employ from 10,000 to 15,000 persons, and sometimes only a couple of thousand men.

Another important trade in the same region is the manufacture of hardware, which is all made in small workshops, in the neighbourhoods of St. Etienne, Le Chambon, Firminy, Rive de Giers, and St. Bonnet le Château. The work is pretty regular, but the earnings are low as a rule. And yet the peasants continue to keep to those trades, as they cannot go on without some industrial occupation during part of the year.

The yearly production of silk stuffs in France attained no less than 7,558,000 kilogrammes in 1881;* and most of the 5,000,000 to 6,000,000 kilogrammes of raw silk which were manufactured in the Lyons region were manufactured by hand.† Twenty years before, *i.e.*, about 1865, there were only from 6000 to 8000 power-looms, and when we take into account both the prosperous period of the Lyons silk industry about 1876, and the crisis which it underwent in 1880-6, we cannot but wonder about the slowness of the transformation of the industry. Such is also the opinion of the President of the Lyons Chamber of Commerce, who wrote me that the domain of the power-loom is increased every year, "by including new kinds of stuffs, which formerly were reputed as unfeasible in the power-looms; but," he added, "the transformation of small workshops into factories still goes on so slowly that the total number of power-looms reaches only from 20,000 to 25,000 out of an aggregate of from 100,000 to 110,000".

The leading features of the Lyons silk industry are the following:—

The preparatory work—winding off, warping and so on—

* 7,558,000 kilogrammes in 1881, as against 5,134,000 kilogrammes in 1872. *Journal de la Société de Statistique de Paris*, September, 1883.

† I take these figures from a detailed letter which the President of the Lyons Chamber of Commerce kindly directed to me in April, 1885, to Clairvaux, in answer to my inquiries about the subject. I avail myself of this opportunity for addressing to him my best thanks for his most interesting communication.

is mostly made in small workshops, chiefly at Lyons, with only a few workshops of the kind in the villages. Dyeing and finishing are also made, of course, in great factories, and it is especially in dyeing, which occupies 4000 to 5000 hands, that the Lyons manufacturers have attained their highest repute. Not only silks are dyed there, but also cottons and wools, and not only for France, but also to some extent for London, Manchester, Vienna, and even Moscow. It is also in this branch that the best machines have to be mentioned.*

As to the weaving, it is made, as we just saw, on from 20,000 to 25,000 power-looms and from 75,000 to 90,000 hand-loom, which partly are at Lyons (from 15,000 to 18,000 hand-loom in 1885) and chiefly in the villages. The workshops, where one might formerly find several *compagnons* employed by one master, have a tendency to disappear, the workshops mostly having now but from two to three hand-loom, on which the father, the mother and the children are working together. In each house, in each storey of the Croix Rousse, you find until now such small workshops. The *fabricant* gives the general indications as to the kind of stuff he desires to be woven, and his draughtsmen design the pattern, but it is the workman himself who must find the way to weave in threads of all colours the patterns sketched on paper. He thus continually creates something new; and many improvements and discoveries have been made by workers whose very names remain unknown.†

The Lyons weavers have retained until now the character of being the elite of their trade in higher artistic work in silk stuffs. The finest, really artistic brocades, satins and velvets, are woven in the smallest workshops, where one or two looms only are kept. Unhappily the unsettled character of the demand for such a high style of work is often a cause of misery amongst them. In former times, when the orders for

* *La fabrique lyonnaise de soieries. Son passé, son présent.* Imprimé par ordre de la Chambre de Commerce de Lyon, 1873. (Published in connection with the Vienna Exhibition.)

† Marius Morand, *L'organisation ouvrière de la fabrique lyonnaise* paper read before the Association Française pour l'avancement des Sciences, in 1873.

higher sorts of silks became scarce, the Lyons weavers resorted to the manufacture of stuffs of lower qualities: *foulards, crêpes, tulles*, of which Lyons had the monopoly in Europe. But now the commoner kinds of goods are manufactured by the million, on the one side by the factories of Lyons, Saxony, Russia and Great Britain, and on the other side by peasants in the neighbouring departments of France, as well as in the Swiss villages of the cantons of Basel and Zurich, and in the villages of the Rhine provinces, Italy and Russia.

The emigration of the French silk industry from the towns to the villages began long ago, *i.e.*, about 1817, but it was especially in the sixties that this movement took a great development. About the year 1872 nearly 90,000 hand-loomers were scattered, not only in the Rhône department, but also in those of Ain, Isère, Loire, Saône-et-Loire, and even those of Drôme, Ardèche and Savoie. Sometimes the looms were supplied by the merchants, but most of them were bought by the weavers themselves, and it was especially women and girls who worked on them at the hours free from agriculture. But already since 1835 the emigration of the silk industry from the city to the villages began in the shape of great factories erected in the villages, and such factories continue to spread in the country, making terrible havoc amidst the rural populations.

When a new factory is built in a village it attracts at once the girls, and partly also the boys of the neighbouring peasantry. The girls and boys are always happy to find an independent livelihood which emancipates them from the control of the family. Consequently, the wages of the factory girls are extremely low. At the same time the distance from the village to the factory being mostly great, the girls cannot return home every day, the less so as the hours of labour are usually long. So they stay all the week at the factory, in barracks, and they only return home on Saturday evening; while at sunrise on Monday a waggon makes the tour of the villages, and brings them back to the factory. Barrack life—not to mention its moral consequences—soon renders the girls quite unable to work in the fields. And,

when they are grown up, they discover that they cannot maintain themselves at the low wages offered by the factory; but they can no more return to peasant life. It is easy to see what havoc the factory is thus doing in the villages, and how unsettled is its very existence, based upon the very low wages offered to country girls. It destroys the peasant home, it renders the life of the town worker still more precarious on account of the competition it makes to him; and the trade itself is in a perpetual state of unsettledness.

P.—SMALL INDUSTRIES AT PARIS.

It would be impossible to enumerate here all the varieties of small industries which are carried on at Paris; nor would such an enumeration be complete, because every year new industries are brought into life. I therefore will mention only a few of the most important industries.

A great number of them are connected, of course, with ladies' dress. The *confections*, that is, the making of various parts of ladies' dress, occupy no less than 22,000 operatives at Paris, and their production attains £3,000,000 every year, while gowns give occupation to 15,000 women, whose annual production is valued at £2,400,000. Linen, shoes, gloves, and so on, are as many important branches of the petty trades and the Paris domestic industries, while one-fourth part of the stays which are sewn in France (£500,000 out of £2,000,000) are made at Paris.

Engraving, book-binding, and all kinds of fancy stationery, as well as the manufacture of musical and mathematical instruments, are again as many branches in which the Paris workmen excel. Basket-making is another very important item, the finest sorts only being made in Paris, while the plainest sorts are made in the above-mentioned centres (Haute Marne, Aisne, etc.). Brushes are also made in small workshops, the trade being valued at £800,000 both at Paris and in the neighbouring department of Oise.

For furniture, there are at Paris as many as 4340 workshops, in which three or four operatives per workshop are

employed on the average. In the watch trade we find 2000 workshops with only 6000 operatives, and their production, about £1,000,000, reaches nevertheless nearly one-third part of the total watch production in France. The *maroquinerie* gives the very high figure of £500,000, although it employs only 1000 persons, scattered in 280 workshops, this high figure itself testifying to the high artistic value of the Paris leather fancy goods. The jewelry, both for articles of luxury, and for all descriptions of cheap goods, is again one of the specialities of the Paris petty trades; and another well-known speciality is the fabrication of artificial flowers. Finally, we must mention the carriage and saddlery trades, which are carried on in the small towns round Paris; the making of fine straw hats; glass cutting, and painting on glass and china; and numerous workshops for fancy buttons, attire in mother-of-pearl, and small goods in horn and bone.

Q.—PETTY TRADES IN GERMANY.

The literature of the small industries in Germany being very bulky, the chief works upon this subject may be found, either in full or reviewed, in Schmoller's *Jahrbücher*, and in Conrad's *Sammlung national-ökonomischer und statistischer Abhandlungen*. For a general review of the subject and rich bibliographical indications, Schönberg's *Volkwirthschaftslehre*, vol. ii., which contains excellent remarks about the proper domain of small industries (p. 401 *seq.*), as well as the above-mentioned publication of K. Bücher (*Untersuchungen über die Lage des Handwerks in Deutschland*), will be found most valuable. The work of O. Schwarz, *Die Betriebsformen der modernen Grossindustrie* (in *Zeitschrift für Staatswissenschaft*, vol. xxv., p. 535), is interesting by its analysis of the respective advantages of both the great and the small industries, which brings the author to formulate the following three factors in favour of the former: (1) economy in the cost of motive power; (2) division of labour and its harmonic organisation; and (3) the advantages offered for the sale of the produce. Of these three factors, the first is more and more eliminated

every year by the progress achieved in the transmission of power; the second exists in small industries as well, and to the same extent, as in the great ones (watchmakers, toymakers, and so on); so that only the third remains in full force; but this factor as already mentioned in the text of this book, is a *social* factor which entirely depends upon the degree of development of the spirit of association amongst the producers. As to Schwarz's figures relative to the higher productivity of great spinning mills as compared with smaller ones, it remains to be known whether the large mills which he mentions are not more modern than the small ones, and are not provided, therefore, with better machinery. One conclusion of Schwarz is, however, absolutely correct: "small industries, unless they are engaged in the production of *artistic* goods, as is the case at Paris, Lyons, Warsaw, Vienna, and so on, can thrive only in connection with agriculture." ✓

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