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FOOD PRODUCTS *and their* INTERNATIONAL DISTRIBUTION.

By STEPHEN BOURNE, ESQ.

[Read before the Statistical Society, 19th June, 1883. The PRESIDENT in the Chair.]

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I.—*Necessity and Importance of Food.*

THE one universal want of every living creature and thing is food, wherewith to nourish its frame, repair the waste of vital power, and enable it to fulfil the great purpose of reproduction. The inanimate plant and the animate creature are alike in this respect, that though in the embryonic state formed from and nourished by the parent, no sooner does separate living existence commence, than a constant supply of food is necessary for the preservation of life, the progress of growth, and the accomplishment of nature's purpose, that life before it comes to a close should be handed on to another generation, and thus repeated until the time comes when individuals, species, and races, shall cease to exist. There is undoubted evidence that, with many variations, this must have been the law ever since life, vegetable, animal, and human, has had any being. Other things which we are in the habit of deeming necessities, such as clothing, shelter, implements, etc., may be done without, but food is absolutely indispensable to all. The plant requires no clothing but that which pertains to the embryo when first formed, or is produced from itself in the infantile stage of growth ; it has no shelter but that which it finds in the locality to which it is attached ; it needs no tools but those which are parts of itself, with which to obtain its supplies. The animal, whether terrestrial or marine, whether mammal, bird, fish, or insect, or of a form

scarcely distinguishable from that of vegetable life, is either born fully clothed, or by natural process speedily acquires all the clothing it needs; and for a home has to be content with that in which it finds itself placed, or can easily form from materials ready for use or drawn from its own internal resources. Even man may and can exist for longer and shorter periods without clothing or shelter; but without continually replenished stores of food, none can sustain, prolong, or reproduce life in itself or its offspring. Such being the undeviating law of nature, it must be of surpassing interest and importance to understand from what sources supplies are to spring, and to know what are the means and channels of its distribution to those by whom it is to be consumed.

If in the first instance we seek whence vegetable life obtains its nutriment, we have to go to the organic substances of which this world and its atmosphere are composed, to study the combined forces of light and heat, probably the yet imperfectly understood dispersion of the electric fluid, or some more subtle agency, by which changes in form and arrangement in the ground on which we tread, in the water which everywhere surrounds us, in the air we continually breathe, fit these elements for incorporation with the plant as it grows. We find this world in which we dwell, impelled by a force we know not when or how produced, subjected in turn to such alternations of temperature and moisture as disintegrate, dissolve, and recombine its particles, until they become suited for assimilation into the plant, which stretches its roots below, and its leaves above the surface, in search of those materials out of which its structure can alone be reared. Do we inquire how the life of animals is sustained? We find them primarily seeking for, and by the processes of mastication, suction, and inhalation, incorporating that which vegetation has first fitted for its purpose of food; and secondly, feeding on that which has already received animation in the lower forms as a preparation for sustaining the life of beings in a higher stage of existence. These all make use of that which is already provided for them, instinctively knowing or learning where and how to obtain possession of all which is needed to supply their wants. Passing upwards to man, we find him in the savage condition scarcely improving upon, nay in many instances, below the brute in the skill or ingenuity exercised in securing or consuming his food; but as his knowledge increases, and civilisation advances, employing the highest talent and the most unwearied industry in producing and utilising everything around him; especially so those creatures over which at his own creation he had dominion given him, for the purpose of sustaining, preserving, and multiplying the life he possesses in himself, and produces in others.

This question of food production thus involves a consideration

of everything around, above, and beneath us. In its earlier stages it is so simple as to need little or no instruction. Simple observation of the seed falling upon and sinking into the soil, or becoming covered by the *débris* of the plants around it, and watered by the droppings from the skies, would soon teach men the rudimentary mode of cultivation. But in the present advanced period of knowledge there is scarcely a science which does not, or may not, lend its aid to agricultural progress. Chemistry, teaching the constituent parts alike of the plant and the soil from which it springs, enables the cultivator to bring together those which are fitted for each other, and to vary their order so as to extract in turn from each piece of ground whatsoever of value it contains, and to return to it all that vegetable growth has abstracted from it. Physical geography shows the particular spots where the conditions are most favourable for the particular culture we wish to pursue. Meteorology does something already, and will probably do much more, in guiding the choice of times and seasons which may be the most advantageous for conducting the various necessary operations in working the soil. Mechanical art provides the implements best fitted for effecting the different processes of tilling, planting, and reaping the vegetable products. All these too render their aid towards the successful breeding, rearing, and preparing for use so much of the animal kingdom as is fitted for employment as food. And as animal life is higher than vegetable, so does it need more extended knowledge to regulate its production. Physiology, and all that is comprehended in sanitary science; architecture, the manufacture of clothing, and the means of transport, as well as methods of preservation from decay, and the best modes of cooking, are essential to the proper provision of animal, and to some extent also of vegetable food. The question then of how best to feed both man and beast is not only one of primary importance, but likewise requiring for its solution, or at least one that may be assisted by, the highest intellect and the most extended knowledge.

Nor do statistical and economic research and study fail to have their place of importance in this necessary work. The knowledge of when, where, and in what quantities the several articles which minister to our sustenance are to be found, and the understanding of how they may best be made to serve their ultimate purpose of supporting life and maintaining its vigour, are of the highest value, and worthy of the closest investigation. The increasing pressure of our population upon the means of subsistence must bring this more and more to the front, and notwithstanding all that has been spoken and written upon these subjects, there is yet room for further compilation, comparison, and utilization of all

the facts and figures which can be searched out or made known in relation to this all-important subject. It has been my wish for a long time to prepare a compendious history or statement of how the world has been, how it now is, and how it may be hereafter fed; to have ascertained and collected together the descriptions and the quantities of the different kinds of food which each country produces, and which each nation consumes. To present such knowledge in a full, clear, and yet compact form would help much to the settlement of many controversies amongst us, and to guide legislation as well as private or public efforts as regards pauperism, emigration, and fiscal regulations. The materials however are yet too scanty, and for some time to come the various branches of inquiry or action must be dealt with piecemeal, yet with the endeavour to combine the various parts so that they may each elucidate and assist all the others. Such an object as I should desire to accomplish would be too large for introducing to notice at one of the Society's meetings; our discussions are of necessity fragmentary, and it is but a small fragment that I am able to ask your consideration of on the present occasion. It is much more limited than I had hoped for; but it is the natural tendency of such fragments to gather others together. But a small stone may fit into some corner of a large building, or help to fill up a gap, and thus by bringing together dissociated portions, to consolidate the whole fabric. It is possible that the attempt to do something in this direction may stimulate younger workers in this field to search out and collect together the information which is so much needed.

At the outset a somewhat serious difficulty arises in settling what is to be embraced in the term "food." Strictly speaking, it should be confined to that which builds up the frame, and repairs the waste of the body through the performance of its daily functions. The anatomist and the physician would tell you that nothing could be properly designated as food but that which not only contains the elements which nourish the system, but presents them in such a shape that the chemistry of nature is able to transform them into flesh and blood, brain, muscle, and nerve. But so long as men have tastes to indulge, and pleasures to procure by eating and drinking, many things will pass as food which are either inert in their action or positively impede the sustenance of life. Again, "what is one man's meat is another's poison," and the widest divergence of opinions exists as to what really does or does not subserve these purposes. Once more, many vegetable substances may be so treated as to conserve or destroy their utility. Grain and sugar for instance, may be taken as means of nourishment or be converted into stimulants. Even wheat, which is deemed the staff of life, may be so dealt with, or be applied to other uses

wholly apart from its value as food. Alcohol, tobacco, and opium may possess no nutritive powers, but they become absorbed into the system, and pass out of existence for no purpose but that of ministering to bodily needs, real or fancied. The safe rule therefore seems to be to put into this class whatever we eat, drink, or inhale, and economically to put on the one side that which is thus consumed, and on the other, that which this consumption goes to produce. In the following tables therefore this rule has been adopted, although there has been as far as practicable a somewhat rough division into several classes, which will serve the purpose of such discrimination of their economic value as each reader may be disposed to assign them.

II.—*Sources of Information.*

The main sources of information have been the statistical abstracts of home, colonial and foreign agriculture and trade, but much help has been afforded by Major Craigie's recent researches, and the very valuable reports and compilations by the consuls and other agents of the American Government, placed at my disposal by the department of the Secretary of State at Washington, and the Consulate in London.

Notwithstanding the incomplete state in which many of the returns reach this country, and the utter absence of any information from many important places, the collection of the various particulars contained in the tables which follow will be found of great interest. They furnish enough facts to throw great light upon the condition in which the food supplies of many countries stand, and afford grounds for forming an estimate of some value as respects others. There is some uncertainty as to the degree of accuracy they possess; many of them are not brought up to very recent periods, they are all less full than might be desired; and like some of our own returns from different portions of the United Kingdom, the want of a uniform system of collection renders it difficult to combine them into an harmonious whole. The latest agricultural reports from Russia date as far back as 1872, and there appears to be nothing at all from the Asiatic portion of the empire. From Norway there is nothing later than 1875; Denmark, 1878; and as the population in the first two of these countries is stated to have increased some 10 per cent. in the interval, it might have been well to have made a corresponding addition to the figures given. The official abstracts contain no information from Turkey, or the provinces recently detached from that country. Otherwise Europe is pretty fully complete, and as the acreage and population of those countries from which agricultural statistics are wanting are known with more or less certainty, it may be fair to conclude that a proportionate increase upon the others

will bring the statements at least approximately up to the truth. The plan pursued has been generally to strike an average of the produce for the last three years shown in the returns, supplementing this in some cases by facts gleaned from the very interesting publications of the American Government. From Asia there is scarcely a particle of information. Even for our own empire in India there are no statements of the quantities produced, and the return which does show the extent of land under cultivation for different crops, is silent as to the most important province of Bengal. For Africa, excepting the Cape, and that is very scanty, there is nothing to be learnt; whilst for America, our own possessions in the north, with those of the United States, both of which appear to have been taken or estimated with much care, is all that is to be obtained. The Australasian figures are as full as any, and probably they are correct.

III.—*Growth of Cereals in United Kingdom and Colonies, and in Foreign Countries.*

The information contained in the following Table IA, is obtained from the Agricultural Abstracts for the United Kingdom, and that for the Colonies. In like manner IB is derived from the abstracts for foreign countries.

TABLE IA.—*Showing the Quantities of Grain, Potatoes, and other Agricultural Produce Grown Annually in the United Kingdom and Colonies.*

[In million bushels and gallons to two decimals.]

Country.	Wheat.	Barley.	Oats.	Other Grain.	Potatoes.	Other Crops.
	Bshls.	Bshls.	Bshls.	Bshls.	Bshls.	Galls.
United Kingdom	84'32	81'27	176'24	1'98	222'00	—
British India	—	—	—	—	—	—
Ceylon.....	—	—	—	—	—	—
Mauritius	—	—	—	—	—	—
New South Wales	3'57	0'14	0'41	4'72	2'09	—
Victoria	9'27	1'02	3'33	0'07	17'20	—
South Australia.....	10'32	0'16	0'05	—	'81	—
Western „	0'31	0'09	0'02	—	0'03	—
Tasmania	0'93	0'15	0'76	—	1'23	—
New Zealand	8'02	1'21	8'62	0'02	4'68	—
Queensland.....	0'10	0'03	—	1'41	0'56	—
Natal	—	—	—	—	—	—
Cape of Good Hope	1'69	0'45	0'92	5'04	0'37	4'49 wine
Canada (Ontario, } estimated)	33'17	22'17	62'00	3'80	—	—
Newfoundland	—	—	—	—	—	—
Jamaica	—	—	—	—	—	—
Barbadoes	—	—	—	—	—	—
Trinidad	—	—	—	—	—	—
British Guiana	—	—	—	—	—	—
United Kingdom and } Colonial	151'70	106'69	252'35	17'04	248'97	—

TABLE IB. — *Showing the Quantities of Grain, Potatoes, and other Agricultural Produce Grown Annually in the undermentioned Foreign Countries.*

[In millions, bushels, cwts., and gallons, to two decimals.]

Country.	Wheat.	Barley.	Oats.	Other Grain.	Potatoes.	Other Crops.
	Bshls.	Bshls.	Bshls.	Bshls.	Bshls.	cwts.
Russia, Europe	284.91	125.63	563.29	1,077.38	345.43	
Norway	0.25	3.74	8.31	2.90	18.04	
Sweden	2.87	13.28	43.71	24.22	43.67	
Denmark	4.61	19.93	26.81	21.15	9.69	13.56 beet
German Empire	92.74	93.38	273.20	206.84	837.82	123.41 „
						0.83 tobacco
						Galls.
						0.68 wines
						cwts.
Holland	5.36	4.25	11.96	15.23	36.56	7.63 beet
						0.07 tobacco
Belgium	15.01	3.98	21.87	28.50	107.26	11.10 beet
France	254.09	48.97	216.23	133.68	342.94	260.40 „
						0.67 hops
						0.39 oil
						6.24 fruit
						0.29 tobacco
						Galls.
						0.91 wine
Italy	139.97	17.71	18.46	36.94	27.72	Bshls.
						9.14 olives
						Galls.
						605.84 wines
						Bshls.
						11.35 fruit
						cwts.
Austria	37.54	43.60	88.63	100.50	222.56	75.91 sugar
						Galls.
						56.43 wine
						cwts.
Hungary	71.05	37.70	44.83	118.77	70.62	26.83 sugar
						1.25 tobacco
						Galls.
						96.15 wine
Algeria	42.70	21.49	1.03	0.28	—	
United States	428.65	40.87	386.80	1,474.18	152.07	cwts.
						3.04 sugar
						3.20 tobacco
Foreign	1,379.75	474.53	1,705.13	3,240.57	2,214.38	
U. Kingdom } and Colonial }	151.70	106.69	252.35	17.04	248.97	
Total	1,531.45	581.22	1,957.48	3,257.61	2,463.35	

With the exception of some few special crops, such as beetroot for sugar, tobacco, wine, &c., the particulars included in the table are confined to cereals and potatoes. It would have been possible to have stated the growth of root crops and hay for some countries, but as these are mainly used for feeding stock, they should appear

in another form, that of the living animals they sustain. Doubtless much of the grain is employed for the same purpose, and might have been excluded, had there been any means of estimating the amount so used; but, on the other hand, there must be a large amount of such roots as carrots, turnips, &c., consumed directly as human food. Roughly speaking, the one being set against the other, it may be assumed that no more is left out than is taken in; perhaps hardly sufficient to warrant the conclusion that what is given is the full representative of the supplies available for supporting the population.

IV.—*Growth of Live Stock in British Empire and Foreign Countries.*

The particulars furnished for the various descriptions of live stock are not, as with the grain, &c., those of the annual production, but a census or enumeration of the numbers alive at the period when taken; Table IIA shows those for the British Empire so far as they are obtainable, and IIB, those for as many foreign countries as the returns contain.

TABLE IIA.—*Acreage, Population, and Number of Live Stock Existing in the United Kingdom and her several Colonial Possessions.*

[In millions to two decimals.]

Country.	Acres.	Population.	Cattle.	Sheep and Lambs.	Pigs.	Goats.
United Kingdom	77·64	35·00	9·83	27·45	3·96	—
British India	578·65	202·69	—	—	—	—
Ceylon	15·81	2·76	1·03	0·06	—	—
Mauritius	0·46	0·38	0·03	0·03	0·03	—
New South Wales	198·85	0·75	2·58	33·06	0·21	—
Victoria	56·45	0·86	1·29	10·36	0·24	—
South Australia	578·36	0·28	0·31	6·81	0·12	—
Western „	640·00	0·03	0·06	1·27	0·02	—
Tasmania	16·78	0·12	0·13	1·85	0·05	—
New Zealand	67·42	0·49	0·62	12·99	0·20	—
Queensland	428·49	0·21	3·19	8·29	0·06	—
Natal	12·00	0·41	0·52	0·46	0·02	—
Cape of Good Hope	142·05	1·25	1·33	11·28	0·13	—
Canada	2,221·05	4·32	2·04	1·56	2·89	—
Newfoundland	25·73	0·18	0·01	0·03	—	—
Jamaica	2·68	0·58	0·12	0·02	0·01	—
Barbadoes	0·11	0·17	—	—	—	—
Trinidad	1·12	0·15	—	—	—	—
British Guiana	48·64	0·25	—	—	—	—
Falkland Islands	4·16	—	0·15	0·31	—	—
	5,116·45	250·88	—	—	—	—
Deduct, India, Canada, &c.	2,344·28	204·62	—	—	—	—
	2,772·17	46·26	23·24	115·83	7·94	—

TABLE IIB.—*Acreage, Population, and Number of Live Stock Existing in the undermentioned Foreign Countries.*

[In millions to two decimals.]

Country.	Acres.	Population.	Cattle.	Sheep and Lambs.	Pigs.	Goats.
Russian Europe	1,331·70	83·66	22·77	48·13	9·80	—
Norway	78·80	1·93	1·02	1·69	0·10	0·32
Sweden	109·39	4·57	2·23	1·46	0·42	0·10 {rein-deer 0·11
Denmark.....	9·44	1·97	1·35	1·72	0·50	—
Germany.....	133·08	45·23	15·78	25·00	7·12	2·32
Holland	8·12	4·04	1·47	0·85	0·33	0·16
Belgium	7·28	5·54	1·24	0·59	0·63	0·20
France	130·56	37·32	11·58	22·89	5·56	1·55
Italy	73·19	28·46	4·78	8·60	1·16	2·02
Austria	74·11	22·14	8·58	3·84	2·72	1·01
Hungary	79·94	15·64	4·60	9·25	4·44	0·24
United States	2,291·36	50·16	33·31	43·58	36·25	—
Foreign	4,326·97	300·66	108·71	167·60	69·03	8·03
United Kingdom and Colonial }	2,772·17	46·26	23·24	115·83	7·94	—
Total	7,099·14	346·92	131·95	283·43	76·97	8·03

Of live stock it is impossible to ascertain how much is annually slaughtered, and so to gauge the meat supplies. The tables giving the latest particulars of the numbers in existence at one time are, there is reason to fear, rather less than more correct than those of the vegetable products. They are wholly wanting for poultry, fish, and dairy produce, for which indeed there is no collection of facts as to our own country, and any estimates even at home are confessedly very wide and doubtful. Both here and abroad the food provided from these sources must be a very considerable addition to the annual supplies. Major Craigie, in his recent paper read before this Society,* took considerable pains to calculate how much meat could be annually obtained from a given number of cattle, sheep, and pigs, and I am glad to see that his estimates do not falsify my own less elaborate computations for a paper read some time back before the Manchester Statistical Society.† Following his calculations, and applying the same method to the figures now before us, it may be assumed that the whole number of animals they show may yield 17,000,000 tons of flesh annually. There are many circumstances which have to be considered as rendering this estimate doubtful. Foreign animals are not generally

* *Statistical Journal*, part 1, March, 1883.

† "Trade, Population and Food," pp. 76—102.

so highly fed, or so large in bulk as our own; many of the sheep in our colonies are kept more for wool than meat, but there must be a large quantity of fish, of which we have not any pretence of an account. Yet it has been thought best to make the computation on the definite ground of the returns as they stand, in the certainty that any estimate must altogether fail of fully stating the actual supplies of animal food yearly eaten in the countries to which the returns relate. These results are not shown separately, but incorporated with those of IIIB in the first column of IIIB. Both this, and that of the products of the vegetable kingdom, can only be put forth as an effort towards right statements, in the hope that they may not be altogether without value, if it be only in pointing out the deficiency of information, and stimulating efforts towards the acquisition of more.

V.—*Estimated Values of Produce.*

It will have been noticed that in the preceding tables numbers and quantities only have been collected, no attempt having been made to get at the actual values. This would be still more hopeless than weights and measures. Yet it is very desirable to have some gauge as to the relative, if not the absolute value of the produce of each respective country; and as there is a pretty definite relation between the value of an ox and a sheep, any factor which brings the disproportionate numbers and quantities belonging to each country into one representative sum will serve for comparison of one with the other. For the next set of tables IIIA, B, C, an appraisement has been taken of each item for each country, on a uniform standard, the multipliers used being the average prices attached to each importation into the United Kingdom for the last three years, and thus a definite value is estimated for each country.

TABLE IIIA.—*Estimated Values of the several Quantities of Grain, Potatoes, &c., Annually Produced in the United Kingdom and her Colonial Possessions; Computed at the Average Rates of Imports into the United Kingdom.*

[In million £'s to two decimals.]

Country.	Wheat.	Barley.	Oats.	Other Grain.	Potatoes	Other Crops.	Total.
	£	£	£	£	£	£	£
United Kingdom	25'30	16'25	22'03	0'39	31'71	—	95'68
British India	—	All	descriptions	—	—	—	450'00
Ceylon	—	—	—	—	—	—	—
Mauritius	—	—	—	—	—	—	—
New South Wales	1'07	0'04	0'05	0'94	0'30	—	2'40
Victoria	2'78	0'20	0'42	0'01	2'46	—	5'87
South Australia	3'10	0'03	0'01	—	0'12	—	3'26
Western „	0'09	0'02	—	—	—	—	0'11
Tasmania	0'28	0'03	0'09	—	0'17	—	0'57
New Zealand	2'41	0'24	1'08	—	0'67	—	4'40
Queensland	0'03	0'01	—	0'28	0'08	—	0'40
Natal	—	—	—	—	—	—	—
Cape of Good Hope ..	0'50	0'09	0'11	1'02	0'05	1'35	3'12
Canada	9'95	4'43	7'75	0'76	—	—	22'89
Newfoundland	—	—	—	—	—	—	—
Jamaica	—	—	—	—	—	—	—
Barbadoes	—	—	—	—	—	—	—
Trinidad	—	—	—	—	—	—	—
British Guiana	—	—	—	—	—	—	—
	45'51	21'34	31'54	3'40	35'56	1'35	588'70

TABLE IIIB.—*Estimated Value of the several Quantities of Grain, Potatoes, &c., Annually Produced in the undermentioned Foreign Countries.*

[In million £'s to two decimals.]

Country.	Wheat.	Barley.	Oats.	Other Grain.	Potatoes.	Other Crops.	Total.
	£	£	£	£	£	£	£
Russian Europe	85'47	25'13	70'41	215'47	49'49	—	445'97
Norway	0'08	0'75	1'04	0'58	2'58	—	5'03
Sweden	0'86	2'65	5'46	4'84	6'24	—	20'05
Denmark	1'38	3'99	3'35	4'23	1'38	1'94	16'27
Germany	27'82	18'68	34'15	41'37	119'69	20'53	262'24
Holland	1'61	0'85	1'49	3'07	5'22	—	12'24
Belgium	4'50	0'80	2'73	5'70	15'32	—	29'05
France	76'23	9'79	27'03	26'73	48'99	—	188'77
Italy	41'99	3'54	2'31	27'83	3'96	—	79'63
Austria	11'26	8'72	11'08	20'10	31'79	—	82'95
Hungary	21'32	7'54	5'60	23'75	10'09	—	68'30
Algeria	12'81	4'30	0'13	0'06	—	—	17'30
United States	128'59	8'17	48'35	294'83	21'72	—	501'66
Total Foreign	418'92	94'91	213'13	668'56	316'47	22'47	1,729'46
„ British	45'51	21'34	31'54	3'40	35'56	1'35	588'70
Total	459'43	116'25	244'67	671'96	352'03	23'82	2,318'16

TABLE IIIC.—*Estimated Value of the several Numbers of Live Stock Existing within the British Empire and in Foreign Countries, as far as can be ascertained; Computed at Average Rates of Recent Imports into the United Kingdom.*

[In millions of £'s to two decimals]

British.					Foreign.				
Country	Cattle.	Sheep, Lambs, Goats.	Pigs.	Total.	Country.	Cattle.	Sheep, Lambs, Goats.	Pigs.	Total.
	£	£	£	£		£	£	£	£
United Kingdom	127.79	60.39	13.07	201.25	Russian Europe	296.01	105.88	32.34	434.23
British India	—	—	—	—	Norway	13.26	3.71	0.33	17.30
Ceylon	13.39	0.13	—	13.52	Sweden	28.99	3.21	1.39	33.59
Mauritius	0.39	0.06	0.10	0.55	Denmark	17.55	3.78	1.65	22.98
New South Wales	33.54	72.73	0.67	106.94	Germany	205.14	55.00	23.50	283.64
Victoria	16.77	22.79	0.79	40.35	Holland	19.11	1.87	1.09	22.07
South Australia ..	4.03	14.98	0.41	19.42	Belgium	16.12	1.29	2.08	19.49
Western „	0.78	2.79	0.07	3.64	France	150.54	50.35	18.34	219.23
Tasmania	1.69	4.07	0.17	5.93	Italy	62.14	18.92	3.83	84.89
New Zealand	8.06	28.57	0.66	37.29	Austria	111.54	8.44	8.98	128.96
Queensland	41.47	18.23	0.20	59.90	Hungary	59.80	20.35	14.65	94.80
Natal	6.76	1.01	0.07	7.84	United States	433.03	95.87	119.62	648.52
Cape of Good Hope	17.29	24.81	0.43	42.53	Foreign	1,413.23	368.67	227.80	2,009.70
Canada	26.52	3.43	9.54	39.49	British	302.12	254.78	26.21	583.11
Newfoundland ...	0.13	0.07	—	0.20	Total	1,715.35	623.45	254.01	2,592.81
Jamaica	1.56	0.04	0.03	1.63					
Barbadoes	—	—	—	—					
Trinidad	—	—	—	—					
British Guiana ...	—	—	—	—					
Falkland Islands	1.95	0.68	—	2.63					
British	302.12	254.78	26.21	583.11					

These prices are certainly beyond the true value in the places of production. It requires no words to prove that a bushel of wheat or a cwt. of meat must have greatly increased in value by the cost of transport to this country, and all that can be said of the method adopted is that the pound sterling is used as an index unit, and thus becomes a not altogether untrue representative of definite quantities. If thus it appears from the table that any one country stands at twice or thrice the number of pounds that another does, it may be safely assumed that it really does grow or rear twice or thrice the quantity of vegetable or animal food, as the case may be, which belongs to the other nation. If too, as must be the case, these values are too high, it should be borne in mind that the surplus may stand somewhat in the place of the various things not tabulated, and thus the sum total for all, taken together or separately, may not be very far from a true estimate of all that is produced. To make it somewhat more full, additional columns have been introduced, reducing the several values to an average for each acre of land and each head of population. Table IIId.

TABLE III D.—*Total Estimated Annual Value of Grain, &c., and Live Stock brought together, and Divided for each Acre of Land and Head of Population in the respective Countries,*

[In £'s to two places of decimals.]

British.				Foreign.			
Country.	Total Value.	Per Acre.	Per Head.	Country.	Total Value.	Per Acre.	Per Head.
	Mln. £	£	£		Mln. £	£	£
United Kingdom.....	169'14	2'18	4'83	Russian Europe	608'34	0'46	7'27
British India	—	—	—	Norway	10'85	0'14	5'69
Ceylon	4'16	0'26	1'51	Sweden	31'76	0'29	6'95
Mauritius	0'26	0'57	0'68	Denmark	24'81	2'63	12'60
New South Wales	35'60	0'18	47'49	Germany	372'06	2'80	8'23
Victoria.....	18'89	0'33	21'96	Holland.....	20'11	2'47	4'97
South Australia	9'53	0'02	34'04	Belgium	37'06	5'09	6'70
Western „	11'28	0'01	42'66	France	273'62	2'09	7'33
Tasmania	2'53	0'15	21'08	Italy	110'47	1'51	3'89
New Zealand	16'34	0'24	33'35	Austria	131'38	1'77	5'93
Queensland	18'92	0'04	90'10	Hungary	110'79	1'39	7'09
Natal	2'43	0'20	5'92	Algeria	17'30	—	—
Cape of Good Hope	16'48	0'12	13'19	United States ...	808'95	0'35	16'12
Canada	43'65	0'08	10'10				
Newfoundland	0'06	0'01	0'33	Foreign	2,557'50	0'59	8'44
Jamaica.....	0'54	0'02	0'93	British.....	340'64	0'12	7'36
Barbadoes.....	—	—	—				
Trinidad	—	—	—	Total	2,898'14	0'41	8'31
British Guiana.....	—	—	—				
Falkland Islands ...	0'81	0'19	—				
	340'54	0'12	7'36				

VI.—*Values of Food Products Exported.*

Having thus seen the countries wherein supplies of food are grown, with the principal articles, quantities, and value of those from whence returns can be obtained, we pass on to that which is of more importance to England as a trading and consuming nation. It does not especially concern us to know the exact kind or quantity of food which each country produces for the use of its own inhabitants, although it is of the utmost consequence to us to know whence contributions may be drawn to our shores to meet our own necessities. Since the countries which have been enumerated are those which are the best able to part with their superfluous growth, it may be sufficient to know that whatever the number of inhabitants of other lands may be, they must be able to feed their own people, unless they are drawing their food from others. Those which are doing this, as well as those who are sending away that which they do not need or cannot afford to retain for themselves, are pretty well known through the several trade reports. As a great carrying nation our ships visit every country. They convey

from port to port by far the greater part of what is removed; and hence, for one reason, it happens that the accounts of imports and exports are far better known than those of production. These statistics too are much easier to procure than the others are, as being of actual transactions rather than estimates. There is much to be desired in the form and periods in which these are prepared, just as there is still room for improvement in those of the United Kingdom.

The following tables, like those which have gone before, are mostly taken from the official publications, the several items having been picked out from the lists of principal articles of trade, and the values being given. These are made use of rather than the quantities, since by simple addition we get the sum of the year's trade for each exporting or importing country. They are, in most cases, the average of three years' transactions, and are up to more recent dates than many of the agricultural returns. The subdivision into different classes is the same as was adopted in the paper already referred to, and is here repeated as being one that both answers the purpose desired, and renders it easy to be read in conjunction with those already in print. The first table of this series (IVA) shows the exports of the various articles comprised within the definition of food as stated some pages back, having those from the United Kingdom at the head, followed by the several portions of the empire arranged in the order of magnitude. The column of animal food includes all meat, whether live or dead, together with such exports of provisions as, so far as can be ascertained, are of animal origin. In like manner the cereal column is made up of what is generally known by the name of corn, and whatever, such as bread or biscuit, is prepared from grain, or other farinaceous substances. Another column is devoted to sugar, spices, fruits, &c. Beverages are divided into alcoholic liquors, and the substances which we use for drinks of another kind, tea, coffee, &c. Tobacco and opium, though not articles of nutrition, are also included, having a column to themselves; and the last one is made up of a few articles which cannot properly find a place in the previous columns. The totals for each country, which, but for convenience, would have been run out at the side, will be found in a subsequent Table (VI), where they serve a specific purpose.

TABLE IVA.—Average Value of Principal Articles of Food Products Exported from the United Kingdom and the undermentioned Colonial Possessions.

[In millions of £'s to two decimals.]

Country.	Animal.	Cereal and Farinaceous	Sugar, Fruit, &c.	Beverages.		Tobacco, Opium, &c.	Miscel- laneous.
				Alcoholic.	Other.		
United Kingdom	1'74	3'13	2'01	3'57	7'94	2'50	—
British India	—	12'92	0'84	—	4'84	13'45	—
Canada	4'07	5'42	—	—	—	—	—
Ceylon	—	—	0'08	0'01	2'96	—	—
Mauritius	—	—	3'00	0'04	—	—	—
British Guiana	—	0'04	2'02	0'26	—	—	—
Victoria	0'49	0'86	0'25	—	0'27	—	—
South Australia	—	1'80	—	—	—	—	—
Trinidad	—	—	0'84	—	0'36	—	—
Barbadoes	0'05	0'06	0'96	—	—	—	—
New South Wales	0'55	0'20	0'19	—	0'07	0'05	—
Jamaica	—	—	0'55	0'19	0'24	—	—
Newfoundland	0'97	—	—	—	—	—	—
New Zealand	0'04	0'86	—	—	—	—	—
Queensland	0'05	—	0'26	—	—	—	—
Tasmania	0'02	0'05	0'15	0'05	—	—	—
Cape of Good Hope	0'19	—	—	0'01	—	—	—
Natal	—	0'02	0'15	—	—	—	—
British and Colonial ...	8'17	25'36	11'30	4'13	16'68	16'00	—

As might be expected, the United Kingdom produces scarcely anything she can spare from the food of her own people. The whole amount exported, 20,890,000*l.*, is but small, and consists almost entirely of goods which have been brought here for a market as such, or, being of foreign origin, have gone through some manufacturing process to fit them for use. Next comes British India, which sends away some corn and rice, tea and coffee, but whose chief export is opium; altogether averaging 32,050,000*l.* Next comes Canada, with a total of 9,490,000*l.*, the largest articles of whose export is wheat and flour, to between 2 and 3 millions of money, besides other grain, with large quantities of salted meats, fish, dairy produce, and some live animals, to the extent of 4,070,000*l.* The other colonies follow in their order. The particular articles they are in the habit of selling for shipment will be best seen by consulting the table itself. The sum of all the home and colonial exports from the enumerated places is 81,640,000*l.*; but this is probably not quite all, for the returns from which these entries are extracted do not specify a number of minor articles, which may probably be to the value of 10 per cent. above those which are described, bringing up the whole to perhaps 90,000,000*l.* Of course a large portion of these exports come to the mother country, and from

her to her children. The object of this table is not to show where they go, but simply the values which each and altogether part with.

The next Table (IVB) details in like manner the trade of as many foreign countries as there is information from; the total being 304,440,000*l.*, to which is added at foot the total of the United Kingdom and her dependencies, making altogether 386,080,000*l.*, or if say 10 per cent. be added for smaller articles, over 420 millions of food products every year passing from some countries to supply the wants of others.

TABLE IVB.—*Average Value of Principal Articles of Food Products Exported from the undermentioned Foreign Countries.*

[In millions of £'s to two decimals.]

Country.	Animal.	Cereal and Farinaceous.	Sugar, Fruit, &c.	Beverages.		Tobacco Opium, &c.	Miscellaneous.
				Alcoholic.	Other.		
United States	28·92	53·38	0·76	0·37	—	4·69	—
Russian Empire	0·95	50·57	0·14	0·56	—	—	—
France	5·78	2·70	5·64	13·55	—	—	—
German Empire	6·51	10·68	5·57	2·44	—	—	—
Austria-Hungary	3·80	13·77	5·28	—	—	—	—
Holland	4·38	6·17	3·10	0·72	2·43	0·12	2·63
Italy	2·85	2·50	5·83	2·04	—	—	—
Spain	0·35	0·58	2·23	9·21	—	—	—
China	—	—	0·92	—	10·19	—	—
Denmark	3·31	4·36	—	—	0·15	—	—
Belgium	0·57	5·13	1·34	—	—	—	—
Sweden	0·86	2·17	—	—	—	—	—
Portugal	0·40	—	0·48	2·00	0·09	—	—
Egypt	—	2·10	0·83	—	—	—	—
Switzerland	2·05	—	—	—	—	0·44	—
Norway	1·94	0·05	—	0·04	—	—	—
Greece	—	—	1·73	0·05	—	0·04	—
Foreign	62·67	154·16	33·85	30·98	12·86	5·29	2·63
British and Colonial	8·17	25·36	11·30	4·13	16·68	16·00	—
Total	70·84	179·52	45·15	35·11	29·54	21·29	2·63

How large a share of the whole falls to two countries is at once seen by the figures 88,120,000*l.* (Table VI) going out from the United States, made up mainly of three classes: breadstuffs, live animals,

and meats salt and fresh, with butter, cheese and lard, and tobacco. The nation which has such enormous stores of food over and above her own necessities, and is possessed of a Government, elected by and existing for the whole of her people, has no fear of starvation, and by mere force of her supplying power cannot fail to exercise a vast influence over the welfare of the countries who consume the produce of her fields and her flocks. Russia follows next with 54,220,000*l.*, of which no less than 50,570,000*l.* she parts with in the shape of corn. Unlike the Western nation, her power to part with so much of her food is no proof of her wealth, and gives her but little influence in the world. She sends all this away, and leaves her own people worse fed, housed, and clothed, than perhaps any other nation in Europe, because she chooses to expend her means in devastating wars and extravagant splendour. Would that she could see that both the ox which treadeth out the corn and the labourer are worthy of their reward, and learn to devote her vast resources to promote the real welfare of her own subjects. France too disposes largely of her produce to the extent of 27,670,000*l.*, exactly half of which is due to her growth of wine and spirits. Some of us may think that other employment of her labour might be better for herself as well as for those to whom she sends these liquors. China would not appear in this list but for the one article of tea, for which she exchanges the opium of India to the tune of 10,190,000*l.* The table itself shows the lesser amounts which other countries part with to their neighbours.

VII.—*Values of Food Products Imported.*

Next in order are similar Tables (VA and B), showing the value of their receipts from other countries. These, like the deliveries, are subdivided into one table for the British Empire, and another for the other countries; the one having a total of 202,960,000*l.*, the other 299,630,000*l.*, a much nearer approximation to each other than in the export accounts, arising solely from the overwhelming preponderance of the draught which this country makes upon the food products of the whole world. Of this more hereafter; but it may be noticed in passing that whereas the difference between the imports by foreign countries and British is 96,670,000*l.*, this is but little more than half the amount which England herself receives from abroad. Adding both together, we have 502,590,000*l.*, or say, with something thrown in for the unenumerated articles, about 550,000,000*l.*

TABLE VA.—Average Value of Principal Articles of Food Products Imported into the United Kingdom and the undermentioned Colonial Possessions.

[In millions of £'s to two decimals.]

Country.	Animal	Cereal and Farinaceous.	Sugar, Fruit, &c.	Beverages.		Tobacco, Opium, &c.	Miscellaneous.
				Alcoholic.	Other.		
United Kingdom	48'47	67'51	26'99	9'60	18'50	3'59	—
British India	1'00	0'24	1'96	1'33	0'23	—	1'10
Canada	0'30	2'47	1'17	0'18	0'68	0'24	0'09
Victoria	0'86	0'41	1'04	0'67	0'68	0'18	—
New South Wales	0'01	0'55	0'68	0'77	0'50	0'11	—
Ceylon	0'15	2'00	0'12	—	—	—	—
Cape of Good Hope	0'08	0'53	0'40	0'30	0'27	0'06	—
New Zealand	0'03	—	0'55	0'42	0'24	0'09	—
Mauritius	—	0'66	—	0'07	—	—	0'10
British Guiana	0'13	0'41	—	0'05	—	0'02	0'11
South Australia	0'03	0'03	0'30	0'19	0'14	0'02	—
Queensland	0'01	0'31	0'02	0'21	0'11	0'04	—
Newfoundland	0'16	0'33	0'09	—	0'04	—	0'05
Jamaica	0'21	0'28	—	0'03	—	—	—
Barbadoes	0'16	0'25	—	—	—	0'05	—
Trinidad	0'11	0'25	—	—	—	—	—
Natal	0'02	0'13	0'02	0'08	0'05	—	—
Tasmania	—	—	0'14	0'01	0'04	0'01	—
Lagos	—	—	—	0'11	—	0'03	—
British and Colonial ...	51'73	76'36	33'48	14'02	21'48	4'44	1'45

TABLE VB.—Average Value of Principal Articles of Food Products Imported into the undermentioned Foreign Countries.

[In millions of £'s to two decimals.]

Country	Animal.	Cereal and Farinaceous.	Sugar, Fruit, &c.	Beverages.		Tobacco Opium &c	Miscellaneous.
				Alcoholic.	Other.		
France	13'02	29'76	7'84	10'64	3'95	—	—
German Empire	6'96	24'11	0'15	2'96	7'94	2'85	—
United States	1'44	1'16	20'76	1'56	15'27	—	1'34
Hamburg	5'82	3'27	5'57	1'28	7'17	2'43	—
Holland	1'99	11'13	2'89	0'42	3'93	0'58	2'79
Belgium	4'30	14'22	—	0'86	1'79	—	—
Russian Europe	0'84	0'38	1'67	2'05	6'30	0'92	1'06
Switzerland	0'75	2'92	0'65	7'53	0'76	0'24	0'07
Austria-Hungary	1'60	5'30	—	—	2'54	2'45	—
China	—	—	—	—	—	10'65	0'25
Italy	1'58	3'47	2'31	—	1'11	0'68	0'26
Sweden	0'78	1'58	1'05	0'21	0'80	0'26	0'19
Spain	1'11	0'63	0'95	1'50	0'50	—	—
Norway	0'51	2'00	0'25	0'16	0'49	0'13	0'12
Portugal	0'62	1'36	0'44	—	—	—	—
Denmark	0'10	0'09	0'71	—	0'67	0'21	0'02
Greece	0'19	0'96	0'18	0'04	0'08	0'01	—
Egypt	0'08	0'08	—	—	—	0'08	—
Foreign	41'69	102'42	45'42	29'21	53'30	21'49	6'10
British and Colonial ...	51'73	76'36	33'48	14'02	21'48	4'44	1'45
Total	93'42	178'78	78'90	43'23	74'78	25'93	7'55

VIII.—*Balance of Exports and Imports.*

The next stage in the progress of our inquiry is that wherein the totals of import and export for each country are brought together, and the balance struck so as to show on which side the preponderance lies. In the next table these countries are divided into two groups, the one gathering together those wherein the exports are in excess, which will be found on the left of the page, and those wherein the imports exceed ranged on the right; those belonging to the British Empire standing first, and the foreign below. The grand total of imports is thus divided into two sums of 115,290,000*l.*—this again separated into 17,730,000*l.* for the British, and 97,560,000*l.* for the foreign—and of 387,300,000*l.*, divided into 185,230,000*l.* British, and 202,070,000*l.* foreign; the first set of figures belonging to the countries which export more food than they import; the other to those which consume more than they part with to others. Against these we have 273,670,000*l.*, separated into 56,240,000*l.* British, and 217,430,000*l.* foreign, for the exports that exceed, and 112,410,000*l.*, composed of 25,400,000*l.* British, and 87,010,000*l.* foreign, for those which are importers rather than exporters; the difference being 158,380,000*l.*, in two amounts of 38,510,000*l.* British, and 119,870,000*l.* foreign, for excesses of exports, and 159,830,000*l.* British, with 115,060,000*l.* foreign, to make up the excesses of imports. These figures will be all found in the table as the results of adding together the amounts for the several colonies and countries, and subtracting the higher from the lower in each subdivision, thus showing at a glance the condition of each country as regards trading or exchanging its food.

TABLE VI.—*Totals showing in which of the Colonial Possessions and Foreign Countries the Exports of Food exceed the Imports, and vice versa.*

[In millions of £'s to two decimals.]

Exports in Excess.				Imports in Excess.			
Country.	Value.			Country.	Value.		
	Exports.	Imports.	Difference.		Imports.	Exports.	Difference.
British India	32·05	5·86	26·19	United Kingdom.	174·66	20·89	153·77
Canada	9·49	5·13	4·36	Victoria	3·84	1·87	1·97
Mauritius	3·04	0·83	2·21	New South Wales	2·62	1·06	1·56
British Guiana .	2·32	0·72	1·60	Cape of Good }	1·64	0·20	1·44
South Australia	1·80	0·71	1·09	Hope			
Trinidad	1·20	0·36	0·84	New Zealand.....	1·33	0·90	0·43
Ceylon	3·05	2·27	0·78	Queensland	0·70	0·31	0·39
Barbadoes	1·07	0·46	0·61	Lagos.....	0·14	—	0·14
Jamaica	0·58	0·52	0·06	Natal	0·30	0·17	0·13
Newfoundland..	0·97	0·67	0·30				
Tasmania	0·27	0·20	0·07	United King-			
Colonial	56·24	17·73	38·51	dom and Colo-			
				nies	85·23	25·40	159·83

TABLE VI *Contd.*—*Showing where Exports exceed Imports, and vice versâ.*

Exports in Excess.				Imports in Excess.			
Country.	Value.			Country.	Value.		
	Exports.	Imports.	Difference.		Imports.	Exports.	Difference.
United States....	88'12	41'53	46'59	France	65'21	27'67	37'54
Russia	54'22	13'22	41'00	Hamburgh.....	25'54	—	25'54
Austria-Hungary }	22'85	11'89	10'96	German Empire..	44'97	25'20	19'77
Spain	12'37	4'69	7'68	Belgium.....	21'17	7'04	14'13
Denmark	7'82	1'80	6'02	Switzerland	12'92	2'49	10'43
Italy	13'22	9'41	3'81	Holland.....	23'73	19'55	4'18
Egypt	2'93	0'24	2'69	Sweden	4'87	3'03	1'84
Portugal	2'97	2'42	0'55	Norway	3'66	2'03	1'63
Greece.....	1'82	1'46	0'36				
China	11'11	10'90	0'21				
Foreign	217'43	97'56	119'87	Foreign	202'07	87'01	115'06
Total	273'67	115'29	158'38	Total	387'30	112'41	274'89

There are many points of extreme interest to be noticed in these particulars. In the first place, the United Kingdom is by far the greatest in the extent of its transactions, out of all proportion to the others in the magnitude of its imports, and still more so in the excessive difference between the food she receives and that she delivers; most of these latter being foreign goods originally imported from abroad, and of no importance in our trade but for the commissions obtained on their sale, and the employment given to our shipping both in bringing them hither, and carrying them away again. Altogether, however, these exports are very limited in amount when compared with the enormous quantities we retain for consumption. England is a great customer, and has no surplus to supply the wants of her neighbours; what these figures show of her there will be occasion to refer to again when dealing with a similar table further on, which shows in like manner to this one the transactions she carries on in goods for other purposes than food. The contrast will be a very marked one. In contra-distinction to the mother country, her eldest daughter India exports largely, but receives little, 32,050,000*l.* of the one to 5,860,000*l.* of the other. Of all the other colonial possessions there are those who together export 24,190,000*l.*, against 11,870,000*l.* of imports, and those again who receive 10,570,000*l.* for 4,510,000*l.* they give. Thus included with the United Kingdom there is a balance of 121,320,000*l.* to be provided for from the parent's resources after she has taken credit for all her children's contributions towards lessening the amount of which this large sum is the remainder. Very different is the result shown by the figures obtained by putting all the foreign countries together. The largest surplus of exports is to

FOOD PRODUCTS, INTERNATIONAL EXCHANGE.			
BRITISH EMPIRE.		FOREIGN COUNTRIES.	
Million £ s. to two decimals	EXPORTS, RED.	IMPORTS, BLACK.	Million £ s. to two decimals.
20.89	174.66		3.66
32.05	5.86		2.03
9.49	5.13		3.03
3.04	.83		19.55
2.82	.72		2.49
1.80	.71		7.04
1.20	.36		25.20
3.05	2.27		—
1.07	.46		27.67
98	.52		11.11
97	.67		1.82
.27	.20		2.97
1.87	3.84		2.93
1.06	2.62		13.22
.20	1.64		7.82
90	1.33		12.37
.31	.70		25.85
.17	.30		5.422
—	14		88.12
		UNITED KINGDOM.	
		FRANCE.	
		GERMAN EMPIRE	
		HAMBURG	
		CHINA	
		GREECE	
		PORTUGAL	
		EGYPT.	
		ITALY.	
		DENMARK	
		SPAIN	
		AUSTRIA-HUNGARY	
		RUSSIA	
		UNITED STATES	
		LAGOS.	
		NATAL.	
		QUEENSLAND.	
		NEW ZEALAND.	
		CAPE OF GOOD HOPE	
		NEW SOUTH WALES	
		VICTORIA	
		TASMANIA	
		NEWFOUNDLAND	
		JAMAICA	
		BARBADOS.	
		GOYLYON	
		TRINIDAD	
		SOUTH AUSTRALIA	
		BRITISH GUIANA	
		MAURITIUS	
		CANADA	
		BRITISH INDIA.	
		UNITED KINGDOM.	
		NORWAY.	
		SWEDEN	
		HOLLAND.	
		SWITZERLAND.	
		BELGIUM.	

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be found in the United States, which, after setting 41,530,000*l.* against her 88,120,000*l.*, stands 46,590,000*l.* to the good. Following the western nation, comes Russia, stretching to the east, with a balance of 41,000,000*l.* in her favour, the difference between 54,220,000*l.* of exports lessened by 13,220,000*l.* of imports. Previous tables have shown that these two growers of grain thus join in providing the food which satisfies the ever increasing demands of our home population; the supplies from the west being augmented by very considerable exports of meat. On the opposite side of the page it will be seen that France is dependent for foreign supplies to the value of 65,210,000*l.*, of which more than a third is for grain, and only exports in exchange 27,670,000*l.*, of which one-half is the produce of her sales of wines and spirits, leaving, on the whole, a balance against her of 37,540,000*l.* This state of affairs with France is somewhat abnormal, owing to the devastations of the insect pest in her vineyards; for though she fairly keeps up her exports of wine and brandy, fully two-thirds of these are not her own produce, but the drainings from Spanish, Portuguese, and Italian growths. Strange to say too, notwithstanding all we hear of her beet-root sugar, her exports, which in 1881 weighed 153,000,000 kilogrammes, were more than counterbalanced by 226,000,000 which she imported—two-thirds from foreign sources, and one-third from her own colonies. Her own indigenous production in the same year, the last of which there is a published account, amounted to 377,000,000 kilogrammes, the half being subjected to duty for home consumption, the remainder giving her the means of exporting as above.

It will be seen that Hamburg figures for 25,540,000*l.* import, without any corresponding export. This properly speaking should be credited to other countries, but whether to Germany, Holland, Belgium, or more remote places, cannot be shown; this port being one of reception of goods mostly distributed by internal means of transport. The one eastern country which appears in this account is China, whose exports of tea do not quite pay for her imports of opium. Neither of these substances are quite fairly classed as food, but, for reasons already stated, the extended definition which this term embraces renders their insertion necessary, though not altering the balance. Indeed, were the figures confined to articles of absolute value as flesh-formers, many of these balances would be greatly altered; yet for the purpose in hand, that of showing how the various nations interchange substances whose ultimate use is for internal bodily consumption, they are in their right places in these tables.

On striking a balance (Table VI) between the food-exports and imports of the enumerated foreign countries, it is important to observe that the difference is so very small, only 4,810,000*l.*, or just

4 per cent. on the side of exports, whilst for our own empire it is so large the other way, 121,320,000*l.* on the side of imports, fourfold more than the exports. It will be obvious that the same goods must appear on both sides of the account, sometimes twice over, when, as in the case of our own ports, goods are brought hither simply to pass again to some other destination, and under these circumstances it will surprise those to whom the conditions of trade are new, that the totals on each side of the account do not agree more closely. Even those who are conversant with the fact that the export values are those at the place of shipment, and the imports at the point of arrival, thus increased by the expenses and profit of removal from one country to another, will note that the difference is somewhat excessive. It is sufficiently large to suggest that the earlier remarks as to the reserve with which all these accounts must be received, were not altogether unnecessary; yet it is not so heavy as to throw great doubts upon, but rather to sustain their substantial fitness for all the inferences which have been drawn from them. As regards our own share, it must be remembered that as the chief carriers of the world, some considerable portion of this balance accrues to our advantage. Any remarks on this part of the subject had, however, better be reserved for the balances between the whole trade, instead of that portion which consists of food only. At best the distinction between what is to be classed as such can but be somewhat rough, as these figures do not profess to deal with every article of the kind, for only the principal articles are specified. It may well be that to include those of minor importance might change some of the totals, but besides this there is no security that the descriptions or classifications adopted in the one country tally with the assumptions in another. One other source of discrepancy may, indeed must exist, so long as we have not all the countries with which trade is carried on contributing their returns to the list. It is to be hoped that the agreement which does so far exist, proves that the pains bestowed in thus bringing the figures in juxtaposition have not failed to bring out facts worthy of the attention bestowed upon them. The one of paramount importance, that of the food supplied to this country, demands special consideration; but reserving this for the concluding portion of the paper, some remarks are called for upon the further Table (VII) which has been thought necessary to make the series tolerably complete, namely, that which shows the whole imports and exports that the returns contain, or, rather, those which are not food, so that by adding the two (VI and VII) for each country, we may see, so far as the records extend, what is the full traffic inwards and outwards pertaining to these countries. The amounts thus shown are not obtained by the collection together of the principal articles,

as was done with the food tables, but by deducting these latter from the total of the whole trade as stated in the accounts coming from each country. It will thus happen that any unenumerated articles of food which may have dropped out of the previous figures will be included in these, and it is probable that such as may have done so will be more amongst the imports, which, especially to this country, embrace very many minor consignments of a great variety of somewhat insignificant articles. These, it is evident, will come more frequently to the country whose capacity for reception is the greatest, and whose traffic is most widely distributed. To whatever extent this may be the case, it will go to swell the already large total of food imports.

IX.—*Exports of Goods other than Food.*

TABLE VII.—*Showing to what Extent the Exports of Goods, other than Food, Exceed the Imports in the United Kingdom, her Colonial Possessions, and Foreign Countries; and those in which Imports are in Excess.*

[In million £'s to two decimals.]

Exports in Excess.				Imports in Excess.			
Country.	Value.		Dif- ference	Country.	Value.		Dif- ference.
	Exports.	Imports.			Imports.	Exports.	
	£	£	£		£	£	£
United Kingdom ...	256·53	215·75	40·78	British India	52·62	43·05	9·57
New South Wales	13·83	12·58	1·25	Ceylon	2·55	1·31	1·24
Victoria	13·01	11·26	1·75	Mauritius	1·54	0·45	1·09
Tasmania.....	1·19	1·16	0·03	South Australia ...	4·56	3·11	1·45
Queensland.....	2·90	2·40	0·50	New Zealand	6·00	5·15	0·85
Lagos	0·56	0·28	0·28	Natal.....	1·84	0·66	1·28
				Cape of Good Hope	6·87	4·46	2·41
British.....	288·02	243·43	44·59	Newfoundland	0·79	0·34	0·45
German Empire.....	118·94	114·32	4·62	Jamaica	0·89	0·37	0·52
Egypt	10·75	6·18	4·57	Barbadoes	0·64	0·20	0·44
United States	89·78	80·44	9·34	Trinidad	1·92	0·65	1·27
				British Guiana.....	0·63	0·33	0·30
				Canada	13·88	8·40	5·48
				British.....	94·73	68·38	26·35
				Russia	75·67	34·74	40·93
				Norway	4·64	3·54	1·10
				Hamburg	70·18	—	70·18
				Sweden	8·40	8·18	0·22
				Holland.....	47·28	32·73	14·55
				Belgium.....	43·32	42·43	0·89
				France	128·02	110·47	17·55
				Spain	15·73	6·73	9·00
				Portugal	5·44	1·97	3·47
				Italy	39·48	31·28	8·20
				Austria-Hungary ...	47·89	45·73	2·16
				Greece	14·44	11·04	3·40
				China.....	2·18	0·63	1·55
Foreign	219·47	200·94	18·53	Foreign	502·67	329·47	173·20
Total	507·49	444·37	63·12	Total	597·40	397·85	199·55

On the figures contained in this table in conjunction with those of Table VI, it may be remarked how very large a portion of all the trade relates to the interchange of food. The two tables added together would show a total of imports 1,544,360,000*l.*, of which 502,590,000*l.*, nearly one-third, is, as we said before, for food; and an export total of 1,291,420,000*l.*, towards which food contributes 386,080,000*l.*, all the other articles which the nations of the world interchange with each other but little more than doubling that of their dealings in food. But when we look to our own country, the proportion is much greater, the food imports being 174,660,000*l.*, the total of all other articles being but 215,750,000*l.*; so that the difference between the imports and exports of food being 153,770,000*l.*, that between exports and imports of other goods is but 40,780,000*l.* Truly the necessity for obtaining supplies of food for our people dominates the whole question of the balance of trade. Not so with other countries. France, the one which next to ourselves imports the most food, with an excess of 37,540,000*l.*, increases this by 17,550,000*l.* with other articles; and Germany, importing 44,970,000*l.* of food, diminishes this by an excess in the exports of other goods. The United States, exporting 46,590,000*l.* more food than she imports, also exceeds on the same side by 9,340,000*l.* with other things. Russia almost exactly balances her account; with 41,000,000*l.* excess of food exports she takes 40,930,000*l.*, more other articles. England is thus the only country in the world which has not within herself the means of feeding all her inhabitants; for if reference be made to Table V, it will be seen that meat and bread make up together rather more than the whole balance against her which has just been pointed out.

France does at first sight seem to be treading much the same road as England, having at the same time an excess of importation of food and other articles as well; but there are several points of difference between the two countries. The most prominent of these is that she is suffering the loss of her vintage, from a cause which cannot be expected to be permanent, though she may be menaced by another, that of a growing disuse by the world of these products. Should either of these prove at all permanent, she would only have to change her cultivation, growing food instead of buying it with wine and brandy. In other respects her condition is wholly opposed to ours. With a population only exceeding that of this country by two millions out of thirty-seven, she grows 188,770,000*l.* of grain, &c., as against our 95,680,000*l.* (Table III), and possesses live stock corresponding with ours in value per head of population. The point in our favour being that we can export of everything else 256,530,000*l.*, hers are confined to 110,470,000*l.*, or less than one-half.

X.—*Conclusion.*(a.)—*The World's Production of Food.*

But it is time to draw these observations to a close by an endeavour to concentrate the points of value in the preceding tables. If India be withdrawn from Table III with regard to grain, as it was from Table II in respect of cattle, &c., for which we have no information at all, the annual production of food in the world, so far as our information extends, may be thus set forth in value, specifying the five principal countries :—

	Population.	Live Stock.	Grain.	Total.
	£	£	£	£
United States	50·16	307·29	501·66	808·95
Russian Europe	83·66	162·37	445·97	608·34
German Empire	45·23	109·82	262·24	372·06
France	37·32	84·85	188·77	273·62
United Kingdom	35·00	73·46	95·68	169·14
Other countries, British	11·26	128·48	43·02	171·50
„ Foreign	84·29	163·71	330·82	494·53
	346·92	1,029·98	1,868·16	2,898·14

If the figures given for United Kingdom be compared with those of Sir James Caird, quoted by Major Craigie in the paper before referred to, they fall considerably short of his in value; for he sets down corn, potatoes, and meat together at 190,737,000*l.*, a sum that appears to me to be somewhat excessive, for the respective quantities do not differ very widely. The sum of 169,140,000*l.* is doubtless too little, but it must be remembered that the object of the foregoing calculations is not to estimate the actual value consumed at home, but to determine if possible the relation which the quantities bear to those of other countries, and to express that relation in figures; using the pound sterling like a common denominator in collecting fractions of different value together; not to consider the varying prices of different countries, but to assume a uniform one for all. In this way the country like ours, in which high prices rule, must work out too low, whilst others are too high for actual expenditure.

Two other tests may be roughly applied. Contrasting the supplies of food of home growth with those of foreign, it has been assumed by eminent writers that the two were about equal some few years ago; the foreign should now therefore exceed; and with this agrees the sum of 174,660,000*l.* imports in Table VI, and the 169,140,000*l.* above. The exports of food from this country consist mostly of articles which are not live stock, grain, or the produce of either. Again, it is generally admitted that the consumption of

meat at home is about 100 lbs. for each head of population. In preparing the value of the amount of live stock, based on the 17,000,000 tons before stated, the quantity works out at 110 lbs. per head for all countries together, which, knowing that ours is a meat eating country, will appear somewhat disproportionate. Not so, however, when it is remembered that these estimates are formed upon the supposition of all the live stock being kept for the production of meat, whereas a large proportion of the sheep are solely used for the growth of wool, and many of the cattle as beasts of burden.

Most of the writers who dwell upon this subject, as regards our own country, make an estimate of the value of the milk, cheese, and butter, which form so considerable an addition to our home supplies of food, and set these down as together equal in value to about one-fifth of the meat and grain. How much fish may be also eaten it is still more difficult to estimate; and, great as is the uncertainty with all these articles as relates to the United Kingdom and its dependencies, it must be still greater as regards other countries.

At the risk of repetition, it must be again remarked that none of these figures must be taken as determining either the absolute value of the food by which the whole human race is sustained, for there is so large a portion of the world for which no records exist, and even those records which are available omit so many of the articles which are effectively used for supporting life. It is for comparative purposes alone that they can be safely consulted, the money value being, as nearly as may be, the representative of quantities; thus showing the relative importance of different nations as contributories to the wants of themselves and their neighbours.

It is somewhat different, however, when we deal with the transportations from one country to another. In the data here—much as there is to be desired in fulness, lateness, and complete accuracy—there is a nearer approach to certainty. The conclusions to which their study leads at least form a foundation for those which are of the greatest moment, as affecting, if not the very existence of our nation, its continued progress, excepting under very altered conditions, both agricultural and manufacturing.

(b.)—*Singular Position of this Country.*

Taking it for granted then that these figures are not far from the truth, we are again brought face to face with the isolated position in which this kingdom stands as so unable to produce its own food, and so dependent upon that of other countries; an inability and a dependence which go on increasing year to year.

But Table VI shows us also how great is our predominance as an exporting country, and hence the means by which our supplies have been obtained; for so long as the markets of the world are open to us, it matters not whether our labour is expended on that which produces or procures the food we need. Unfortunately, however, whilst ever-increasing facilities arise for purchasing, those for selling or exchanging are becoming fewer. The most ardent free trader must admit that prohibitory duties abroad are not favourable to our own progress, and that the condition of trade is not so satisfactory as to prevent uneasiness as to the results. Hence the efforts made to suggest a remedy. Three main ones are at present brought before us by those who desire to revive the prosperity of the nation, and to prevent or postpone its decline. To each of these it may not be out of place to offer a few remarks as to the bearing of the information this paper contains on the solution of the problem.

(c.)—Remedial Measures Suggested.

In the first place it is thought that the remedy may be found in an increased growth at home, and it is sought to stimulate this by reimposing duties on imported food, thus rendering it profitable to grow more here. Can such a result be at all anticipated? Is it possible to conceive of the land in this country, not only providing for the deficiency already existing, but also for the growing necessities of increasing numbers? Even if it were possible by higher farming to increase the produce of our fields, would this be done without increasing the cost? Already grain is grown cheaper elsewhere, and can be brought here at such small increase on the original cost as to rival our own products. Is there any reasonable prospect of these things being reversed? If not, what justice or policy would there be in telling the labourer to expend his strength in the production of a bushel of corn at home, if in other ways he can produce that which obtains for him two bushels from abroad? The assertion that a duty on importation would be paid by the foreigner instead of by the home consumer is contrary to all past experience, and is utterly inconsistent with the arguments in favour of levying that duty; for if it failed to increase the price, it would also fail to stimulate increased production at home. If, on the other hand, prices rose, the cost of production of our manufactures, which are the coin wherewith we pay for food, must necessarily increase also. It is true that economy and thrift would go far to neutralise the effect of lower wages, but there can be no reason why that thrift should be practised for the benefit of but one section of the community. If we cannot grow as cheap at home as we can import from abroad, no amount of protection given

to home growers can be anything but a temporary expedient which must give way to increasing pressure. Our true policy is to employ our strength on that which will exchange for more than it can produce. The capacity for foreign production shown by the figures already given, forbids the supposition that it is wise to restrict our appropriation of these to our own use. The power which it is also shown us to possess for supplying foreign markets with goods other than food, assures us that it ought to be cultivated and extended.

In the next place it is suggested that a shifting of the burden of taxation from the shoulders of the home producer of food on to those of the community generally, would enable him to stand against foreign competition. If taxation is unequal, and there is sufficient evidence to warrant the fullest inquiry, by all means let the inequality be rectified, but the records of our export trade do not warrant the supposition that it can bear any additional weighting. If land be entitled to relief from taxation, it cannot be met by levying duties upon manufactured articles for home consumption, which must, by raising the price of all, inevitably check their sale abroad; and so diminish the power for payment in the only produce we can offer to other nations. Thus throwing out of employment, and dependent upon the rates, those who now earn their maintenance by our foreign trade.

The third remedy which presents itself is that if producers of food at home cannot supply our wants, and if consumers of other goods abroad will not take our home-made goods, we should send our surplus labour to the fields where food can be produced by ourselves. Tables IIA and IIID show the great disproportion which the acreage and production at home bear to that of other parts of the empire in even that portion of it for which we have returns. Why not then extend cultivation in our own possessions abroad, and there raise up consumers for an additional quantity of our home manufactures? Everything points to the freest exchange between the nations of the world of that which each produces, and it should be matter of intense gratitude that if the world will not yet admit us to free trade with them, we have both land and labour of our own to do without them.

DISCUSSION *on* Mr. BOURNE'S PAPER.

MAJOR CRAIGIE, in opening the discussion, wished to offer the thanks of the Society to Mr. Bourne for the valuable paper which he had placed before them. There were, however, but few points which in a paper like this could be easily discussed without preparation. No one could doubt the enormous importance of the subject, and the conclusions to be drawn from such investigations. He must own he looked with some little trepidation on the wide range now taken, and the somewhat ambitious flight into a region where the data were so incomplete and unsatisfactory. The labour of such a task as that to which Mr. Bourne had set himself was enormous. He entertained, however, some doubt that they had not got a perfectly satisfactory unit for comparing the products of different parts of the world in taking the pound sterling. The values attributed to the different countries would be to the public mind, despite Mr. Bourne's caution, not a little misleading. The value of the products was given as imported to this the richest country of the world at its ports, and this would by no means be the mean of the values throughout the world generally. Take for instance the figures in Table IIId, where Russia was credited with a production equal to four times the amount per head of the population as against the United Kingdom; such items startled one a little on reading the figures. He was not quite sure how the gap between Tables IIId and IIId was got over, Table IIId being one of the most important summary tables in the whole paper, since in it the production of all these countries was put side by side. Here the United Kingdom was taken as producing 150·7 millions of food per annum. But in Table IIIA the annual value of the grain produce and potatoes in the United Kingdom was taken at nearly 96 millions, which would only leave something like 55 millions annually as the whole yearly value of the annual product of meat, as well as the omitted products of milk, butter, cheese, &c. How had this estimate of 55 millions been arrived at?

Mr. BOURNE said that Table IIId was a calculation of the value of the existing stock. He had arrived at the difference between the grain and the live stock in the following table by calculating what that amount of existing stock would yield when slaughtered.

Major CRAIGIE said he questioned the total of 150 millions,* and wished to point out that deducting the annual value of the grain, 95 millions, only 55 millions was left as the annual value of the meat produced. Even admitting that dairy produce was not included in the estimate, the proportion of meat must be much too low. According to his (Major Craigie's) recent calculations, the estimated yearly home production of meat was equal to 1,240,000 tons per annum. The value of that meat, if it was taken at anything like 73*l.* or 74*l.* a ton, must be very greatly in excess of the 55 millions mentioned in Mr. Bourne's paper, and therefore he thought he must have con-

* It will be seen, on reference to the table referred to, IIId, that Mr. Bourne, in deference to Major Craigie's opinion, has taken his estimate for meat somewhat higher.—EDITOR.

siderably under estimated the value of the butcher's meat alone, without taking account of other animal products. He believed that the meat supply alone was nearer 85 millions than 55 millions. He did not propose to enter upon the very interesting calculations with reference to import and export movements which composed part of the paper, but only to insist that, as regarded relative production, there was a fallacy in taking a pound sterling as the unit of comparison. The figures would be to some extent modified if another mode of calculation was adopted. Recurring to what had been said as the aggregate value of the out-turn of the United Kingdom in the way of food, no doubt Sir James Caird's figures which had been quoted in the reference to his (Major Craigie's) paper were taken after a period of very much higher prices than at present; they must be too high for existing circumstances. In the paper he (Major Craigie) read last January, therefore, he proposed to reduce the value of the grain alone produced in this country to something like 60 millions a year, in place of 87 millions, and he gave his reasons for so doing when he read his paper. The difference between Mr. Bourne and himself was thus narrowed, but he was still unable to see how the total with regard to meat could be made up from the data now given. These points would no doubt be explained by Mr. Bourne in his reply; but if his calculations were wrong in the points he referred to, he was afraid they were also wrong in the totals for other countries. If the meat production of England was brought out at only 55 millions, then he was afraid they must be also wrong in the meat supply attributed to other countries, if the proportion annually slaughtered were assumed to be the same. In applying to foreign countries the measure applied to their English stock, estimating the amount of meat produced from a given number of animals, they were in great danger of going wrong. The proportionate number brought to the butcher annually must be totally different in many countries from what it was here, and would throw out, to some extent and in another way, the general figures with regard to animal products. At the present moment, when the question of animal imports was attracting unusual attention, it became their Society very closely to look into the question of the meat consumption of the country in any one year and the sources of their supplies, and he hoped that the paper that Mr. Bourne had so ably placed before them would be the means of stimulating discussion on that very important, but still undecided, point. He had been induced to go lately into such data as were available on this head, and the figures showed that, speaking roughly, 100 pounds of meat were consumed by each unit of the population in the course of the year. If of that 100 pounds 78 pounds, as his own investigations showed, were produced at home, and the remainder imported either alive or dead, those were figures which bore a very important relation to many of the discussions going on at the present time with reference to the importation of animals and the dissemination of disease among our home stock. His own inquiries pointed to something like a home production of meat from cattle, sheep, and pigs equal to 1,240,000 tons yearly, while we had, according to last year's returns, nearly 62,000 tons

of fresh and 170,000 tons of salt meat imported, and living animals in addition, calculated to furnish a further supply of meat equal to 106,000 tons; the total of the country's meat thus reaching 1,578,000 tons, or very nearly the 100 pounds per head to which he had referred; while, if these figures were anywhere near the truth, the relative importance of the sources whence our population were fed was shown by the home supply furnishing 78 pounds to each inhabitant, the foreign dead meat 15 pounds, and the foreign live meat 7 pounds. If they were to go more thoroughly into this question, perhaps some of the data put before them by Mr. Bourne would afford a useful starting point.

Mr. H. MONCREIFF PAUL said that thoroughly agreeing as he did with the able remarks at the commencement and the end of Mr. Bourne's paper, he was sorry to be obliged to follow very much in the wake of Major Craigie, and rather take exception to the basis upon which some of the calculations had been made. Mr. Bourne had guarded himself by saying that he could not pretend to anything like accuracy in his statistics, but this proviso, notwithstanding the tables as given, might prove very misleading. For instance, in Table IA, showing "the quantities of grain, potatoes, and other agricultural produce grown annually in the United Kingdom and Colonies," the returns for the United Kingdom were taken for the year 1882, while those for the Australasian Colonies were for 1880; and yet those two years were put together in one table as if they were returns for the same period. The same remark applied with regard to the live stock in Table IIA, that for the United Kingdom being given for the year 1882, and for the Colonies for 1880. Passing to Section 5, "Estimated Values of Produce," the index unit being taken as a pound sterling, they found in consequence on reference to Table IIIC, that while the cattle in the United Kingdom were put down at 13*l.* a head, cattle in the Australasian colonies were also put at 13*l.* a head, whereas the value of cattle in these colonies was less by 80 per cent. than in England. Taking as a further example the case of Russia, her sheep were estimated at over 2*l.* a head, or far in excess of their value in that country. Turning to the Tables IVA and VA, giving respectively the values of food products exported and imported, and taking as a type case the returns for New South Wales, it was found that the imports were 2.62 millions, and the exports 1.06 millions, showing an excess of imports according to these calculations of 1.56 millions. But if reference were made to the actual statistical returns of the colony, it would be found that for the year 1881 the imports of New South Wales were 4.87 millions, and her exports at 1.41 millions, leaving a surplus for excess of imports of 3.42 millions instead of 1.56 millions. The comparison of these tables with the actual statistics furnished by the different countries seemed therefore to point to the conclusion that they were resting upon a wrong basis, and would require modification. He believed the secret of the error lay in this, that the principle of computation dealt with in the case of imports and exports in order to reconcile values had not been applied. In order to do so they should

follow the course adopted as indicated by Mr. Bourne in the United States, of assessing imports by taking the value at the point of production, and adding thereto the cost of transit. If that same system had been adopted in the tables before them more accurate data might have been obtained. Mr. Bourne had not been able to supply statistics with regard to the wheat produced in India. That was a very important point, because India was becoming daily a more important factor in producing wheat for herself and for the rest of the world. The figures for 1881 of the produce of wheat in India showed 212 million bushels, or $26\frac{1}{2}$ million quarters, from an acreage of some 19 millions, showing a very fair yield per acre. The question of wheat production was exceedingly important, and he was glad that Mr. Bourne had given such prominence to it. France in this respect occupied an abnormal position, for whereas in the year 1882 there were obtained by Great Britain only 64 million quarters of wheat from France, in 1878 201 millions were imported thence, showing that latterly bad harvests had affected her as they had other producing countries. The question of meat importation in the shape of refrigerated animal food was one which was coming before them more prominently than ever. The problem had now been successfully solved, and the process could be extended all over the world, that is to say, that wherever there were countries which could produce animal food in excess, it might be brought by means of refrigeration to those countries which required more food, and in that way a gap might be filled up which England felt very strongly. While the trade was at present in its infancy, the day was near at hand when the annual supplies of Australasian mutton would exceed half a million of carcases. Such imports would tend to place a wholesome check on the upward movement in values, of which there was abundant evidence in the butcher's bills so reluctantly paid by the British householder.

Mr. R. HAMILTON referring to the question of some common denominator for the various items which had to be brought together, said that though in temperate climates at all events the crops of cereals were secured year by year that was by no means the case as regards the supply of meat. Not only the *bulk* of the animals but the *time* required to bring them to maturity was a most important factor in the calculation. Scientific breeding and rearing had done very much in this respect within the last few decades. Perhaps Major Craigie could get from the Royal Agricultural Society the data from which a common unit of the food value of animals could be deduced. Even with grain in many parts of India a "wet" and a "dry" crop could be raised within the year, and this double annual supply was one reason why Oude and Bengal could support so large a population without suffering the extreme of poverty. With regard to the question of free trade, a long series of bad harvests had subjected the country to a most extreme test, but the strain had been borne with a most marvellous facility. He believed that under any circumstances short of a war of an enormous magnitude, their food supply as regards the present generation was not only secure but could be attained with great facility. The ease

with which so gigantic a difficulty had been met might well give them confidence in the ability of the country to overcome similar difficulties in the future as long as the principles of free trade were maintained.

Mr. W. J. HARRIS said he thought Mr. Paul had made a little mistake with reference to the acreage under wheat in India.

(Mr. PAUL here said the real acreage was 19 millions, and not 10 millions as he had inadvertently stated.)

Mr. HARRIS said Dr. Hunter, in his recent work called "The Indian Empire," put it at 35 millions, but he believed that was an over estimate. He (Mr. Harris) had seen it stated that 21 millions was the acreage, but he believed it was increasing every year. The exports of wheat from India had lately been larger than ever before, and it was very encouraging to know that our great dependency was able to supply so much of our food. He did not entirely agree with the last speaker on the free trade question, for he believed that the land of England was capable of producing a vast quantity more than it did at present. Lord Derby said some years ago that he was certain that its produce might be doubled, but probably that was over stating it. He (Mr. Harris) thought that if they could produce more food at home, and import less from abroad, it would be better for their manufacturing interests, because the food produced at home would be sold at home, and the money that it brought would all be spent at home. He thought therefore that we had pushed free trade too far in this country; at the same time the country was not at present prepared to put any duty on the import of food. If a suitable reduction in the burden appertaining to agriculture were made on the farming land of England, to be given in proportion to the amount of land devoted to tillage, it would be very greatly to the benefit of the country, and the produce of our present acreage would be vastly increased thereby. So far as manufactured goods were concerned, he admitted that he was a moderate protectionist, and believed that we ought to prevent the manufactures of foreign countries interfering with the labour of our own workmen to the extent they were now doing. With regard to France, he thought Mr. Bourne had not made sufficient allowance for bad crops, causing the large imports which that country had made of late years. Seven years ago France was a wheat exporting country, but for the last four or five years it had been a very large importing country. With good harvests France might again be an exporting country, and that would make a vast difference in the sum which Mr. Bourne had put down to the debit of her balance of trade in food. He agreed with what Mr. Bourne said as to a duty on the import of wheat not being of much benefit to the agriculturists in England. He believed that such a duty would in great part be paid by the foreign producer; in fact this was shown by our own history, for when the repeal of the corn laws took place, there was a great advance in the price of wheat in all exporting countries, and very little fall in this country, clearly

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showing that the import had not affected the consumer to the extent generally supposed; therefore it would do the English farmer but little good to re-impose it. With regard to the last paragraph in the paper, he did not think our colonies were for the future more certain to take our goods in return than other nations, so long as they had equal tariffs against us as against others; and therefore it was a most important thing for us to try and induce them to reduce their duties in our favour by making concessions to them in return, and thus to encourage more free exchange than existed at present. The world was treating us very badly in trade matters, and we had no reason to consider the rest of the world when we were making commercial arrangements with our colonies. He did not mean to say that free exchange with all the world would not be a very excellent thing if we could really get it; but it seemed to him that we adhered to the one-sided system which we called free trade as though it were the religion of our lives, and he thought a little departure from it would in the end bring more real exchange of commodities than we ever had before.

Mr. GEORGE HURST said allusion had been made to the taxes put upon agriculture, but he should like to know what those taxes were. For his part, he generally looked upon the various taxes as being local burdens, and they were chiefly necessary for the good management of the land itself. As to the highway rates, every one who had lived in the country must know that good and perfect highways were the greatest benefit that the agriculturist could have, and where they had good highways the land had doubled in value. Poor rates were no doubt a charge upon land in the same way as the poor in towns were a charge upon the general inhabitants. If these local taxes were removed what would be the result? The tenant would not gain anything, but it would be a great benefit to the landlord. According to Mr. Ricardo's doctrine, the rent did not commence until all expenses were paid upon the land, and also the profit of the farmer; and if there was any truth in that doctrine, the removal of these local burdens would certainly bring about an increase in the rent. Emigration had been referred to. Everyone who knew much of the agricultural counties would know that a great proportion of the best labourers had emigrated, and the inferior men remained at home; therefore if they had too much emigration there would be a considerable deterioration in the next few generations. He thought it would be very important if they could give some kind of inducement for agriculturists to improve their agriculture; but this could only be done by the land proprietors themselves taking care that the tenant should not have too large a holding, but should have a holding in proportion to his capital, so that he might be enabled to improve the cultivation and to prosper himself. The great misfortune with regard to farmers throughout the country was, that they had very much more land than they had capital to work. A small farm might be too large where the means were inadequate, but no objection could be made to the large extent of the holding when the occupier had sufficient energy, judgment, and capital, to secure its proper cultivation.

Mr. CORNELIUS WALFORD said that some years ago upon investigating the subject of famines, he made some attempts in the direction of estimating the food supply of the world, but found it surrounded with difficulties owing to the want of returns in any available shape. He therefore congratulated Mr. Bourne in having brought together a vast array of figures which previously were not available in any form for comparison. The broad view of the question was this, that there was a surplus of food available in certain nations, and in others there was a deficiency. The moral of the paper must therefore be that they should know which nations had a surplus, and which nations required that surplus. That being so, if they found at any time that the nations from which they drew their supply had for that particular year a failure in their crops, they would know where to look for other supplies; and shippers and others would have their attention drawn to those countries which could afford some surplus of food. Every year there was produced in the world enough food for the world, but what was wanted was facilities for transport, and a knowledge of where the surplus food was lying. In India, even in the year of famine, there had always been produced in the country food enough for the whole of the inhabitants; but in practice food supplies had been sent from other parts, because the facilities of transport as between the different localities did not exist. Happily owing to the railways he hoped the time had gone past when any great famines would be heard of there again. Every country was liable to have its food supplies destroyed, and therefore a paper which brought up the broad facts would render very good service in times to come. The economic aspect of the question was that as long as we could obtain cheap supplies of food, so long would our manufacturing industries maintain themselves against all nations.

Mr. PELL, M.P., said on the whole he assented to the propositions laid down by the author. He could not, however, concur in the statement that had been made that the United Kingdom was going to double its production. No doubt those who were engaged in the production of food were doing their best, for, on the one hand, the price obtained for meat was so good that every man who had the capacity would strive to produce good cattle and sheep; and on the other hand, those who were engaged in the production of cereals were making desperate efforts to see whether or not they could grow cereals and get a fair return before they gave up that side of their production and surrendered it to other countries. He was not at all hopeless about their position, for he believed that they would still see the land best suited to the production of cereals devoted to it, and that some increased production, though not a large one, would be made. With regard to the supply of food from the United States, they must not expect too much in the way of very large continued exports of wheat, though they might look to their growing more cattle. The American found that wheat was a hazardous crop, and expensive to harvest, and that "corn" was the one to which he must turn his attention. He found that if maize was worth 15 cents a bushel in the form of grain, it was worth 25 cents a bushel when turned into pork; and

further, that while a crop of maize required to be carried to the dépôt, if it was turned into pork it would transport itself. Under those circumstances he was inclined to believe that the Americans would be forced into a greater production of animal food, being shrewd enough to see that that would be the better investment.

Mr. BATEMAN said France was one of the very few countries where they had had complete statistics of agriculture for the last fifty or sixty years, and they found that in the last fifty years the acreage of wheat had increased 40 per cent. and the yield 70 per cent., and yet France had become an importing country for wheat, the population not having increased. The simple reason was this, that they consumed wheat bread there very widely, instead of rye bread as formerly; and whereas sixty years ago they used some $\frac{3}{4}$ lb. of wheat per head per day, they now consumed $1\frac{1}{4}$ lb. On the other hand the wheat consumption in all the large towns except Marseilles was actually decreasing, because the people were eating meat. In Paris the consumption of bread was now rather less than 1 lb. per day per head, and of meat nearly $\frac{1}{2}$ lb. per head.

The PRESIDENT: I think at this late hour I may now proceed to ask you to give a very cordial vote of thanks to Mr. Bourne for the paper we have heard to-night. Some criticisms have been passed upon special tables which he has given us, but I think that even those who have criticised some of the figures must agree that taking it altogether, the work put before us to-night is of very substantial value. And I think with reference to that work it is interesting to point out that the criticisms which have been made only apply to a few of the tables, one or two in which Mr. Bourne attempts to make a comparison of the food production of different countries. He says, taking the value in a certain way, and putting upon the value of the agricultural production of all countries the value of the imports into the United Kingdom as those articles are imported into the United Kingdom, he obtains a basis of comparison of more or less value by which he can compare the gross agricultural production of different countries. Nobody can be better aware than Mr. Bourne that a hypothesis of this kind only carries one a certain length, and that it is liable to very great difficulties of interpretation. The criticisms which have been passed have been passed almost exclusively upon tables of this nature; but these are only a part of what Mr. Bourne has done, and I should like especially to call your attention to the latest tables in his paper, which deal entirely with data, which are very little estimated, in which he has compared different countries as regards their food imports and exports, showing how we stand in reference to this very important question. These tables will be found of the very utmost value. The one remark which I should wish to make with reference to the figures themselves, touches upon that point which Major Craigie mentioned, and I should be very much obliged to Mr. Bourne if he would tell us in what way he has dealt with the question of other agricultural productions besides meat; for if these values had been included it would tend to bring up the value of our agricultural production considerably above the figure which he has put

upon it. I think, on the whole, the estimate for comparative purposes of the United Kingdom is rather lower than perhaps it ought to be. Mr. Harris is no doubt entitled upon a question of this kind to bring up the question of free trade and protection, but I do not think any remarks which he has made to-night contribute to the enlightenment of our mind at all. The chief statement that he made is that we ought to produce much more food at home, and that it would be a better thing if we did. Upon this subject we have had the remarks of Mr. Pell, and I think he has disposed very well of the question as to whether it is within any reasonable probability that we can produce more food at home. No doubt more food could be produced if certain land which is now devoted to purposes of pleasure could be devoted to other purposes, but I should doubt very much if there is any great quantity of land that could be so utilised as to make any material difference in this question. If the production of food can be increased at home by the greater efficiency of the producers, then all that is undoubtedly a gain to this country; but if people are merely to be turned from making other things into producing food,—other things in which we have the advantage perhaps over other countries,—then it might happen that by producing more food instead of producing other things we should be losers and not gainers. Mr. Harris has not given any explanation of what he means by asserting that the increase of the production of food at home would be a good thing, and it must be quite clear it is only increased production by means of the greater efficiency of labourers, and greater efficiency in industrial and scientific appliances of every kind, that the increased production of food at home would be of any advantage to the country. Mr. Harris asserted that agriculture is pressed down by taxes, and that is a great obstacle to production. That has been to some extent dealt with by Mr. Hurst; and it surely must be as clear as any proposition can be, that the taxes to which he referred are not taxes which press upon agriculture, but taxes which press upon rent. If these taxes have any effect in diminishing agricultural produce, then it must follow that rent itself, which is much larger than the rates, is also a restraint upon agriculture, and that surely is to a large extent nonsense. No rent could be paid unless there was profit. With reference to the suggestion that there should be taxation upon the imports of manufactured articles, I think those who make remarks of that kind ought to go back fifty years and read the free trade controversy of that time. I think it would do Mr. Harris good to read the book just published containing the speeches of Mr. Villiers, in which the propositions which he has put forward were fully discussed, and at a time when we were doing all we could by taxing imports from foreign countries to promote our trade in the way Mr. Harris would like it to be promoted. The real truth is that we commenced our free trade course in 1842 and 1843, because we had found out that that mode of taxing imports from foreign countries was the worst way in which to promote our own trade. There can be no doubt, I think, that the conclusion to which the free trade party of that time came, namely, that we should take care of our imports and let the exports take care of themselves, was really the wise conclusion in this matter. I have now

o return to Mr. Bourne the most cordial vote of thanks, in which we must all agree, for the very excellent paper which he has brought before us to-night.

Mr. BOURNE, in reply, said Major Craigie had started the discussion by expressing doubts as to the unit, the pound sterling, being a satisfactory one. It was not altogether so, but it was the only one which he had time or opportunity to introduce, and whether some better one might not be devised he could not say. With regard to meat, it could only be based upon a calculation of the quantity which might be produced annually from a certain definite amount of stock. With reference to the value of the grain, &c., in Tables IIIA and IIIB, as well as live stock in Table IIIC, and also of the meat added to the grain for IIID, he took the average price of imports into England for the last three years, and he did not know that a more satisfactory unit could be chosen. With reference to the figures in the export and import tables, they were not derived from any calculation as to what might be the value of the quantities, but from the actual values recorded of the different transactions. The difficulty as to taking returns for different years in Table A was unavoidable, because the returns were wanting; but he had guarded against any error as far as possible by taking in all cases an average for three years. He believed that the system adopted in the United States with regard to value was to take the value of the goods of import at the place of shipment. In England the goods imported were valued at the point of arrival; and therefore the two figures of import and export values could not accurately be compared. As to the value of wheat in India, the 219 million bushels referred to by Mr. Pell as being raised, that was a calculation from the amount of land. He had searched the latest tables from India, and found no record at all for Bengal; and he believed that any estimate formed with regard to the amount of wheat produced in India must be simply a rough calculation from the acreage. In the case of France, as in others, he took an average of three years, and he did not know that anything better could have been done without entering into a series of minute calculations adapted to various countries, which would have been very difficult indeed to explain. He quite agreed with Mr. Harris's desire to promote free trade between the colonies; and the statistics showed that trade was increasing with the colonies in a much greater ratio than with other portions of the world. Mr. Bateman's remark was exceedingly important, but it was not one that he could deal with in the figures. The question of dairy produce was one that he could not grapple with, because there were no data on which to rest any calculation. If that difficulty was found at home, it was far greater with regard to foreign countries, and there were no data available. His endeavour had been to present something to the Society that was tangible, in the hope that it might stimulate others to go forward in the work, and in that manner step by step they would increase their knowledge, and thus advance their ability to deal with these various questions.