

REPORT
OF THE
Indian Tariff Board
ON THE
SUGAR INDUSTRY



X9(F68):53.2
G1
8981

CALCUTTA GOVERNMENT OF INDIA
CENTRAL PUBLICATION BRANCH
1937

X9(F68):53.2
G1
008981

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AGENT IN PALESTINE:—Steinmatzky, Jerusalem.

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PRELIMINARY.

The enquiry into the Sugar Industry was referred to the Tariff Board under the Government of India, Commerce Department's Resolution No. 127-T. (19), dated 20th May, 1930, which runs as follows:—

“ At the beginning of the current year the import duties on sugar were as follows:—

23 Dutch Standard and above	Rs. 4-8 per cwt.
Inferior to 23 Dutch Standard but not inferior to 8 Dutch Standard	Rs. 4-0 per cwt.
Below 8 Dutch Standard, molasses and sugar candy	25 per cent. <i>ad valorem</i> .

The Finance Act of 1930 enhanced these duties, for revenue purposes, by Re. 1-8 per cwt. in each case. During the last session of the Legislature the Government of India received a representation from the Imperial Council of Agricultural Research, which stated that in March, 1929, the Government of India had addressed all Local Governments on the subject of the sugar industry, and that on receipt of replies to this letter the whole question had been examined by a specially qualified Committee appointed by the Imperial Council of Agricultural Research. This Committee's report had been considered by the Council, which resolved that the Government of India be asked to refer to the Tariff Board for enquiry the question whether protection is required, and if so, in what measure, for the sugar industry in India. In making this application the Imperial Council of Agricultural Research had taken into consideration the fact that the three Provincial Governments most vitally interested in the sugar industry, namely, the United Provinces, the Punjab and Bihar and Orissa, together with the Government of Bombay, had asked for an enquiry by the Tariff Board.

“ 2. The question whether a *prima facie* case has been established for reference to the Tariff Board of the desirability of granting protection to the sugar industry has been carefully examined by the Imperial Council of Agricultural Research, and the Government of India after considering the evidence adduced by the Council have decided to refer this question immediately to the Tariff Board for enquiry.

“ 3. In making its enquiry the Tariff Board will be guided by the principles laid down in the Resolution adopted by the Legislative Assembly on the 16th February 1923, and will consider—

- (i) whether the conditions laid down in paragraph 97 of the Report of the Indian Fiscal Commission are satisfied in the case of the sugar industry, in which term is intended to be included the grower of sugarcane in India, the manufacturer of *gur*, including *rab*, *jaggery* and all other indigenous forms of raw sugar, and the manufacturer of crystalline sugar,

- (ii) to what extent, if any, and in respect of what classes or descriptions of sugar, protection should be afforded, and
- (iii) how its recommendations, if any, will affect industries using any sugarcane products.

“ 4. Firms or persons interested, who desire that their views should be considered by the Tariff Board, should address their representations to the Secretary to the Board.”

The Board issued a Press Communiqué, dated 13th June, 1930, in the following terms:—

“ The attention of all those interested is invited to the resolution of the Government of India in the Commerce Department, No. 127-T. (19) of 20th May, 1930, in which the Tariff Board has been directed to hold an enquiry into the question whether protection is required for the Sugar industry in India. The Board proposes to take up this enquiry at once and those firms and persons who desire that their views should be considered by the Board are requested to forward their representations (with five spare copies) to the Secretary so as to reach the Board's tour office in Ootacamund not later than the 15th July.”

As will be seen from the terms of the resolution the principal applicants were the Imperial Council of Agricultural Research and four Provincial Governments, namely, Bombay, United Provinces, Punjab and Bihar and Orissa. At a later stage a representation was also received from the Government of Bengal through the Government of India. The Board issued four questionnaires in all as follows:—

- (i) for Local Governments,
- (ii) for Manufacturers,
- (iii) for Importers,
- (iv) for *Gur* Merchants.

Replies were received from all Local Governments, but the Government of Bombay in their letter No. 6479/D, dated 25th/28th July, 1930, which contained a general representation on the subject, stated that they reserved their considered opinion regarding the necessity for the protection of the Sugar Industry until the Tariff Board's report was before them. The replies to the questionnaire and the evidence of officers serving under the Government of Bombay must, therefore, be considered as having been given by them in their private capacity only and not as representing the views of the local Government. Similarly the Government of Bengal, when forwarding written replies compiled by their officers, stated that the replies did not embody the views of the local Government and in giving permission for the Director of Agriculture and his assistants to appear before the Board they explained that they were not authorised to speak definitely on behalf of Government. Since the Governments themselves are the principal applicants in this case we should have welcomed a more authoritative

expression of their opinion before the Board. The Governments of Bihar and Orissa, United Provinces, Punjab and Bengal were officially represented in evidence and we wish to record our sense of obligation to the Hon'ble Sir Jogendra Singh, Minister for Agriculture, Punjab, who appeared and gave evidence before us at Delhi. We also wish to express our thanks to the Directors of Agriculture and other officials who afforded us great assistance in the course of our enquiry. We also had the advantage of examining Mr. B. C. Burt, C.I.E., on behalf of the Imperial Council of Agricultural Research and Mr. R. C. Srivastava, the Sugar Technologist to the Imperial Council.

A representation was received from the Indian Sugar Producers' Association, Cawnpore, as well as replies from a number of individual factories belonging to the Association, from Cane Growers' representatives in Bombay and Bihar and Orissa and from merchants and importers. Several of the companies supplied us with full information regarding their costs. Of this we have made the fullest use in estimating a fair selling price for the Indian industry. Since the information was supplied confidentially, the names of the different factories concerned have not been given. In addition a large volume of valuable statistical information was placed at our disposal by Mr. Wynne Sayer, Secretary of the Sugar Bureau at Pusa, to whom our thanks are also due for having arranged our visits to various factories.

The Board's tour programme in outline is shown below:—

Tour and witnesses.

1930.

June, 28th	Visit Coimbatore Cane Breeding Station.
July, 1st	Visit Nellikuppam Factory.
„ 23rd	Arrived Bombay.
August, 30th	Visit Surat (Gold Thread Enquiry).
September, 3rd	Arrived Bombay.
„ 5th	Visit Belapur.
„ 9th	Visit Manjri Farm, Poona.
„ 10th	Arrived Bombay.
„ 17th	Arrived Calcutta.
October, 4th	Visit Jamshedpur (Steel enquiry).
„ 18th	Arrived Calcutta.
„ 21st	Arrived Pusa.
„ 27th	Arrived Cawnpore.

November, 5th	.	.	.	Arrived Delhi.
„ 14th	.	.	.	Visit Sonepat.
„ 16th	.	.	.	Arrived Shahjahanpur. Visit Rosa Factory. Visit Agricultural Farm.
„ 19th	.	.	.	Arrived Bareilly. Visit Pilibhit Factories.
„ 23rd	.	.	.	Arrived Pusa. Visit Samastipur Factory. Visit Daulatpur Farm. Visit Bara Chakia Factory. Visit Lohat Factory.
December, 9th	.	.	.	Arrived Calcutta.
„ 18th	.	.	.	Arrived Jamshedpur (Steel enquiry).

1931.

January, 1st Arrived Bombay.

During its halt in Bombay in August and September, 1930, and its halt in Calcutta in September and October, 1930, the Board was engaged upon three other enquiries in addition to Sugar and again in December, 1930, a fourth additional enquiry necessitated a visit to Jamshedpur. In addition to the large volume of written evidence and representations received the Board examined orally between 50 and 60 witnesses and had the opportunity of seeing the conditions under which cane is grown in typical areas of Madras, Bombay, Bihar and Orissa, United Provinces and the Punjab.

We are conscious throughout this report of the very close connection between the sugar industry and agricultural development. Since the raw material required by the industry is sugarcane, the cost of which is in present conditions nearly two-thirds of the cost of manufacturing sugar, it is clear that the future position of the industry must depend on the solution of problems mainly agricultural in their nature. Questions of this kind naturally fall outside the province of this Board. Though we have had occasion to touch on some of these matters in broad outline, we have endeavoured so far as possible to confine our attention to the question of the desirability of granting protection and the method, amount and duration of such protection. We have been impressed with the importance of arriving at an early decision on the problem of protection if serious depression in cane cultivation is to be avoided. On the agricultural side the subject is so wide that time has not permitted us to deal in detail with cane cultivation in all its aspects and we have not attempted to traverse the ground covered by the 1920 Sugar Com-

mittee's report. We believe the purpose of our enquiry will best be served by a detailed examination of the problems directly presented by our terms of reference, leaving the more technical aspects of the agricultural problems involved to those bodies and departments whose function it is to advise Government on such matters and to frame schemes for the better development of agriculture.

APPENDIX I.

White Sugar Factories actually working in India at present.

<p>A.—FACTORIES THAT WORK WITH CANE ALONE.</p> <p style="text-align: center;"><i>Bihar and Orissa.</i></p> <p>Japaha Sugar Factory. Pursa Sugar Factory. Ganga Deshi Sugar Factory. Lohat Sugar Factory.</p> <p style="text-align: center;"><i>United Provinces.</i></p> <p>Bubnowlie Sugar Factory. Mahalakshmi Sugar Factory.</p> <p style="text-align: center;"><i>Madras.</i></p> <p>Aska Sugar Factory.</p> <p style="text-align: center;"><i>Bombay.</i></p> <p>Belapur Sugar Factory. Hanuman Sugar and Oil Factory. Total . 9 factories.</p> <p>B.—FACTORIES THAT WORK WITH CANE AND ALSO AS REFINERIES.</p> <p style="text-align: center;"><i>Bihar and Orissa.</i></p> <p>Champaran Sugar Factory. Ryam Sugar Factory. Marhowrah Sugar Factory. Pachrukhi Sugar Factory. New Savan Sugar Factory. Samastipur Sugar Factory. Maharajganj Sugar Factory.</p> <p style="text-align: center;"><i>United Provinces.</i></p> <p>Gauri Sugar Factory. Padrauna Sugar Factory. Noori Sugar Factory. Purtabpore Sugar Factory. Rosa Sugar Factory.</p>	<p>B.—FACTORIES THAT WORK WITH CANE AND ALSO AS REFINERIES—contd.</p> <p style="text-align: center;"><i>United Provinces—contd.</i></p> <p>L. H. Brothers' Sugar Factory (2 factories). Sardarnagar Sugar Factory. Ghugli Sugar Factory. Basti Sugar Factory. Lakshmiganj Sugar Factory.</p> <p style="text-align: center;"><i>Madras.</i></p> <p>Samalkote Sugar Factory. Nellikuppam Sugar Factory. Total . 20 factories.</p> <p>C.—REFINERIES ONLY.</p> <p style="text-align: center;"><i>Bihar and Orissa.</i></p> <p>Siwan Deshi Sugar Factory. Sitamarhi Sugar Factory.</p> <p style="text-align: center;"><i>United Provinces.</i></p> <p>Tribeni Deshi Sugar Factory. Lucknow Sugar Factory. Umai Indrani Sugar Factory. Cawnpore Sugar Factory. Baijnath Balmukund Sugar Factory. Unao Sugar Factory. Srikrishna Deshi Sugar Factory.</p> <p style="text-align: center;"><i>Madras.</i></p> <p>Al. Vr. St. Sugar Mill. Sriram Sugar Works. Travancore Sugar Limited.</p> <p style="text-align: center;"><i>Punjab.</i></p> <p>Harkishan Sugar Mills. Amritsar Sugar Mills. Total . 14 refineries.</p>
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APPENDIX II.

Note by Mr. G. R. Hilson, Director of Agriculture, Madras.

PADDY.

The future of this crop, in this Presidency, calls for careful consideration.

There has been a general fall in the price of rice in all the world's markets. The price of Rangoon rice on the London market, for example, between 1926 and the present date has fallen from 15s. 4d. to 13s. per cwt. It is therefore not a temporary fluctuation we are witnessing. It is a permanent drop which so far as can be seen is likely to continue further.

At the present time in this Presidency, the price of paddy is about 30 lb. per rupee, at which price there is little or no profit in the crop.

It does not seem likely that prices will improve in the near future. In all the rice growing countries, the tendency is to extend the area and to try and improve the yield per acre. Particularly is this the case in those countries which are importing as well as producing countries, Java, Ceylon and Japan for example, not to mention our own province and other provinces in India. Japan has in fact progressed so well with her programme that she is now checking import. Australia which might have proved a limited outlet for the East has raised her import duties on rice and paddy and actually contemplates export to the East. America appears to be encroaching on India's share of the Cuba market. Italy, Spain and America are all more advantageously placed in relation to the English and Continental markets than is India. So much for the general position.

In this Presidency there are several factors working towards over production. There is first of all the Agricultural Department with its steady campaign for reducing the seed-rate used for sowing seed-beds, for enlarging the area under heavier yielding strains and for extending the use of green manure crops coupled with an application of phosphatic manures. The first of these items besides reducing the amount of paddy consumed usually results in a slightly higher yield. The second brings about an increase of from 10 to 20 per cent. and the third gives increases up to 25 per cent. if the continued application is persisted in. The cumulative effect of all these factors is likely to increase the average yield to about 18 cwts. per acre.

Secondly, the educated Madrasi is wakening up to the fact that he is better off from a health point of view if he reduces his consumption of rice and replaces it by fruit and wheat or ragi.

Thirdly, large increases in area, amounting to more than half-a-million acres, are contemplated in the very near future. This is one side of the picture. At the last census in 1921, the population of Madras Presidency was under 43 millions. It must now be about 46 millions. I estimate that about 40 per cent. of the people of this Presidency are rice-eaters, and that the average consumption of rice per head per day is 1½ lb. or 4 cwts. per annum. On this basis, the total quantity of rice required is 3·7 million tons.

During the last three years the average acreage under paddy in the Presidency has amounted to 11·3 million acres and the average yield per acre to 14 cwts. of paddy. In storage this 14 cwts. will lose 7 per cent. or 1 cwt. and of what is left 1 cwt. will have to be set aside for seed purposes. There will therefore be left for consumption 12 cwts. The proportion of rice to paddy is about 2:3. The rice equivalent of 12 cwts. of paddy is therefore 8 cwts. This figure we may take as the average yield of consumable rice per acre. The total production of such rice is therefore 4·5 million tons. Consumption therefore lags behind production. If we allow that 50

per cent. instead of 40 per cent. of the population are rice eaters then production and consumption are about equal.

Examining next the figures for export and import by sea, for the same period, it is seen that there is a balance in favour of imports of 345,000 tons of rice. A large proportion of this is consumed by people who prefer the coarser Burma rice to the finer Madras rice and by others who while they would prefer to eat the finer Madras rice find that the lower price of the Burma product suits their pockets better. Against this import, if there is no accumulation of stocks on which point my information is not satisfactory, must be set export by rail and by road, and consumption in feeding elephants and for ceremonial purposes, *e.g.*, weddings, funerals, feeding of ants and feeding of cattle at Pongal, etc., on which items we have no readily available information. This is the other side of the Presidency picture.

It does not offer much hope for expansion of production. For supposing that out of this 345,000 tons, 300,000 actually remained in the Presidency, which is unlikely, any one of the three factors I have already mentioned or a good season will bring about an increase in production within the Presidency of more than that amount. The first two will do it gradually and allow time for adjustments, the last two factors will do it abruptly and will cause dislocation.

One thing is certain however, whichever way it is done, if this quantity of rice now imported into the country is produced in the country and there is no corresponding decrease somewhere else there will be an extra 300,000 tons of rice for which a market will have to be found. If it is produced at a price which will enable it to compete with Burma or Bengal rice, which is unlikely, then this outside rice will have to seek a market, if not, as is more likely the Madras rice will have to find a market. In either case, there will be a reduction in price.

This leads us to the next point. In a struggle for markets, what chance has Madras rice of being able to compete successfully with other Indian rices? From the table given below it will be seen that Madras is the least favourably situated of all the Provinces for this purpose.

Rice—Area, 1927-28.

Province.	Total acreage.	Irrigated.
Madras . . .	10,900,000	7,600,000=70%
Bombay . . .	3,200,000	1,300,000=40%
Bengal . . .	18,700,000	1,200,000= 6%
United Provinces . . .	7,300,000	500,000= 7%
Burma . . .	12,400,000	1,400,000=11%
Bihar and Orissa . . .	13,500,000	3,500,000=26%
Central Provinces and Berar . . .	5,400,000	1,000,000=18%
Assam . . .	4,200,000	600,000=14%

In Madras, 70 per cent. of the paddy grown is irrigated, that is to say, it has to meet a charge for water either in the form of water rate or as cost of lifting. Bengal and Burma, the two chief exporting provinces are both very much more favourably situated as most of their paddy is rainfed.

At the present moment the Tanjore cultivators are bemoaning their inability to find a market and are complaining that Government were ready enough to take advantage of the period of high prices to raise their assessment but are not so ready to lend a helping hand now that prices have fallen. What they will say when they find the produce of an additional 600,000 acres helping to increase their difficulties can be imagined. Their grumble is of course not justified. They asked for water in order to grow paddy. They got it. That point apart, we have here a very clear indication, I think, of what the future has in store for us.

What then is to be done? This is a question that many cultivators are asking and some have answered. The majority as yet do not believe that there is anything to do but wait. Confronted by a similar state of affairs the arable farmers of England laid their land down to grass and changed their style of farming. Similarly, the paddy cultivators of this Presidency, will have to make a change and grow other crops than paddy. This is the only solution we can offer, it is the solution some of them have found, it is the course to which the others will be driven. It is here that trouble will arise, for the crops that will have to be grown in place of paddy, not only do not require so much water as paddy but do require better conditions of drainage. Irrigation works designed for example to supply water in two seasons, will find themselves with a surplus of water in the second crop season and no means of getting rid of it except by letting it run to waste. If therefore my view of the situation is fairly accurate it would seem advisable to begin to take action now and give a lead rather than to wait until the majority of cultivators who can change find that they must do so or cease to farm, and begin to raise a clamour.

It may be argued that the natural increase in population will be sufficient to keep pace with the increased production of rice. This however assumes that the increased population will be in a position to buy rice, that in fact they will be employed. In the absence of any signs of increasing industrial activity of any magnitude in this Presidency, and in view of the present outcry about unemployment and the need for cottage industries this does not seem to me a very hopeful solution of the problem. It ignores the fact that Burma can undersell Madras in the rice market and that a rise in population without a corresponding increase in ability to employ more workers will lead to a demand for cheap rice of which Burma and not Madras would get the benefit. It also ignores the fact that while there is room for industrial expansion the majority of the people of this Presidency must always depend on agriculture for their livelihood and that an expansion of the area under paddy is not the best way to provide agricultural employment.

There is however another aspect from which the situation may be viewed. In those provinces in which the bulk of the paddy grown is rainfed, conditions are such that it is impossible or not readily possible to change to other crops. Moreover other conditions cause these areas to be much less favourably placed than is Madras for growing certain crops which are much more valuable than paddy. In Madras on much of the paddy growing area, it is possible to change. Conditions in Madras are moreover very favourable for the growing of crops like sugarcane, plantains, groundnuts, cambodia cotton, etc. We can grow as heavy crops of sugarcane as any other province and heavier than most. We have the best conditions for growing groundnuts and cambodia cotton and have the largest area of all the provinces under these crops. India supplies the world with castor seed and oil, and Madras grows the largest area of this crop. Our cattle are good and need only a little more attention to feeding and breeding to make them very much better. We have excellent conditions for growing fodder crops. We have very good conditions for growing plantains, orchard fruits, and vegetables. Tomatoes can be grown with the greatest ease. We can grow excellent crops of sunhemp for fibre, for which there is a market in England.

Poultry, eggs, milk, working bullocks, stock for export, sugarcane, plantains, betel-vine, groundnuts, cambodia cotton, gingelly, castor, sunhemp for fodder and for fibre, chillies, and turmeric, tobacco, onions, tomatoes, brinjals, mangoes, limes, oranges, ragi, cumbu, cholam and pulses of all kinds give a wide enough choice to enable any one who desired to do so to decide how he may cut out one or all of his paddy crops.

Incidentally these crops form the basis of subsidiary industries which will produce employment for those not needed on the land and at the same

time can be so used that they will provide work all the year round on the land and for a greater number of people.

To my mind we do ourselves a disservice by not taking advantage of the fact that these other provinces and countries must grow paddy and by not assisting them to do so at a reasonable profit while we make use of our land to better purpose and we do them a disservice by insisting on growing paddy and so helping to glut the market from which they cannot escape but we can.

I do not visualize a complete cessation of the growth of paddy. In some parts of the Presidency conditions are such that paddy is the only crop which can be grown. I do however visualize a limitation of the paddy crop to one season in the year, the wettest, in order to avoid the heavy loss which now occurs from insect pests and so raises the cost of production and in order to make room for the more profitable crops I have mentioned, a change in the methods of cultivation in order to reduce the cost of production, a reduction in the amount of water used for the crop in order not to interfere with the more profitable long term crops which will have to be grown alongside paddy, a cessation of the practice of lowering the level of paddy fields at intervals and the adoption of the opposite practice of raising the level of fields by the application of silt from tanks and channels in order to improve drainage conditions during the wet months.

APPENDIX III.

*Abstract estimate for a Sugar cane factory with a capacity of
13,00,000 mds. of cane per season.*

	Rs.	Rs.
1. Site		17,000
2. Railway Sidings		25,000
3. F.o.b. cost of plant £52,000	6,76,000	
Ocean freight, insurance and duty at 20 per cent.	1,35,000	
Inland railway freight at Re. 1 per maund	35,000	
Erection of plant	40,000	
Workshop tools	12,000	898,000
4. Factory boundary wall		10,000
5. Stores	6,254	
Clarification house (90' x 46' x 34') and (35' x 46' x 52')	13,206	
Mill house (101' x 52' x 23')	15,397	
Boiler house (92' x 64' x 32')	6,548	
Installing boilers, i.e., foundations, brickwork, etc.	13,594	
Installing one Lancashire boiler	1,839	
Flues	1,492	
	23,473	
Chimney (140' x 7' 6" octagonal)	9,066	
Power house (72' x 39' x 21')	6,236	
Pan house (125' x 55' x 52')	15,084	
Sugar house (60' x 55' x 34')	9,074	
Workshop (101' x 26' x 22')	2,723	
Spray pond (92' x 86' x 3' deep)	2,496	
Office and Laboratory	18,500	
Latrines	3,000	
Drainage	7,500	132,009
6. Sugar godown (450' x 50' x 15')	44,194	
Oil godown (40' x 15' x 10')	1,865	46,059
7. Manager's bungalow	16,500	
Assistant's half semi-detached bungalow	12,000	
Bungalow godowns (two)	1,500	
Bungalow outhouses	4,000	
Garages (two)	1,500	35,500
8. Clerks' quarters (12 double sets 12' x 12')	40,000	
Workmen's quarters (40 sets) 10' x 10'	36,000	
Watchmen's quarters (12 sets) 10' x 10'	11,000	
Laboratory equipment	5,000	
Office and Bungalow furniture	10,000	
Electric equipment, i.e., wiring of factory and bungalows	7,500	109,500
9. Tube well		10,000
10. Weighbridge		15,000
11. Cart scales		5,000
12. Locomotive		15,000
13. Storage trucks for cane		10,000
14. Molasses storage tanks		25,000
Total		13,53,068

APPENDIX IV.

Note by Mr. Noel Deerr on Java costs of production.

Estimated cost of production of white sugar in Java by the carbonatation process under the best possible economic conditions.

This estimate is based on data collected when in Java, on various publications up to 1927 and is corrected for recent developments in that island.

The data accepted are—

Acreage	2,750
Maunds cane per acre	1,750
Total production of cane	48,00,000 maunds.
Maunds sugar per acre	213
Maunds sugar made	6,00,000
Maunds molasses made	1,60,000
Sugar, per cent., cane	12·5 per cent.
Molasses, per cent., cane	2·9 per cent.
Value of molasses	Re. 1 per maund.

In accordance with general practice in sugar house accounting the value of the molasses is deducted from the cost of production of sugar. The attention of the Tariff Board is called to the following very essential points of difference under which the Indian industry as it is at present constituted is handicapped:—

- (1) Larger capacity of factories in Java affecting items such as salaries, labour, new parts, repairs and many items of supplies. As regards the cost of machinery generally, a general rule is cost varies as $\sqrt[3]{c^3}$, where c is the capacity of the unit, i.e., spare parts for an engine of 200 h.p. will, when compared with an engine of 100 h.p. cost $\sqrt[3]{2^3} = \sqrt[3]{4} = 1·59$.
- (2) The very low comparative cost for limestone in Java factories due mainly to the propinquity of Java factories to source of supply, the superior quality of the limestone and the superior quality of Java cane, the last two factors combined reducing the quantity required to half what is required in Indian factories. The less quantity of limestone used also reduces the cost of another large item, the press cloth.
- (3) The groups of Java factories under centralised control being much larger than any group in India administration or head office charges must be much less.
- (4) Marketing under one organization also reduced brokerage and similar charges.
- (5) The relatively low cost of Java cane and its high value, the first being due to mass production combined with intensive cultivation and fifty years intensive research and the latter also including favourable conditions of climate.

EXHIBIT A.

Total cost, cost per acre, cost per 100 mds. cane, cost per 100 mds. sugar as estimated for best economic conditions in Java.

	Rs.	Rs. per acre.	Rs. per 100 Mds. cane.	Rs. per 100 Mds. sugar.
Cane	8,50,000	309	17.72	141.7
Manufacture	4,50,000	164	9.38	75.0
Administration	1,20,000	44	2.50	20.0
Sundries	1,50,000	55	3.13	25.0
Total	15,70,000	572	32.73	261.7
<i>Deduct Molasses</i>	<i>1,40,000</i>	<i>51</i>	<i>2.91</i>	<i>23.3</i>
Nett	14,30,000	521	29.82	238.4
Rail in Java	1,25,000	—	—	18.7
Port charges Java	75,000	—	—	12.5
Freight Calcutta	1,25,000	—	—	18.7
Port charges Calcutta	1,25,000	—	—	12.5
Total c.i.f. Calcutta	18,80,000	—	—	300.8
<i>Add duty</i>	<i>26,25,000</i>	<i>—</i>	<i>—</i>	<i>437.5</i>
Total c.i.f.d. Calcutta	45,05,000	—	—	738.3

EXHIBIT B.

Detail of cost of cane in Java.

	Rs.	Rs. per acre.	Rs. per 100 Mds. cane.	Rs. per 100 Mds. sugar.
Salaries	50,000	18.2	1.04	8.3
Labour	300,000	109.0	6.25	50.0
Rent	100,000	36.4	2.08	16.6
Supplies	400,000	145.4	8.35	66.8
Total	8,50,000	309.0	17.72	141.7

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EXHIBIT C.

Detail of cane labour.

	Rs.	Rs. per acre.	Rs. per 100 Mds. cane.	Rs. per 100 Mds. sugar.
Cultivation	1,35,000	49.0	2.81	22.5
Manuring	15,000	5.5	.31	2.5
Irrigation	45,000	16.4	.94	7.5
Cutting and loading	75,000	27.2	1.57	12.6
Transport	30,000	10.9	.62	4.9
TOTAL	3,00,000	109.0	6.25	50.0

EXHIBIT D.

Detail of cost of cane supplies.

	Rs.	Rs. per acre.	Rs. per 100 Mds. cane.	Rs. per 100 Mds. sugar.
Seed cane	30,000	10.9	.62	5.0
Irrigation	75,000	7.2	1.56	12.5
Cultivation	60,000	21.9	1.25	10.0
Manures	1,25,000	45.4	2.62	20.8
Transport	1,10,000	40.0	2.30	18.5
Total	4,00,000	145.4	8.35	66.8

EXHIBIT E.

Detail of cost of manufacture.

	Rs.	Rs. per 100 Mds. cane.	Rs. per 100 Mds. sugar.
Salaries	50,000	1.04	8.3
Labour	65,000	1.36	10.9
Supplies	3,35,000	6.98	55.8
Total	4,55,000	9.38	75.0

EXHIBIT F.

Detail of labour in manufacture.

<i>Operating Season</i>	1,000 units of labour per day at 120 days and at 8 annas per day=Rs. 60,000.
<i>Silent Season</i>	50 units of labour per day at 200 days and at 8 annas per day=Rs. 5,000.

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EXHIBIT G.

Detail of manufacturing supplies.

	Rs.	Rs. per 100 Mds. cane.	Rs. per 100 Mds. sugar.
Bags	1,35,000	2·81	22·5
Fuel	5,000	·10	·8
Limestone	35,000	·73	5·8
Coke	7,500	·16	1·3
Press cloth	25,000	·52	4·2
Sulphur	2,500	·05	·4
Oil	12,500	·26	2·1
General Engineering stores	30,000	·62	5·0
New parts and repairs to machinery	82,500	1·72	13·8
Total	3,35,000	6·96	55·9

EXHIBIT H.

Detail of salaries for manufacture.

	Rs.	Rs. per 100 Mds. cane.	Rs. per 100 Mds. sugar.
Manager	12,000	·25	2·00
Chief Engineer	8,000	·16	1·28
Chief Chemist	8,000	·16	1·28
Four assistants	12,000	·25	2·00
Superior Javanese on permanent pay roll	10,000	·21	1·68
Total	50,000	1·03	8·24

EXHIBIT I.

Detail of Sundries.

	Rs.	Rs. per 100 Mds. cane.	Rs. per 100 Mds. sugar.
Insurance	15,000	·31	2·50
Brokerage	25,000	·52	4·17
Experiment Station	10,000	·21	1·67
Advisory staff	20,000	·42	3·33
Repairs houses and buildings	20,000	·42	3·33
Taxes	60,000	1·25	10·00
Total	1,50,000	3·13	25·00

APPENDIX V.

Note by Mr. Noel Deerr on the Zone System or a topical basis of cane distribution.

During the season 1928-29 there were 12 factories operating west of the Great Gandak in the districts of Saran (Bihar and Orissa) and Gorakhpur (U. P.). These factories in all milled 121,63,637 maunds of cane of which 63,22,537 maunds were carried by rail. These were operated by the 12 factories' 216 weighbridges and the total haul of cane was 179,740,000 maund miles. By means of a mutual system the whole of this cane could have been reduced to 108,520,000 maund miles.

In Exhibit I are given the actual conditions which obtained during crop 1928-29. Exhibit II shows how by a system of allocating the nearby cane to each factory and avoiding hauling cane past factories the same quantity could have been supplied to each factory. As an example Lakshmiganj factory would have been allocated 211,086 maunds from Khada dividing the supplies here (473,101 maunds) with Ghughli, the whole supply from Siswa Bazaar 173,545 maunds and 46,302 maunds from Captainganj dividing the supplies here (82,077) with Padrauna factory. They would have operated three weighbridges and had a total haul of 1,084,000 maund miles, drawing cane from the nearest stations.

Actually this factory operated 17 weighbridges widely scattered and had a total haul of 1,351,000 maund miles.

The totals in Exhibits I and II are not the same and this is due to small differences, the labour in reconciliation of which would have been great.

EXHIBIT I.

Actual number weighbridges operated and maund miles, etc., hauled by factories operating in Saran and Gorakhpore.

	Weigh- bridges.	Rail cane.	Md. mile × 10,000	Average haul mile.
Basti	28	2,12,452	795	37
Bhatni	38	9,10,671	2,825	31
Gauri Bazar	14	2,92,300	952	33
Ghughli	8	5,11,601	880	17
Lakshmiganj	17	5,16,827	1,351	26
Marhowrah	12	2,94,217	1,392	47
Pachrukhi	30	12,14,972	4,090	32
Padrauna	5	4,69,926	771	16
Purtabpore	3	1,07,440	130	12
Saraya	21	4,53,805	1,518	33
Sewan	23	5,03,782	1,484	30
Tamkohi	17	8,13,993	1,786	22
	—	—	—	—
Total	216	63,01,986	17,974	29
	—	—	—	—

EXHIBIT II.

Optimum number of weighbridges, etc., for factories operating in Saran and Gorakhpore on a topical basis of distribution.

	Weigh- bridges.	Rail cane.	Md. mile ×10,000	Average haul mile.
Basti	15	2,17,175	553	24
Bhatni	13	9,10,671	1,071	12
Gauri Bazar	3	2,92,300	195	7
Ghughli	1	5,11,601	899	18
Lakshmiganj	3	5,16,827	1,084	25
Marhowrah	8	2,77,538	770	29
Pachrukhi	8	12,14,972	3,175	25
Padrauna	1	4,69,926	348	9
Purtabpore	2	1,07,440	86	8
Saraya	8	4,53,805	1,087	24
Sewan	3	5,03,872	529	10
Tamkohi	4	8,13,993	1,075	13
	—	—	—	—
Total	69	62,90,120	10,852	17
	—	—	—	—

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