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NOTES
ON
INDUSTRIAL DEVELOPMENT
IN THE
BARODA STATE

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BARODA PRINTING WORKS, BARODA

1916

X 9.23182.N2

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14504

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NOTES ON INDUSTRIAL DEVELOPMENT

IN THE

BARODA STATE.

PART I.

GENERAL.

1. The following notes have been prepared with the object of giving a short account of the Industrial Development in the Baroda State.

To enable the reader to fully appreciate the Industrial problem, a general description of the physical condition of the State territories as well as their natural resources has been given by way of preface.

2. The territories of the Baroda State are situated largely in Gujarat and the rest in Kathiawar. All the four administrative divisions of the State—Baroda, Kadi, Naosari and Amreli—lie between 20°45' and 24°9' N., and 70°42' and 73°59' E., with the exception of the Okhamandal tract, which lies between 20°5 and 20°35 N., and 69°5 and 69°20 E. The Gujarat Divisions of Baroda are separated from each other by intercalated parts of British territory belonging to the Districts of Surat, Broach, Kaira and Ahmedabad, and the Political Agencies of Panchmahal, Rewakantha and Mahikantha. Similarly, the six Talukas of the Amreli Division are interspersed with the various Native States of the Kathiawar Peninsula. The total area of the State is 8,099 sq. miles, Kadi Prant having 3,015, Baroda 1,887, Naosari 1,952 and Amreli 1,245 sq. miles. Out of this area, 680 sq. miles mostly in Naosari and a few in Amreli are covered with reserved forests and prove a very valuable asset to the State in famine times when fodder is scarce.

3. The greater part of the State lies within the area of the coastal band of alluvium which has been formed of the detrital deposits brought down from the western slopes of Malva and the southern parts of Rajputana by many rivers, large and small, which drain the Province of Gujarat. The upward slope of the alluvium band from the sea-board eastward is very gradual so that except where wind-blown accumulations of loam or sand make small eminences here and there, the face of the country appears to be a dead flat. It is only as the eastern side of the alluvial flat is approached that low hills make their appearance.

4. The soils are mainly alluvial, except in the hilly parts of the Naosari and Amreli Districts and in the south-east corner of the Baroda Prant where they are mostly formed by the disintegration of the underlying rocks. These alluvial soils may roughly be divided into *Gorat* or light-red (sand and sandy loam), *Besar* or mixed (loam) and *Kali* or black. The rock-formed soils are for the most

part black ; but where they have come into contact with the alluvial soils, they have formed a variety of *Besar*. The distribution of these soils may very briefly be stated as follows :—

The soils of the Naosari and the Baroda Districts may principally be classed as *Gorat* or light-coloured, black and *Besar* which is intermediate between the other two kinds. As a rule, the black soil of the Naosari District is far superior to the soil of a similar kind found in the other Districts. The lands formed in the beds of rivers from alluvial deposits are often found in the Naosari District and are most productive. In the Kadi District, the soil is mostly of the light sandy kind. Black soil is met with, but merely in patches in parts of the District ; except in Kadi and Kalol Talukas where in the southern parts it is wholly black. The soils of the Amreli District (Okhamandal excepted) may be classed under two main heads—black and *Gorat*. But the black and *Gorat* soil of this District is much inferior to the similar soils of the Baroda and Naosari Districts on account of the shallow depths, scanty rainfall and dry climate. In Okhamandal, the northern half is slightly red but the whole of the coast line is sandy and unproductive. Inland, the soil is fairly productive and fertile.

5. The average annual rainfall ranges from about 40 to 70 inches in the different parts of the Naosari District, from 30 to 50 inches in the Baroda District, from 15 to 35 in the Kadi District, and from 13 to 30 in the Amreli District. Thus the fall is heaviest in the southernmost District, and it goes on diminishing as the monsoon current travels from the south towards the north. It is considerably heavier in Gujarat proper than in Kathiawar. The duration of rainfall is about 4½ months in the Naosari District, commencing early in June and ending by the middle of October. It is four months in other divisions, commencing a little later, that is about the end of June. The character of the *Kharif* crops and the good prospects of the *Rabi* depend entirely upon the regularity and seasonableness of rainfall from the middle of June or the beginning of July to the middle of October. The late showers of October help the spring crops also. Sufficient and timely rain in June, July and August in the Naosari District and in July and August in the other Districts gives hopes of a good harvest : but the full and satisfactory maturity of the crops depends upon the September and October showers.

6. These periodic rains are the chief controlling factors in the life and means of sustenance of the people of the State. Failure of the monsoon current, its premature cessation or its unequal distribution means a total or partial bankruptcy of a great majority of the people. Great loss of property also results, sometimes leading to death of men and cattle as happened in 1899-1900.

Unfortunately, a part of the State territories are situated in a position where there is a likelihood of some failure of rain at short intervals.

7. The climate of the Baroda State varies considerably in the different Districts. But it may be said generally that it is dry and hot in the hot-season, which commences in March and ends in June. The climate during the rainy-season—from July to October—is hot, moist and relaxing. During the cold season which com-

mences in November and ends in February, the climate is dry and cool. The coldest months are generally December and January. In the months of September and October, the climate is more unwholesome than at any other time of the year, and people suffer considerably from malarial fevers.

8. The mean yearly temperature ranges from 52·5 at Baroda to 69·4 at Mehsana. The minimum temperature during the cold weather months is about 40·1 and the maximum during the hot weather 109·5. The highest temperature recorded in 1910 was 114 in the month of June and the lowest 35 in the month of January at Mehsana (Kadi District). This shows that the climate of the Baroda State and adjoining parts of Gujarat is an extreme one, especially in the northern parts compared to that of the southern parts.

9. The inhabitants of the Baroda State are for the most part agriculturists. The principal crops are juwar, bajri, rice, pulse, cotton, tobacco and oil-seeds. The crops are generally thriving and plentiful in Kadi and the western half of the Baroda District. The coast line and the western talukas of the Naosari District are very fertile and yield garden produce, but the south-eastern parts are inferior in fertility, and owing to rocks and mountains are hardly cultivable in some places. The Amreli District, as a whole, is much inferior in fertility, but there are very fertile tracts here and there, especially in the Amreli, Damnagar and Kodinar Talukas.

Of the total culturable land in the State (80,00,000 bighas—a bigha is equal to about $\frac{2}{3}$ of an acre,) 87·4 per cent. is under cultivation and 12·6 per cent. is available for further cultivation. On an average, each individual of the total population has 3 bighas of land.

10. Small irrigation works are met with all over the Raj, especially what are called "Paddy tanks," whose duty is to protect rice, the chief of the monsoon crops, by giving it water during a break in the rains and more especially giving it the last one or two waterings to mature it. The number of such tanks in each division or taluka varies with the nature of the staple crops, nature of the soil and the intelligence, skill and capacity of the cultivators. Naosari Division, which has good and rich irrigable soil, intelligent cultivators, and high class crops grown, is singularly fortunate in the possession of a large number of paddy tanks, almost every village in each taluka possessing one or more. Baroda Division comes next to Naosari in point of their number, and the rice-growing talukas of Vaghodia, Savli and part of the Baroda Taluka abound with them. Kadi Division has also a fairly large number of such tanks, especially in the two sister talukas of Kadi and Kalol, where rice is extensively grown. Its cultivation is, however, falling off, owing to the scanty and ill-timed rainfall of recent years and the state of disrepair of some of the tanks. Hardly any rice is grown in the Amreli Division, so there are no paddy tanks worth the name. The Division, however, like Naosari possesses a few rivers and streams in which there is a flow throughout or nearly throughout the year. In both Divisions, there are *bandharas* or weirs thrown across such water-courses and the impounded water is led by channels to irrigate the fields. The Allidhar Vellar Bund

near Harmadia, the Natalia Bund near Dhari, both in Amreli Division, and the Chikhli Bandharpada and Tichakia in Naosari Division, may be mentioned as instances of this form of irrigation.

11. Besides these small paddy tanks, large irrigation works have been constructed at a cost of about 45 lakhs of rupees. These
Area under irrigation. irrigate about 6,100 bighas of land. All over the State there are again about 20,000 Kacha and 35,000 Pacca wells. Special officers were appointed to grant Tagavi loans for sinking new wells and some of these wells were built with Government assistance. All these irrigation works irrigate 4½ p.c. of the area actually cultivated every year.

12. The following table shows the population of the State during the last three decades. It also shows the principal Industrial occupations of the people during the same period :—
Population.

No.	Occupation.	1911.		1901.		1891.	
		Persons.	Percent.	Persons.	Percent.	Persons.	Percent.
1	2	3	4	5	6	7	8
1	Total population	20,32,798	..	19,52,692	..	24,15,396	..
	Persons engaged in Industries:—						
2	Textile Industries	52,143	2·08	68,213	3·49	1,24,111	5·13
3	Hide, skins, etc.	16,032	0·78	29,173	1·49	37,176	1·53
4	Ceramics	26,743	1·81	26,165	1·33	35,311	1·46
5	Metals	16,150	0·79	25,029	1·28	36,442	1·50
6	Building Industries	12,931	0·63	15,729	0·80	13,903	0·57
7	Miscellaneous ,,	1,25,751	6·18	1,03,004	5·26	18,41,938	7·60
	Total in Industries	2,50,050	12·30	2,67,313	13·68	4,30,871	17·83
	Persons engaged in Agriculture:—						
8	(a) Land-holders, Tenants and Sub-tenants.	9,70,675	47·75	6,34,688	32·50	11,96,580	49·55
9	(b) Labourers	3,13,479	75·42	3,72,961	19·10	1,90,896	7·94
	Total in Agriculture	12,84,154	63·17	10,07,652	51·60	13,87,476	57·5

In 1891, the total population was 24,15,396 being the highest on record. In 1901, it dwindled to 19,52,692; because since 1896, plague was raging in some parts of the State and then came the great famine of 1899 which carried away by death and emigration a large number of the people. At the last census, a slight increase was recorded; although during this period also some districts were suffering from plague.

13. In spite of the sustained efforts of the State to develop industries, it is noticeable that the number of people supported by them is rapidly going down, resulting in more people being thrown on agriculture. In 1891, 4,30,877 persons or 17·83 per cent. were supported by industries, while in 1911, 2,50,050

or 12·30 were so supported. In 1891, the number of landlords, tenants and agricultural labourers was 13,87,476 or 57·5 p.c., while for 1911 the respective figures were 12,84,154 and 63·17. Though the agriculturists suffered the most from the famine of 1899, their number has been augmented from other trades; therefore, they do not show a proportionate fall in number. Of the persons engaged in industries except those employed in the building trade all show a fall both in their total number as well as in the general percentage. Of these, those supported by textile industries have suffered the most. In 1891, there were 1,24,111 or 5·13 p.c. supported by it, while in 1911 the numbers for the same stood at 52,143 and 2·08 p.c. respectively. Owing to the competition of modern industries, old-styled hand industries are slowly disappearing. As a result, more and more people are compelled to depend upon agriculture as their principal means of livelihood.

RESOURCES OF THE STATE.

14. It would be seen from the physical description of the State that it cannot have any rich minerals. As stated below, two
 Mineral. Geological surveys have been made; and excepting some lime-stones, marbles, granites, china clay, salt deposits, materials for cement, and ochres, there is hardly any valuable mineral found so far. A complete list of the mineral resources of the State with their location, description and the quantity available is attached herewith (Ex. I).

15. There are 680 miles of forests mostly in the Nāosari and the rest in the Baroda and Amreli Districts. All forests may be
 Forest. classed as deciduous and mixed. The most important species of trees are *Sag* (*Zectona grandis*), *Becya* (*Pherocarpus marsupium*), *Sisham* (*Dablergia sissoo*), *Sadeda* (*Terminalia tomentox*), *Khair* (*Acacia catechu*), *Haldwan* (*Adina cardifolia*), and other species of less importance are *Kalam* (*Styphogym parvifolia*), *Kantee* (*Acacia modesta*), *Dhaman* (*Crewia Silitaefolia*), *Timru* (*Diospyros*), *Bondara*, (*Lagerstrocmia lanceolata*), *Asintra* (*Banhinia racemosa*), *Beheda* (*Terminalia belerica*), *Kugdoli*, *Babul* (*Acacia arabia*), *Khakhar* (*Butea frondosa*) and Bamboo (*Bambusa arundinacea*). The minor products of economic value are lac, gum, resin, colouring bark, honey, wax, mahuda flowers, etc. A complete list of these products, both major and minor, is given in (Ex. II).

16. Agriculture is the most important industry of the State. Nearly
 Agriculture. 63·17 p.c. of the population directly depend upon it for their maintenance. Of the 80 laos bighas of agricultural land, 61 laos are under cultivation. The following table shows the principal crops sown :—

Serial No.	Crop.	Bighas.	P. C. of Total.
1	Cereals and Pulses	2,621,570	51·83
2	Wheat	546,237	10·80
3	Oil Seeds :—		
	Rape Seed	106,165	2·10
	Castor	216,642	4·29
	Sesamum	139,194	2·76
	Others	6,547	0·13
	Total Oil Seeds ..	471,548	9·32

Serial No.	Crop.	Bighas.	P. C. of Total.
4	Cotton	1,213,368	23.99
5	Tobacco	44,539	0.88
6	Sugar-cane	6,348	0.13
7	Other Crops (Minor : fibres and intoxicating drugs, colouring materials, garden crops, etc., etc.)	154,510	3.05
8	Total area Cropped	5,058,120	100.00

Most of the food stuffs are consumed locally, but the commercial crops, such as oil seeds, tobacco, cotton, etc., are exported either to the other parts of India or to foreign countries. Naosari cotton and Petlad tobacco are well known in trade and command good prices. The yellow rape and castor of Kadi are of superior variety.

17. The most important industry connected with Agriculture is the Dairy industry, specially of Charotar in Gujarat and of Gir in Kathiawar. Almost every cultivator keeps a buffalo and utilises the milk either for his domestic use or for the manufacture of *Ghee*. But this industry has been very greatly developed in Charotar (Baroda District). In almost every important village there is a cream separator. The merchant separates the cream and sells it to Bombay or Ahmedabad butter factories, while the separated-milk is either thrown away or casein extracted from it. From the Gir, *Ghee* is exported either to Bombay or to other parts of Kathiawar. This trade is more or less common all over the State.

18. The number of live stock in the State may be seen from the following table:—

Plough Cattle.	Cows and bulls.	Buffaloes.	Horses, mules and donkeys.	Sheep and goat.	Total.
3,56,412	2,47,697	3,11,942	43,329	3,21,923	12,81,303

They supply, besides dairy products, a fairly good trade in hides and bones, most of which are exported to Bombay.

19. As for the resources in mechanical power there are three important sites for Hydro-Electric development. They are:—

- (a) *Handol*, on the river Sabarmati, in Kheralu Taluka of the Kadi District.
- (b) *Tichakia*, on the river Zankhri, in Vyara Taluka of the Naosari District.
- (c) *Arkati*, in Songhad Taluka of the Naosari District.

There are a few other small power-sites in Dhari and Kodinar but not of much importance.

Handol :—British Government is contemplating the development of this site as an irrigation project. But nothing definite has been known of this since a long time.

Zankhri :—Investigations are being made to harness this river for irrigation purposes. If this succeeds, power could be generated here and electricity supplied from Vyara to Surat as also to Naosari and some other places. Mr. Purves, the irrigation expert, is investigating the potentialities of this site.

Arkati :—This site has been recently suggested and is considered superior to the others. Investigations may be made after the Zankhri project is decided upon.

Both these sites (2 and 3) are in the forest area of the Naosari District. There are no industries near by to which power can be supplied. The only industries that could be started under the present conditions are forest industries ; such as wood distillation, match manufacture, saw mills and tanning extracts. Nitrogen manures could also be manufactured from the air.

PART II.

COMMERCE AND BANKING.

20. From the time His Highness the Maharaja assumed control of the State affairs, he has shown a keen desire to develop railway facilities of the State and to connect all the important parts by railways. The following is the statement of open lines:—

Ownership.	Gauge.			Total.	Capital invested.
	Broad.	Metre.	Narrow.		
Baroda State	21	224	210	455	1,94,48,984
Foreign	146	83	...	229	....
Total ...				684	

Besides these, there are 120 miles under construction. There are only two important talukas, Kodinar and Dwarka in Kathiawar, that remain to be connected. Railways are shortly going to be constructed there too.

21. It will be seen from above that for every 12 sq. miles of Baroda territory there is a mile of railway. The railways have been constructed out of the savings of the State. They pay 4 p.c. on the total investment. Almost all the railways are feeder lines managed by the main lines—mostly by the B. B. & C. I. Ry.

22. The territories of Baroda State are mostly situated inland except at two places in Kathiawar and one in Gujarat. There are two seaports—one at Rupen in Okha, and the other at Mul Dwarka in Kodinar. These are fair weather ports; and most of their trade is local. They are not connected with any railways. However, there are two possible ports just near these—Beyt in Okha and Velan in Kodinar, which are far superior not only to the other Baroda ports but to the rest of the Kathiawar ports. Both these with some improvements could be turned into important ports with safe harbours. Soundings have been taken and other inquiries have also been made and the services of an expert Harbour Engineer have been asked for to finally decide upon these improvement schemes. Since adjoining Native States are going to build the railways that will ultimately connect these ports with the main land, the development of these harbours would be undertaken as soon as possible.

23. There is only one important river port in Gujarat, viz., Billimora in the Naosari District on the B. B. & C. I. Ry. main line. It is an old port and was quite an important one before the advent of the railway. But since the construction of the latter, the port has dwindled down as the railway has imposed discriminating rates against Billimora. This has led to its legitimate traffic being diverted. The port also is getting silted up. The river has changed its course and some rocks have appeared which prevent larger ships entering

it. Formerly, ships (country) of the capacity of 400 tons used to come but at present only ships of 125 tons can enter it. The rocks found in the bed of the river are to be shortly removed. Annually 1,245 country crafts come and the trade amounts to Rs. 7,63,000. When there is a congestion of traffic on the railway line, Billimora shippers get freight. Local goods going to Kathiawar can be sent cheaper by this (sea) route. Billimora is a fair weather port. It was a place noted for its ship-building (country craft), but this industry is now dying out.

24. Since the abolition of the customs duties at the frontiers of the State in the year 1909, no reliable statistics of the trade of the State are available. The rail-borne trade statistics may give some idea of the principal items of import and export, for most of the territories are covered with railways and most of the trade is carried by them. But since the last three years, these are not collected. The last available statistics are for the year 1911-12. Ex. III gives the rail and sea-borne trade statistics of the State for the year 1911-12. They include the figures for land trade of the two maritime talukas of Kathiawar which are not connected with railways. Though these returns are old, they may give some idea of the nature of this trade.

It will appear from this that most of the raw materials produced in the State are exported, while manufactured articles form the major portion of the import list. The inter-state trade is mostly in raw materials.

25. The necessity for uniform weights and measures was felt for a very long time. Every district had a separate system of local weights and measures. This was naturally detrimental to the interests both of merchants and consumers. Since 1885, several circulars and orders were issued regulating weights and measures. In the year 1904, all these were revised and embodied into special Rules laying down a uniform system of weights and measures. The *seer* of 40 rupees weight of 180 grains each, was laid down as unit. As for measure, water at its maximum density was considered the standard for a measure of capacity. For measure of length, a "Gaj" of 24 inches was taken as unit. From the operation of these rules only gold and silver weights are exempted. This question was taken up in the year 1913-14; however, it has been kept in abeyance till final orders are passed by the Government of India on the Report of the Weights and Measures Committee.

26. To provide standard weights, arrangements have been made in each taluka to stamp weights brought by merchants and artisans. Since Baroda territory is interspersed with the adjoining British territory specially in some talukas of the Naosari District the local merchants were put to great inconvenience and to some loss in their dealings with the merchants of the British districts. Therefore, these talukas have now been exempted from the operation of the Rules.

27. In 1875, when the new administration commenced its work of reform and reconstruction, there was a system of customs levied on land (import and export), sea, in towns and even in some of the villages. Goods had to pay duties every time they passed the frontiers of the several talukas. These taxes operated

as a great hindrance to the development of trade and commerce within as well as without the State. The first principle in the levy of duties under the new regime was laid down as under :—

“ No more than one import and one export duty will be levied at the Railway Station and on the frontier. All land *Nakas* and all duties and imports levied at them will be abolished. No article taxed when imported will be taxed again when exported and *vice versa*. Only a limited number of articles will be taxed, *ad valorem* rates converted as far as possible as rates on weight.”

Transit duties were abolished in most of the places. As customs brought a substantial revenue (about 8 lakhs), the administration could hardly go further than this in its simplifications. But later on, preliminary to the total abolition of these duties in 1904, the Customs Act was revised and minor items of duty were removed. By this Act most of the town duties were abolished, export duties, except on cotton and mahuda, were removed and the whole schedule was simplified. The principle of protection of nascent industries was accepted in framing the schedule.

23. In 1909, however, when industrial activities were growing, it was found advisable, even at the sacrifice of a large revenue, to abolish all the import and export duties except at the ports of Kathiawar, where the State was bound to levy them under treaty obligations with the British Government. Even town duties were removed. The State territories do not form a compact block. They are interspersed with foreign territories everywhere and the advantage of import duties was not properly realised. At this time, the new Municipal Act came into operation and municipalities were permitted to levy octroi within their town limits. Wherever possible, the town authorities are asked to levy house tax instead of the octroi. The octroi schedules are closely scrutinised and all articles intended for local manufacture are scrupulously removed from the list.

Besides town duties, there is only the Income Tax that Industries have to pay on their profits. The incidence of the tax is 1½ per cent. The cotton mills have to pay excise duties on the same scale as in British India.

29. Before 1875, all the banking in the State was carried on by Shroffs. All the State funds were deposited with four prominent sowcars of Baroda. About the year 1876, State Treasuries were organised and the State funds were withdrawn from private Shroffs. This, necessarily, caused scarcity of fluid capital and the State felt the necessity of organising commercial banks to help both the Shroffs and the general public. In 1884, the Baroda Pedhi was started with a capital of Rs. 3,00,000 divided into 600 shares of Rs. 500 each. Half of these shares were taken by Government and the other half by the people of Baroda. As special concessions (i) the use of a state building was given free of rent, (ii) a cash credit of Rs. 3 lacs at 3% and some other minor privileges were granted. The Pedhi (bank) was managed by a Board of five Directors consisting of a President and two Directors nominated by Government and two others by the shareholders. It was authorised to lend money on the usual banking

principles. The scope of this bank was very limited and it was not in a condition to meet the growing needs of commerce and industry. For several years therefore, it was in contemplation either to have another large bank or to invite one of the important Bombay banks to open a branch here. In 1908, it was decided to start a new bank for Baroda and the Pedhi being no longer required was sent into voluntary liquidation. All along its career the old bank was working successfully, and when it was closed shareholders received about 30 p. c. over and above their share capital.

30. A similar bank was started at Visnagar about the same time. But being away from the headquarters and under the control of the District Collector (Suba) who has always multifarious duties to perform, it was not well managed. The Directors were not local men. Some of the investments were risky and the famine of 1899 ruined some of the bank's clients. In 1904 or so, this Pedhi was closed and sent into liquidation. The share capital was fully realised and returned to the shareholders.

31. While these two banks were started to help commerce and industry, six more banks were organised to help Agriculture. Rules were made embodying the terms and conditions on which the State was prepared to help such banks. The principal concessions granted by the State were (i) subscription of half the share capital, (ii) exemption from the payment of Stamp and Registration duties, (iii) collection of arrears by revenue process (subsequently withdrawn), and (iv) State audit and inspection. The first two banks were started in 1899-1900 in the forest tracts of Songhad and Vyara of the Naosari District and are still working with more less success. Later on two more banks were started in the Kadi District, in Harij (1901) and Visnagar (1905) but both of them were closed subsequently without any loss. They were closed, because their management was found to be incompetent. The local people did not take any interest and the managers who were low paid clerks abused their powers. Since then two more banks have been organised at Amreli (Kathiawar) in 1909 and at Bhadrin (Baroda District) in 1910. They are working successfully. Since the last few years these Agricultural banks have been financing Co-operative Societies each in its territory.

32. Mention may also be made here of two other institutions that have been doing important work in Baroda City. To help the rank and file of the Baroda military as well as servants of the Palace, a small bank has been opened since 1890. A small sum has been placed by the State at the disposal of the Military authorities and loans are made therefrom. A similar bank is working for the Police force.

33. As said above, to meet the growing needs of commerce and industry, in 1908 the Bank of Baroda, Ltd., was started. The following is the list of concessions granted:—

- “ (1) Government will deposit with the Bank without interest an amount equal to $\frac{1}{4}$ one-fourth of the paid up capital, but not exceeding $2\frac{1}{2}$ lacs of rupees.

- (2) Government will maintain deposits with the bank equal in amount to ($\frac{3}{4}$) three-fourths of the paid up capital but not to exceed $7\frac{1}{2}$ lacs of rupees in any case, at the rate of 4 per cent. per annum, if and when considered necessary by the Directors, provided that the bank maintains at all times within the State assets equal to the amount so deposited.
- (3) The aforesaid concessions shall hold good for a period of (15) fifteen years.
- (4) Government will pay to the bank annually one-half of the salaries and expenses of management for a period of (5) five years on condition that the bank engages an expert manager, and with the further proviso that the sum so paid shall not exceed Rs. 10,000 per annum.
- (5) Government will turn over to the bank from time to time such proportion of the State's banking business (*i.e.*, the receipt, remittance, collection, and payment of money or securities and other matters usually transacted by Bankers for their customers) as the prosperity and condition of the bank may warrant, and as may be agreed to between themselves and the Directors.
- (6) Government will appoint Auditors to audit the books, including the ascertainment of assets under clause 2 above, and accounts pertaining to its own business with the bank, such audit to be at their expense: and it shall interpose no other supervision or interference with the bank's affairs."

It has a paid up share capital of Rs. 10,00,000 and a total working capital of about Rs. 1,10,00,000. It has financed almost all the important industries of the State. The State Treasury at Baroda has been transferred to it and the disbursements of all the funds at Baroda are made therefrom. It has opened two branches at Mehesana and at Naosari.

Any Baroda merchant may now obtain loans at a reasonable rate of interest, if he is prepared to offer proper securities.

34. There are two Chambers of Commerce, one at Baroda and the other at Naosari. They have been recently started and are interested only in local problems of trade and industries. The Baroda Chamber has been given a right to send one member to the Industrial Advisory Committee.

Commercial Organisation.

PART III.

INDUSTRIES.

35. Before the era of Modern Industrialism under the influence of which many factories of modern type have grown up in Gujarat, there were found all over the State a number of small Industries. Every village, every town had a full complement of smiths, carpenters, tanners, weavers, brass workers, etc., who supplied the needs of the local people. Some towns were noted for their special manufactures: Pattan for 'patolas,' Visnagar for brass and wood work, Kadi and Pattan for cutlery, Sankheda for horn and lacquer work, Billimora and Naosari for wood carving, Baroda and Pattan for silk and gold thread weaving, Padra, Kathor and Nandol for dyeing and printing, Baroda for glass-ware, Dabhoi for turbans, Billimora for ship-building, etc. All these were hand industries carried on by artisans mostly in their homes. But owing to the sudden competition of cheap foreign articles and the change in the tastes of the people, most of the hand industries died out or are in process of decline, and as may be seen from the preceding paragraphs the number supported by them has also been going down. During this period except in one case when silk and gold-lace weavers were imported into Baroda from Ahmedabad, no serious attempts appear to have been made either to revive the old industries or to start new ones.

36. The real work of developing the natural resources of Baroda, of reviving wherever possible the old industries and introducing modern industries dependent upon improved machinery and scientific research commenced with the reign of the present Maharaja. From the time H. H. the Maharaja came to the throne, he perceived the complete absence of modern industries, and initiated various measures for their introduction. The steps taken by His Highness' Government and the result of the State policy may be seen from the following paragraphs. The early eighties was a period of reconstruction in the State: it had to be efficiently re-organised and its administration improved. As a beginning, a few model factories, such as cotton and sugar mills, were started. The people also organised a few small industries such as pencil-making, button and soap-making; but the promoters lacked scientific knowledge and information and most of the enterprises failed. The second period in the industrial development commenced with the early nineties. Then the State took some more comprehensive measures, the Kalabhavan and the Museum were started, a number of students were sent to Europe to be trained in industries, railways were built all over the State, loans were given to new industries at a low rate of interest, custom duties were revised and on the whole a very sympathetic policy was adopted. This is the period when the foundation of modern industrial development was laid. The result of these various activities was that a number of small industries grew up all around, flour and rice mills, cotton ginning and press factories, etc. As was to be expected, some of the concerns failed and the factories changed hands, and went under the management of competent business men and prospered.

37. The third period in the Industrial progress began with the year 1905. All over the country, new industries were started; the State also took advantage of the enthusiasm of the people and extended its help to all the new ventures that were started with loans and in many other ways. A special Department of Commerce and Industry was organised of which an American gentleman was engaged to take charge. The Bank of Baroda, Ltd., was started to finance local industries, the import and export duties were abolished, rules were laid down for the development of Commerce and Industries clearly defining the Industrial policy of the State and the terms and conditions on which it was prepared to grant concessions. (Ex. IV.)

38. The result of this policy may be seen from the following table which shows the number of modern industries of some importance, small and large, working at the present moment :—

KIND OF FACTORY,	POWER USED.			TOTAL.
	Steam Power.	Oil Engine.	Hand Power.	
1	2	3	4	5
Ginning Factories	90	10	3 Water power.	103
Cotton Presses	17	....	....	17
Cotton Mills	4	....	....	4
Distilleries and Chemical Works ..	2	....	....	2
Metal Works .. .. .	....	2	....	2
Cutlery Works .. .. .	....	1	....	1
Agricultural Water pumps	5	25	....	30
Rice Mills .. .. .	....	11	....	11
Dyeing Factories	4	....	....	4
Oil Mills and Refineries	6	3	1	10
Chocolate Factory .. .. .	....	1	....	1
Candle Works manufacturing also Glycerine and Soap.	1	....	....	1
Flour Mills .. .. .	....	13	....	13
Sugar Factory	1	....	....	1
Ice Factories	2	....	....	2
Printing Works.. .. .	....	4	....	4
Twine Factory	1	....	....	1
Brick and Tile Factory .. ..	....	1	....	1
Slate and Slatepen Factories	2	1	4	7
China Clay Refinery .. .. .	....	1	....	1

KIND OF FACTORY.	POWER USED.			TOTAL.
	Steam Power.	Oil Engine.	Hand Power.	
1	2	3	4	5
Mortar Mills	3	2	....	5
Electric Works	2	....	....	2
Stone Sawing Mill	1	....	....	1
Furniture Factory .. .. .	....	1 Oil and electric.	....	1
Kala-bhavan Workshop	1	....	....	1
Brush Factory, (School Apparatus) ..	....	....	2	2
Foundries and Workshops .. .. .	....	4	....	4
Total ..	142	80	7+3	232

Looking to the fact that the Baroda State is mostly an agricultural country, and that before 1881, there were absolutely no modern industries of any kind, this record should not appear disappointing. There are, further, greater possibilities in store for the future; as valuable experience has been gathered which will guide the policy on business principles and on scientific considerations.

DEPARTMENT OF COMMERCE AND INDUSTRIES.

39. The Revenue Department has been considered the chief executive department of the State. Therefore the important work of developing commerce, trade and industry was for a very long time carried on by that Department. In 1905, a separate branch was opened in that Department and a special officer was appointed in charge of the Commerce, Industry, Agriculture, Customs and a few other allied branches. Soon after, it was found that a single officer, however capable, could not cope with the work of all these Departments and therefore, in 1906, the services of Mr. Whitenack, an American gentleman, were engaged as Economic Adviser; and in 1907 his Department was converted into the Department of Commerce and Industry. Mr. Whitenack retired from the State service in the year 1909. In the same year, the Assistant to the Director of Commerce was sent to America to be trained in Economics, Finance and Commerce; and on his return, he was given charge of the Department.

40. In order that the work of the Department of Commerce and Industry may be conducted on well regulated lines, Rules (Ex. IV) were made in 1915 defining the functions of the Department of Commerce and Industry and the aid and concessions, financial and other the State is prepared to grant. These rules enable the State to maintain a continuity of Industrial policy as well as inform the people as to what concessions the State is prepared to give.

The functions of the Department are defined as under :—

- “(a) To study the Industrial and Commercial conditions of the State and to advise Government to take such measures as may be found necessary and advisable.
- (b) To conduct industrial experiments and to give demonstrations of successful experiments.
- (c) To advise manufacturers, merchants and artisans in the development of trade and industry in the State.
- (d) To advise Government on measures that effect commerce and industry of the State.
- (e) To assist the people in the organisation of trade, commerce and industries.
- (f) To investigate and recommend applications for State concessions to His Highness' Government.
- (g) And to do all other duties as may from time to time be entrusted by His Highness' Government.”

41. The following are the important lines of work at present being
Lines of work. carried on by the Department :—

- I. Geological Survey.
- II. Handloom Demonstration,
- III. Fisheries.
- IV. Regulation of Joint Stock Concerns.
- V. Administration of the Mining Act.
- VI. Boiler Inspection.
- VII. Surveys of Industrial towns.
- VIII. Rural Surveys.
- IX. Industrial Engineering (recently sanctioned).
- X. Bureau of Statistics and Information.

All preliminary inquiries before concessions are granted are made by the Department and all complaints from and difficulties of the merchants and traders are addressed to it.

42. The present staff is constituted as follows :—

Present staff of the
Department.

1. Director,
2. Two Fisher Assistants.
3. One Weaving Assistant and four Demonstrators.
4. Geologist and Mechanical Engineer (this post has been recently sanctioned).

Besides, the services of the professors and teachers of the Technical Institute are always available when required for advice, experiments and enquiries. The workshop of the Institute is also utilised for experiments.

43. In order to associate the people in the work of developing the resources of the State on proper lines, an Industrial Advisory Committee was appointed by His Highness the Maharaja in the year 1914. Its principal function is to study the local needs both as regards industries, agriculture and forest and advise Government on the measures necessary for economic development. It is empowered to make small experiments and a sum of money has been placed at its disposal. The Committee is composed of 22 members, 13 officials and 9 non-officials: of the latter, eight represent the four District Boards and one represents the Baroda Chamber of Commerce. It meets once a year, and its sub-committees, one on Agriculture and the other on Industries, meet at regular intervals and investigate problems entrusted to and initiated by them. Though it is recently started, it has been doing fairly good work.

44. In order to facilitate promotion of industries and to regulate them on well established principles, the following Rules and Regulations have been passed :—

Acts and Rules.	Year of passing.
Factories Act	1913
Companies Act	1897
Mining Act	1908
Boiler Act	1898
Customs Act	1904
Rules for opening Factories and the Acquisition of Lands therefor ..	1904
Weights and Measures Rules	1904
Rules for the Development of Commerce and Industries in the State..	1915

Except the last two, all the Acts and Rules are based on similar legislation in British India with suitable local variations.

45. The first Geological survey of the State was made in the year 1892 by Mr. Bruce Foote of the Madras Geological Survey and his report was published in the year 1898. With a view to determine the economic value of the various geological deposits, another survey was started in the year 1907-08 and Mr. Sambashiva Iyer of the Mysore service was engaged. Most of the deposits were analysed and his report suggested various steps that should be taken with a view to determine the quantity and the economic value of the deposits. That work has been to a certain extent carried out, but a good deal still remains to be done. His Highness' Government have sanctioned the appointment of a well qualified Geologist and the work will be shortly undertaken. As a result of Mr. Iyer's enquiry, glass and china clay refining factories are started and further inquiries into other industries are being made.

46. The first Industrial survey of the State was made in the year 1893. **Industrial and Economic Survey.** A Commission consisting of 3 officers and one non-official member was appointed. It visited every taluka and submitted its report in the year 1895-96. It was concerned both with Agriculture and Industries, but so far as the latter were concerned, only the existing hand industries were inquired into. The report was bulky, and an English summary of it was prepared. The important fact brought out by the Commission was that the old hand industries were dying out. Consequently, as will be noticed in another part of this note, several branches of the Kala-bhavan (School of Arts) were started in some of the taluka towns.

47. Another survey was commenced by Mr. Whitenack in the year 1907. It was intended to be of a general economic nature, not of industries alone. It embodied within its scope both Agriculture and Industries. A questionnaire was prepared and circulated among the leading officers and the people of the State. But before the answers received were tabulated, Mr. Whitenack retired from the service and the inquiry was ordered to be dropped: but at the same time, it was decided that instead of the whole State, special taluka inquiries may be made, so that accurate and reliable information may be gathered. Accordingly, an economic inquiry of the Padra taluka was conducted by Mr. Datar, the then Director of Commerce.

48. Another important inquiry was in connection with the Agricultural Indebtedness in the State. **Agricultural Indebtedness inquiry.** The problem attracted the notice of His Highness the Maharaja during the year 1899—the year of the memorable famine of Gujarat, and a comprehensive inquiry was instituted.

The whole question was entrusted to a committee of four officers, but the final compilation of the report was entrusted to Mr. Manilal B. Nanavati, the Director of Commerce and Industry in the year 1911. The report was submitted in the year 1912. Action is being taken on most of the recommendations made therein.

49. Soon after the submission of the above report, His Highness ordered that periodical inquiries into the economic condition of people “living in particular villages or situations” may be made and that as an immediate step a Sociological survey may be made of the servants (numbering 800) of the Khangi (Palace) Department. **Sociological, Village and Town Inquiries.** This inquiry was conducted by the Director of Commerce and Industry in the year 1914 in consultation with Rao Bahadur G. H. Desai and Dr. Mayer and a report published in the same year. The second step in making a similar inquiry was the survey of a typical village. Under the orders of His Highness the Maharaja, a village in the Petlad Taluka was selected and a full economic survey was made. The report of this survey is under preparation. Besides these general economic surveys, industrial surveys of two towns of Petlad and Billimora have been made. These town surveys are useful in so far as they reveal the needs of local industries.

PIONEERING OF INDUSTRIES.

50. His Highness the Maharaja from the commencement of his rule had noticed the absence in Baroda territories of any modern industrial institutions; and finding that the fact was due in a great measure to the conservatism of the people, His Highness resolved to start in the year 1892 a Cotton Spinning and Weaving Mill as an object lesson to capitalists. 10,328 spindles and 104 looms were set up. The total cost of machinery and building amounted to Rs. 3,63,500. Subsequently some more looms and machinery were added, and to the date of selling the mill in 1905, the total capital expenditure amounted to, Rs. 6,35,000. By that time, it was realised that the importance of the Cotton Mill Industry was well understood and that private enterprise was forthcoming to start new Mills. Therefore it was decided to sell it. The sale fetched Rs. 5,00,000. During the 21 years of its working, it had paid on an average 3 p. c. interest on the investment.

The object in starting this mill was fulfilled when three Cotton Mills were started within a couple of years of the sale, two in Baroda and one in Sidhpur, all by Baroda subjects.

51. The second industry pioneered by the State was the Sugar Factory at Gandevi, in the year 1884. At first, it was started as a joint stock concern, and the State took shares for half the amount. But as this did not work satisfactorily, the State, then, purchased the factory at a cost of Rs. 3,00,000 and worked it for some time. However, the working resulted in a loss and the factory closed in 1894. In 1904, the concern was sold for Rs. 70,000. When the factory was first started, it was taken for granted that ample supply of cane would be obtained from the surrounding districts. But no serious effort was made to develop the cane cultivation nor to extract juice from the date palms found in the district. The new purchaser organised a joint stock concern and leased out the factory to another merchant, who has worked it only for a very short time. As far as can be gathered from the past history of this concern, a full and proper trial has never been given to the industry, nor has the lessee just mentioned had the necessary working capital. The factory is there and it is very likely that it would be working in a short time.

52. To meet the growing needs of the Public Works Department a Brick Factory was started in the year 1890 at a cost of Rs. 24,722. Provision was made in it for the manufacture of Mangalore tiles, earthenware pipes and jars, and the necessary machinery was purchased. For some time, experiments were made in the manufacture of the other articles mentioned besides the regular manufacture of bricks, but none of the experiments proved successful. In the year 1907, the factory was sold to a local P. W. Contractor for Rs. 16,699 on the condition that he supplied the P. W. Department a certain number of bricks at a special rate. It is now working successfully, and besides bricks, it is manufacturing Mangalore tiles. Experiments are also being made in the manufacture of jars and earthenware pipes.

53. In 1909, machinery for Chrome Leather Tanning was purchased. Before however it started working, a private company came forward to whom the machinery was transferred at cost.

54. In order to meet the requirements of the palaces as well as the other Furniture and other State works. Departments of the State, a fully equipped Furniture Factory was started in the year 1909. It is turning out high class furniture, and is managed by one of the former State scholars trained in Europe. Further, a complete electrical generating plant has been installed for lighting the palaces, which is also supplying electric light and power to private persons in the Baroda City. The plant is being extended and when this will be completed a larger amount of electricity will be available both for lighting and industrial purposes.

The P. W. Department owns a full set of stone-working machinery which is installed at the famous Motipura marble (Serpentine) quarries. This has now been leased to a private enterprise.

55. Since Government management as a general rule can hardly be economical or financially successful, it will be seen from the above that the Baroda State has stuck to its original policy of starting an industry and giving it over as soon as practicable to private enterprise. Excepting the Sugar Mill, none of the factories has failed and even the Sugar factory is likely to be a success under competent management.

INVESTIGATIONS OF INDUSTRIES.

56. It is one of the important functions of a State to inquire into the natural resources of the country and investigate the possibilities of their development for industrial purposes. The Baroda State has since a long time taken up this duty and no money has been spared. Experiments were made and experts engaged in several industries as will be seen from the following :—

- I. *Glass* :—Experiments were made in Baroda in 1887-88 with the various sands found in the State to test their suitability for Glass manufacture. Samples were sent to Europe and as a result it was almost decided to bring Belgian experts. But as the State consulting engineer in Europe did not find the sand experimented upon of the highest quality and as the cost of manufacture was likely to be high, on his advice the project was abandoned. About Rs. 5,000 were spent towards these experiments both in Baroda and abroad. Better class sand has been recently found and a Glass factory is now established in Baroda (—temporarily not running).
- II. *Cement* :—An English cement expert was engaged to report on the suitability of clays and limestones found at Dwarka and Velan for cement manufacture. Favourable reports have been received, but the development of this industry is delayed for want of railway communication with the taluka.
- III. *Cotton Seed Oil* :—A thorough inquiry into this industry was made. Local seeds were sent to America to being tested for their oil-yielding property ; and the result of the investigation was published. As a result, a Cotton Seed Oil Mill was started

in Baroda. The Agents of the Company however at the last moment disregarded the advice of the Department of Commerce and Industry and purchased an unsuitable type of machinery. The factory crushes castor and other oil seeds, but not cotton seed.

IV. *Oil and Soap Industry* :—An American expert was engaged in the year 1910 to investigate the possibilities of Oil Industry and the manufacture of soap and other products. The report he gave did not give sufficient information or guidance to be of practical use.

V. *Tanning* :—In 1907, an expert trained in America was engaged to make experiments in Chrome Leather Tanning and a set of machinery was purchased. It was proposed to make experiments in the Kala-bhavan, but before the work was started, a joint stock concern purchased the machinery and started a factory. Unfortunately, both the agents and the expert proved thoroughly incompetent and the factory was closed after a short period of working ; with the result that a really promising industry has received a set-back in the eyes of the people.

VI. *Calico Printing* :—In the early period of the Kala-bhavan, a set of machinery for calico printing was purchased. The experiment proved unsuccessful and the machinery was sold.

VII. *Hand-loom* :—Experiments were made in order to find out a new type of hand-loom to replace the present old style throw-shuttle loom. A new type of fly-shuttle hand-loom has been designed and is being introduced. Experiments in better class weaving in silk and wool are also being conducted. A Weaving Assistant with a staff of demonstrators has been engaged and attached to the Department of Commerce and Industry.

There are some other industries, the possibilities of which are being investigated, such as the refining of China clay and reh, manufacture of alkalis from salt at Dwarka, of iodine from sea weeds, of pottery from China clay, soaps, matches, etc., but the inquiries are not yet complete.

FISHERIES.

57. When His Highness the Maharaja visited Dwarka in December 1903, he was informed that real pearl shells were occasionally found in the creek near Beyt. Thereupon, he was pleased to direct that an expert in pearl fishery might be engaged to investigate the possibility of finding in this creek pearls in sufficient quantity and of a quality which could stand the test of trade competition.

Inquiry of Mr. J. Hornell.

Thereupon, the services of Mr. James Hornell, F.Z.S., Marine Biologist and Inspector of Pearl Banks, Ceylon, were engaged. He visited the

Okhamandal coast and submitted his report in the year 1909, in which he made several useful suggestions for the development of fisheries of the Okhamandal Taluka.

Up to the time of Mr. Hornell's visit, the right to collect Chanks alone from the Okhamandal coast was annually auctioned. As a result of his investigations, the right to collect window-pane and real pearl oysters is also leased out by which the annual revenue of the State has increased on an average by about Rs. 15,000.

58. With a view to give some practical effect to Mr. Hornell's suggestions, he was consulted during the year 1913-14; and on his recommendation Sir F. A. Nicholson, I.C.S., K.C.I.E., the Hon. Director of Fisheries, Madras Government, undertook to train up two students from the State. Two Science Graduates were selected and sent to Madras, one for training in Pearl and Edible Oyster Culture; the other in Fish Curing, Canning and allied subjects. Since their return, they have made surveys of the coast of the State and have submitted reports of the existing condition of the fisheries and the future lines of their development. The schemes submitted by them have been sanctioned and they will commence practical work of experiment and demonstration from the next fishery season.

Experimental Farms to be opened.

FINANCIAL ASSISTANCE.

59. In the absences of proper banking facilities in the State, His Highness has considered it a part of the duty of his Government to grant loans to industrial enterprises on reasonable terms. In 1891-92, a sum of Rs. 1,50,000 was placed at the disposal of the Revenue Commissioner to be loaned at 3 p.c. to new industries. This sum was, however, increased to Rs. 3 lacs in the year 1892-93. In the four years after the inauguration of this policy, a sum of Rs. 2,32,000 was loaned to 13 merchants. Most of these concerns were flour, rice and oil-mills, the rest being small concerns manufacturing scents, oils, soaps, etc. Unfortunately as most of these factories failed in a few years the loans had to be re-called, the State suffering a loss of a few thousands in the whole undertaking. Some of these factories were not *bona fide*, they were started just to get Government assistance which was given by over enthusiastic officers without adequate inquiries either into the nature of the industry or the security offered.

Assistance in 1890-95.

60. Discouraged by the failure of these ventures, the State granted no more loans for a few years. In the year 1908-09, however, when better class merchants came forward to start important industries, the loan system was revived and Rs. 2,90,000 were given to three concerns, two of these being Cotton Mills. When the Bank of Baroda was organised in the year 1909, these as they fell due were withdrawn and the concerns were asked to go to the Bank for financial assistance. However, the State has laid down that in special deserving cases it is prepared to grant loans at reasonable rates and for a sufficiently long period. Rules laid down for the purpose are shown in the appendix to this report (Sec. 16 of Ex. IV). A Committee of three officers is appointed to scrutinize all applications before they are submitted to Government. Under

In 1908 and Recent Rules.

these rules, two loans for Rs. 4,25,000 have been sanctioned—one to the Glycerine Factory at Billimora (Rs. 1,25,000) and the other to a Cotton Mill (Rs. 3,00,000) to add 300 looms. In order that the concerns receiving State loans may not be put to any inconvenience for working capital, it is generally held that all these loans may be given through the Bank of Baroda. The Bank gets $1\frac{1}{2}\%$ commission for the risk it undertakes, the State depositing the necessary funds with the Bank at $3\frac{1}{2}\%$. It is gratifying to note that since the new policy has been inaugurated no money has been lost and all the industries helped are flourishing. A complete list of industries that have received financial assistance from the State has been given in Ex. V. It shows the nature of the industry, the amount lent, the rate of interest, the period of the loan and whether the industry is in working order.

61. Another method of giving financial assistance was also tried, *viz.*, purchase of shares. In two cases shares worth Rs. 10,000 were purchased from State funds. However, both these concerns—the Umbrella Factory and the Chocolate Factory—have gone into liquidation and most of the money lost. It has now been laid down that shares of industrial concerns shall not be purchased by way of help.

62. Besides the financial assistance mentioned in paras. 59 to 61, the State has been giving several other concessions suitable to each industry.

All these concessions may be grouped as under :—

No.	Nature of Concession.	No. of Factories.	REMARKS.
1	Financial Assistance .. .. .	....	.....
	(1) Loans	19	.....
	(2) Share subscription	2 @	@ This is over and above the patronage extended by H. H. the Maharaja to several concerns from his private funds.
2	Water at concessions rate 2 as. per 1,000 gallons. Usual rate is 4 as. per 1,000 gallons, from the Baroda Water Works at Baroda.	16	.....
3	Services of experts given to individual concerns at State cost.	2	Leather and the Glass Factories. Pay of the Manager-expert was given for two years. Both the factories have failed, as the experts did not turn out efficient.
4	Exemption from the payment of customs duty on the payment of a small lump sum.	11	Most of the factories are situated in the Baroda City; these concessions were given when the import duty was in operation. On the abolition of the customs, the Municipality has continued the concessions given by the State.

No.	Nature of Concession.	No. of Factories.	REMARKS.
5	Total exemption from the payment of the import duties.	6	Most of these factories are situated in the Baroda City; these concessions were given when the import duty was in operation. On the abolition of the customs, the Municipality has continued the concessions given by the State.
6	Exemption from the payment of Octroi duty levied by the Municipalities of the State.	4	4 Cotton Mills.
7	Preference in the purchase of State stores.	3	Candles ; Glass.

63. Besides these, several other concessions and facilities have been given to the various factories, such as the permission to open distilleries and to manufacture spirits and alcohol, construction by the State suitable roads to connect factories with railways, the acquisition of land for factory sites, the giving of wood from the State forests at nominal price (to a Match Factory), etc.

64. The result of this liberal policy may be seen from the steady growth of industries in the State. Though some of the factories encouraged have failed it has not led to any change in the active programme of State aid.

JOINT STOCK CONCERNS.

65. The Companies Act was passed in the year 1897. Since then 53 companies have been registered under it (Ex. VI). They may be classed as under :—

No.	Names of Industries.	Total Number Registered.	Working at present.	Closed.
1	Banking and Loan Companies	1	1	....
2	Provident Societies	10	....	10
3	Trading Companies .. .. .	....	....	....
4	Mills and Presses.. .. .	18	11	7
	(a) Cotton Mills	4	4	..
	(b) Ginning factories and Presses	7	4	3
	(c) Oil and Flour Mills.. .. .	3	1	2
	(d) Others	4	2	2
		18	11	7
5	Other Industries	16	6	10
6	Miscellaneous	8	2	6
	Total ..	53	20	33

Out of these, 20 are working at the present moment. Of the rest, 7 never started work as the promoters were perhaps not able to get the necessary capital, 11 went into voluntary liquidation and 8 into liquidation through court, while 7 are in the process of liquidation. These statistics hardly show a very hopeful future for joint stock enterprises. It is unfortunate that the promoters of some of these concerns were men without previous experience in the organisation and management of joint stock companies. As elsewhere here too they started factories without sufficient knowledge of their undertaking. Neither did they have sufficient funds nor credit to procure the necessary working capital. A few of them also were anxious to get rich quick and mismanaged their business. Of this class were the eleven provident societies that failed.

66. It is however encouraging to note in this connection that the private proprietary concerns are more successful than the joint stock ones. The former start with their own or their friends' funds and manage their factories very economically; they start on suregrounds and try every means to make their factory a success. In most cases, therefore, they have succeeded. The truth of this remark may be seen from the following statement:—

Industry.	Proprietary.	Whether successful or not.	Joint Stock.	Whether successful or not.
1. Oil Mills ..	At Sidhpur, Petlad and Billimora.	Successful.	Cotton Seed Oil Mill at Baroda.	Not prospering; may be successful if it goes in good hands.
2. Manufacture of school apparatus.	Nandol ..	Very successful.	The Brush Factory manufactures School apparatus.	Badly managed.
3. Dyeing Factories.	2 in Petlad ..	Do. do.	Dyeing and Bleaching, and the Vaso Dyeing Factories at Baroda.	This first is struggling along while the second has gone into liquidation.
4. Mangalore Tiles Factory	At Baroda and at Ajrai (Gandevi).	Fairly successful.	At Baroda a Joint Stock concern was floated.	Did not get the necessary capital.

From the above list it will be noticed that where a joint stock concern has failed, a proprietary undertaking of a similar nature has generally succeeded. Of course it cannot be said that private factories have always succeeded. There are failures here too, but looking to the total number of both classes of factories, there is certainly a larger number of failures among the former.

67. If we study the history of industrial development in Europe, America and Japan, the experience of these countries has been of a similar nature. In the early stages of industrial growth joint stock concerns have everywhere failed. Industrial aptitude of the people. Out of the failure of these, new and strong concerns have been built up. At the same time, it must be remembered that some of the gigantic factories of those countries had very small beginnings, in small workshops, or small mills conducted by one or two sturdy pioneers who steadfastly struggled through the first few years and laid the foundations of a successful business. We are getting similar experiences here also. The Dyeing Factories of Petlad, the Oil Mills of Petlad and Sidhpur, etc., are still in the early stage of development. Every year they are extending their business and laying foundations for important additions to their works. All over the State are found men full of zeal for some particular industry, collecting all the information they can, making experiments with their limited means and knowledge, and trying to start their factories. Some of them succeed, and others fail. A few such enterprises may be mentioned: manufacture of Slate and Slate-pen, Soaps, Cutlery, Colours, Inks, Mercerized Yarn, Brushes, Enamel-ware, School apparatus, Refined Oil, Perfumes, Safes and Locks, etc. The experience gained by several years' working of the industrial and manual training schools has shown that, all over the State, are found boys in schools who have greater liking for manual work than for ordinary book learning. Proper facilities being given, these boys may be trained either as skilled artisans or workers in small industries.

68. While considering the industrial aptitude of the people one fact may be noticed. Thirty years ago there were hardly any industries or workshops run by small oil engines. Their use was unknown or not understood. Use of oil engines and small machines getting popular. At present there must be at least 70 oil engines driving water-pumps for irrigation; oil, flour, saw, rice and mortar mills; gins, foundry and workshop machinery, etc. Their use is getting more and more popular. Even some of the cultivators have fully understood the use of these engines and are installing and working small irrigation plants. The use of lathes, stamping and punching machinery, treadle presses, metal-sheet rollers, drilling machines, etc., is getting popular and such machines are often to be seen in the shops of silver smiths, and copper and ironer-work. If our people are properly guided and carefully trained, there is surely genius enough among them to start any number of small industries. As for the larger enterprises, such as the cotton mills, oil mills and refiners, soap and chemical works, etc., there are men in the State who can manage them, yet their traditional training is of a different type. The shrewd business men of Pattan, Mehesana, Visnagar and Amreli, of Gandevi, Billimora and Naosari are quite capable of organising the larger industries, but, unfortunately, few of them possess the necessary information regarding the requirements of modern industries. People in this country have to compete with the highly developed industries of the world unaided, and unless local industries are started with full knowledge of the business organisation and the scientific development of the advanced countries, they are likely to fail. At the same time it should be noted that the new industrial environment has been only of recent growth and it must take some time before

industrial acumen is developed in the investors and the technical experts and the business managers. During this formative period, some inexperienced and sometimes unscrupulous persons take advantage of the enthusiasm of the credulous public and start new ventures that often fail. However the time is slowly coming when a better class of entrepreneurs is coming forward. So we may expect better results in the future.

69. It might be interesting to know the number and the kind of industries that have failed in the State. Exhibit VII. Industrial failures. shows a list of such industries. Most of the failures are joint stock concerns; as the people have not yet got the aptitude to manage such undertakings. However, it may be noted that except in one case where the machinery was sold to some outside people all the other factories are likely to be revived.

PART IV.

TECHNICAL EDUCATION.

70. A Committee was formed in November 1888 to consider and report upon the measures to be adopted in connection with the establishment of a Technical School: and Prof. T. K. Gajjar M.A., B. Sc., was entrusted with the work of drawing up curriculum for the different branches of the Institute.

71. His Highness the Maharaja, after carefully considering the scheme submitted to him, passed the following order on 25th March 1890:—

“The project of diffusing general and technical knowledge through the Vernaculars has been under the consideration of Government. The proposal of Mr. Gajjar, to start such an institution on the Grant-in-aid principle has been considered, and it is thought desirable on the whole that the experiment should be made as a State concern. It is accordingly directed that a Technical Institution should be opened at Baroda, where education of the hand and the eye will be attempted side by side with that of the mind, and where instruction will be imparted mainly through the Vernaculars. The object is to help people to improve the existing industries and to introduce new ones that may be remunerative. It is desirable that a modest beginning should be made, and scope of the institution should accordingly be restricted for the present to teaching drawing, bleaching, dyeing and calico-printing and carpentry. The course of instruction should combine theory and practice so as to turn out a more skilful artisan than at present.”

* * * *

“Along with this central Institution, dyeing schools should be opened in the Districts, at places to be fixed by the Department.”

Accordingly, the Kala-bhavan (School of Arts) was started in August 1890, and the existing Training school, including the Agricultural class, was amalgamated with it.

72. The school has now on its roll 400 students, some of them coming from the remotest parts of India. It has three years' Courses of Instruction. fully graduated and systematic courses of instruction in eight branches, viz., (1) Civil Engineering, (2) Mechanical Engineering, (3) Chemical Technology (specially of dyeing, bleaching and textile printing), (4) Industrial Chemistry, (5) Textile manufacture, chiefly Weaving Technology. (6) Fine Arts (including process work), (7) Architecture and (8) Banking and Commerce. Besides these regular courses, there are three demonstrators teaching repoussé work, wood-carving and art enamelling. Except the School of Commerce which is conducted in English, most of the other classes are conducted in Gujarati. Besides the diploma courses, special

one or two years' short courses are offered in most of the Departments. Those who are artisans and those who do not want complete Art training, are accepted as free apprentices in the Industrial Art workshops. So also free apprenticeship is offered in carpentry, mechanical engineering, dyeing and weaving to a few young men in each Department. In order to keep the students in constant touch with industrial conditions, they are frequently taken on visits to local and outside industries. The Kala-bhavan has got a well-equipped library containing useful technical books and magazines.

73. It was the desire of His Highness the Maharaja that the technical education in the State should be wide as well as deep and should reach all important villages with industrial possibilities. With this view, three District Industrial Schools were established soon after the opening of the Kala-bhavan. Most of them were mono-technic schools teaching some one art or industry, such as dyeing or weaving. These schools were opened at Dabhoi, Padra, Kathore, Petlad, Vaso and Pattan, places where these industries were flourishing. At present the Kala-bhavan has two district schools, one at Amreli with weaving, dyeing and carpentry classes, and the other at Dabhoi teaching weaving and dyeing.

74. During the 25 years of its career, the Kala-bhavan has sent out nearly a thousand graduates fully trained in the various arts and industries. It has supplied a large number of mechanical engineers, dyers, weavers, &c., to Gujarat and dyers specially to the whole of India. The dye-houses now established, large and small, have most of them got their inspiration and guidance from the Dyeing School of the Kala-bhavan. "Prof. Gujjar, who was very keen on the promotion of Chemical Industries, by his own work and with the help of Prof. Schumaker and Dr. Erhardt who were brought from Germany to work on the Kala-bhavan staff, organised a very successful school of Chemical Technology, which has been supplying dye-house chemists to the country for the last many years."

75. As foundation to technical study, classes in manual training and drawing have been established in some of the important primary schools of the State, so that boys from their early days may get a liking for an industrial career. There are at present several manual training classes attached to the vernacular schools.

Besides these State industrial schools, there is one Grant-in-aid industrial school, "The J. N. Tata Hunnar Shala," at Naosari. It has classes in mechanical engineering, carpentry, etc.

76. His Highness the Maharaja is a firm believer in the benefits that accrue from foreign travel and training at the best universities of Europe, America and Japan. During the last 25 years, several students have been sent to these countries to be trained in various arts and industries. If the number of students sent for Medicine, Law and higher education is excluded (and

this number is considerable) those that were sent for training in Industries and Arts come to 25 :—

- 4 Agriculture.
 - 6 Industries (cabinet-making, watch-making, chemical technology, pottery, mining, etc.)
 - 6 Engineering, civil, mechanical, electrical and sanitary.
 - 2 Forestry.
 - 2 Gardening.
 - 5 Commerce and Economics.
-
- 25

Some of these State scholars were graduates of Indian universities while others were sons of artisans trained in the local School of Arts. In addition to these, promising artisans (7) have been trained up in the Art schools of Lahore, Madras, etc., in Industrial Arts. Most of the scholars trained with State scholarships are "now serving the State with credit or finding profitable employment in other parts of India."

77. Since a few years, a scheme of loan funds has been started to send promising graduates of Indian universities to foreign countries "to learn the methods of modern Industries." In the selection of the students for foreign training, it may be mentioned that no distinction of caste or creed is observed. Sons of artisans are also selected, so that hereditary skill may get further developed.

78. The first Industrial exhibition was held in the year 1881 to celebrate the accession of His Highness the Maharaja. In that not only were all the arts and crafts of the State adequately represented but new industries likely to be developed were also demonstrated.

Since then, only one exhibition has been held, namely, the one at Naosari in 1911. This was industrial as well as agricultural. Though it was organised under the auspices of the District Board, every State Department did what it could to make it a success. Demonstrations in several industries, such as glass-making, nib and pencil manufacture, lac manufacture, etc., were given. During the 30 years' interval between these two exhibitions, however, the State has participated in several exhibitions in India as well as outside by sending representative exhibits of State products. Baroda exhibits were sent to London on four occasions (1884-85-86-95), and also to Mysore (1908), Nagpur (1908), Lahore (1909) and Allahabad (1911) exhibitions.

79. In 1892, under the presidentship of Mr. Bruce Foote, a committee was appointed to work out the details of a Museum and in 1894 the foundation for the State Museum at Baroda was laid. In the beginning, the services of an expert from England were engaged to purchase samples and arrange them. The collection was at first located in the Central Pavilion in the Public Park; and in about 1898, when the present building was ready, it was transferred to it. The building has since a few years been found to be insufficient for the growing collection, so another wing has been built for the Picture Gallery.

80. The Museum is divided into two sections—Science and Arts. In the Science section, Geology and Biology Departments *Its further development.* are well equipped and are a great help to the students of the Baroda College. In the Arts section, there is a special wing for Baroda Industries. This collection, however, is not complete and some more exhibits of Baroda economic products are needed. A Committee has been recently appointed to suggest the lines of development of the Museum. It has been proposed that a special Industrial section may be added and that suitable charts, maps, working models, etc., may be purchased. It is very likely that the proposal of the Committee will be accepted.

81. In the Museum, a small Sales Depôt of local Art industries has been *Sales Depôt.* recently opened, and a beginning has already been made in the direction of purchasing the best products turned out by artisans of different places in the State.

PART V:

INDUSTRIAL PROBLEMS OF THE BARODA STATE.

FUTURE WORK.

82. Looking to the natural resources of the State, it is possible to develop the industries mentioned in (Ex. VIII). Some of the industries, such as, cotton and oil mills appear feasible as there is an ample supply of raw materials, and suitable places for the location of factories. It requires however good business men to organise them. It is possible to introduce other industries also, such as wood distillation, alkali manufacture, manufacture of china-ware; but before these can be confidently recommended, some investigations and experiments on a small scale will have to be conducted. Only after they are found to be profitable could the public be asked to undertake them.

I.—Industries that could be developed.

In such inquiries, it will be necessary to engage experts in different lines; and in some of them experiments on a small scale will have to be carried out.

Besides the industries suggested above, it is quite possible to introduce some other industries also though these may be dependent upon raw materials that may have to be imported, such as hosiery, calico printing, saddlery and shoe-making, manufacture of tin and hollow-ware, etc. These also will require thorough preliminary investigation. In such cases besides local inquiries, it would always be best to consult experts in foreign countries who might collect information about machinery, etc., and render us careful and proper advice. This method of enquiry, though costly, will save the people unnecessary trouble and risk. Some of the important institutions like the Society of Chemical Industry, the Institute of Civil Engineers, the American Society of Mechanical Engineers, and some of the important universities and technical colleges, may also be addressed and arrangements made through them.

83. The Bank of Baroda, Ltd., is the only commercial bank in the State.

It has two branches: at Naosari and Mahesana; which however do no other work than receiving deposits and doing the Hundi business. All loans are negotiated only at the head office. Therefore, merchants living in the districts and taluka towns hardly get any advantage of the bank. Only those who want a fairly large amount and who are prepared to give some kind of tangible security can secure loans, so the small business and the small industry are outside the range of the bank's influence. The bank has no agents or shroffs in the districts who could enquire into the credit of the people or guarantee loans if found necessary. It is urged on the other hand that it does not pay this bank to do small business in the districts; and that if it does so, it will have to engage a better paid staff whose expenses would be too heavy for the bank. The result is that the small man does not get any assistance and the bank has to invest about three-quarters of its funds out of the State. Hence, it should be said that although the bank has rendered very good help to almost all the large industries, it has not been able to "democratise credit" or meet the wants of the merchants of the State. Therefore, it is

II.—Adequate Banking Facilities.

proposed that small banks should be organised in some of the important district or taluka towns with the help of local leaders. The State could pass a special Banking Act and render some help in the beginning. The Bank of Baroda will then serve the purpose of a central bank for these taluka banks balancing their funds and supplying credit where necessary. Certainly there are difficulties in organising and working small banks; for instance, there will be a strong opposition from the Shroffs, who are generally leaders in towns. It might also be difficult to get suitable directors and good management, but if local trade and small industries are to be developed, small banks are absolutely necessary.

84. Warehouses are needed at several places. When banking facilities are available, warehouses should be opened at important trade centres. The Bank of Baroda has been found unwilling to build any, and if private warehouse companies are started, their certificates would not be accepted by banks as security for loans. The State ought to build some warehouses of its own at one or two trade centres; since these will help small local merchants as well as the industries. In absence of such facilities the raw products are shipped to ports as soon as they are in the market, the result being that the trade is spasmodic and the small industry has no opportunity of supplying its needs.

III.—Bonded warehouses.

85. (a) The present staff of the Kala-bhavan is poor and should be strengthened. Men with higher qualifications both in theory and practice ought to be engaged. More intimate co-operation is required between the Technical Institute and the Department of Industries. The equipment of the Chemical Laboratory should be improved. Arrangement should be made for complete quantitative and qualitative analyses of industrial products. The Department of Chemical Technology should have a full equipment of machinery for experiments on a small scale.

IV.—Technical Education.

(b) More mono-technic schools should be opened in the districts—carpentry, smithy, weaving, dyeing, etc.

(c) Manual Training should be made compulsory in all the better-class primary schools; specially in all the towns and important villages.

At present there are only six manual training classes attached to the vernacular schools. This number is obviously negligible. It should be the ambition of the State that every fair-sized school should have a manual training class. This is essential for developing the aptitude of the people for mechanic arts.

86. (a) Forest industries are neglected. Efforts should be made to grow special varieties of trees, such as *semrie* for matches, in reserved localities.

V.—Forest Industries.

(b) A thorough survey should be made to find out what forest industries could be developed, such as the extraction of tannin, distillation of wood and manufacture of charcoal by improved methods. The Department should adopt a

more active policy both in the planting of special varieties of trees and the utilisation of the waste products.

87. No Industrial exhibition has been held in the State since a long time. One should be held immediately after the war, and thereafter at regular intervals, of say every three years. Such periodic exhibitions could with advantage be held in each of the four districts by rotation.

VI.—Industrial Exhibitions.

88. Promising young men should be sent to foreign countries to be trained in important industries some of which are as follows :—

VII.—Industrial Scholarships.

Chemistry —Oils and Fats.
 „ Alkalis.
 „ Wood Distillation.

These men should not only be trained at first class universities but they should also work in factories for three or four years, after finishing their college course.

89. A fully equipped Technical Library should be organized at Baroda and a complete set of books and magazines on industries that it is possible to develop should be specially kept.

VIII.—Technical Library.

90. Instead of having industrial surveys of a general nature, surveys of important towns and industries should be made by the present staff of the Department of Commerce, and industrial surveys should be made by experts specially engaged.

IX.—Industrial Surveys.

91. An Industrial section should be organised in connection with the Baroda Museum. It should consist of the following sections :—

X.—Industrial Museum.

- (a) Agriculture : Farm products and machinery.
- (b) Forestry : products and their uses.
- (c) Industrial arts of Baroda.
- (d) Industries :
 - (1) Natural resources and raw materials.
 - (2) Their Industrial uses.
 - (3) Information regarding other industries, with the necessary charts, maps, models, etc. A first class chemist should be placed in charge of this section, who can test the raw materials, conduct experiments, reply to industrial inquiries and give regular lectures and demonstrations on industrial subjects.

92. Bulletins and leaflets on various industries should be prepared and published specially in the vernacular and magazines and journals on leading industries should be subscribed to and should be made available to the public.

XI.—Publications.

**INDUSTRIAL PROBLEMS FOR DEALING WITH WHICH
CO-OPERATION FROM THE BRITISH GOVERN-
MENT IS NECESSARY.**

93. About 10 to 15 thousand tons of salt forms every year in the creeks of Dwarka in Kathiawar, and with further improvement about 60 thousand tons could be obtained. A very small quantity out of this is sent to Zanzibar, but the rest is washed away by rains. Baroda Government have been writing to the Government of India to permit them to export salt to the Indian ports on payment of the usual import duties, that is to say, to treat them on the same basis as the foreign importers. This request has been negatived on the ground that such trade might encourage smuggling and the Government revenue might suffer. However, some arrangements could surely be made by which this raw material could be saved.

XII.—Export of Salt.

94. The Alembic Chemical Works, Ltd., of Baroda are manufacturing alcohol; and are exporting spirituous preparations to British territories. But before these can be sent out, they have to be first sent to Bombay under the Excise Rules. In this way, unnecessary and heavy freight charges have to be incurred. Therefore, permission is required by them—

- (1) to warehouse spirituous preparations in Baroda Camp;
- (2) to denature spirit in their own factory under the supervision of the Baroda Government as directed by the British Excise Department;
- (3) to export spirit and spirituous articles in bond to large places on the coast as well as to places outside India.

XIII.—Export of Alcohol.

95. There are three important rivers in Gujarat, namely, Tapti, Narbada and Ambica with Surat, Broach and Billimora as their seaports. With some improvements, they could be made navigable and very good forest and other traffic could be tapped by them. The rivers pass through British and several Native State territories. It is suggested that the States concerned and the British Government may make a joint preliminary survey.

XIV.—River Improvements.

96. In connection with the rivers mentioned above as well as some others, it is possible to develop large irrigation as well as hydro-electric works. This cannot be undertaken without the co-operation of the British Government.

BARODA,
1st September, 1916.

MANILAL B. NANAVATI,
Director of Commerce and Industries,
Baroda State.

BULLETIN No. I.

EXHIBIT I.

**MINERAL RESOURCES
OF THE
BARODA STATE.**

NOTE.

*For further information
on any of the minerals
mentioned in this Bulletin,
the Director of Commerce
and Industry,
Baroda State, Baroda,
may be referred to.*

I.—METALS.

No.	Material	Locality, etc.	Nearest Ry. Station or Port.	Quantity.	Industrial Value.	References.	REMARKS.
1	Iron	Naroli Nahni—bed of the Laterite ridge, Velchha Taluka, Naosari District.	Velachha	An abundant supply of moderately rich ore.	Smelting Works	Foot's Geology of Baroda, pp. 72; 112.	
2	„	Bank of the Tapti, near Vajpur and Songadh, Kamrej Taluka, Naosari District.		An immense quantity of rich Magnetic Iron Sand.	Do.	Do.	
3	„	In eocene rocks about half a mile to the south of Vijapur, Vijapur Taluka, Kadi District.	Vijapur	A thin small bed ..	Nil.	Iyer's Mineral Resources of Baroda, p. 104.	
4	„	Bed of Hematite iron near Phudhera.	Vijapur .. ..	.....	Nil.	Do. p. 104 ..	
5	„	Hematite in lenticular patches in Achali Hills, near Achali in Sankheda Taluka, Baroda District.	Jojwa	Very small outcrop ..	Nil	Iyer's Mineral Resources of Baroda, p. 105.	
6	Silver	On the bank of the Tapti river near Ghala, Kamrej Taluka, Naosari District.	Sion or Kim	Quantity remains to be determined.	Percentage is very small in the clay found on the surface.	.....	Further investigations are to be made.
7	Gold	In the high bank of the Heran river a little S. E. of the small village Sigam 6½ miles S. E. by S. from Sankheda, Talukas, Sankheda, Baroda District.	Sankheda Bahadarpur.	Traces	Nil	Foot's Geology of Baroda. pp. 37; 115. Iyer's Mineral Resources of Baroda p. 100.	The quantity is too small to justify any attempt at mining for it. Mr. Iyer suggests to make trials near Songir, Londra and Sigam all in the Sankheda Taluka.

II.—CHEMICALS.

No.	Material.	Locality, etc.	Nearest Ry. Station or Port.	Quantity.	Industrial Value.	References.	REMARKS.
1	Iron Pyrites ..	On the Bank of the Tapti river, near Ghala, Taluka Kamrej, Naosari District.	Sion or Kim ..	Large quantity is expected.	Good for the manufacture of crude sulphuric acid and other kindred trades.	....	Further investigations are necessary.
2	Bauxite ..	Kuranga, Okhamandal, Amreli District.	Only 1½ miles from the creek.	A bed 1½ inch thick.	Manufacture of Alum.	Iyer's Mineral Resources of Baroda, p. 11.	"General prospecting work of bauxite should be undertaken." IYER.
3	Seaweeds ..	Near the low cliffs on the Dwarka Coast, Okhamandal Taluka, Amreli District.	....	A few tons ..	The ash of the burnt weeds contains "traces of Iodine" and 5-53% of Potash."	Do. pp. 70 (a) and (b) ..	Experiments are being made to find out the quantity of Iodine.
4	Salt ..	(1) Creeks near Bhimrana, Rajpura and Charkla in Okhamandal, Amreli District. (2) Near Mul-Dwarka in Kodinar Taluka, Amreli District.	Dwarka Port .. Mul-Dwarka Port ..	500 tons near Rajpura, 5,300 tons in Bhimrana Creek, 4,300 tons at Charakla annually. With a little improvement the formation could be increased several times. The deposits are formed naturally by the evaporation of seawater that accumulates in the creeks.	Material for the manufacture of Soda and bleaching powder.	Do. pp. 58;70.	

II.—CHEMICALS—*contd.*

No.	Material.	Locality, etc.	Nearest Ry. Station or Port.	Quantity.	Industrial Value.	References.	REMARKS.
5	Natural Soda ..	(1) Mev and Khookas, in Mehsana Taluka and Kada in Visnagar Taluka and various other places in the Kadi District.	Mehsana. ..	The extent of the Alkali ground is nearly a sq. mile near Khookas. The aggregate area in the district is likely to be several miles.	The refined soda may be used in the manufacture of glass and soap and also for washing purposes.	Iyer's Mineral Resources of Baroda, pp. 48;58.	....
	....	(2) Rajpura and Tupni in the Okhamandal Taluka, District Amreli.	....	In small areas.	.....	....	....
6	Fuller's Earth ..	(1) Kurunga, Okhamandal, Amreli District.	Dwarka ..	A layer 8" thick. ..	"This substance yields a soft absorbant powder and that it should make a good Fuller's earth." Mr. Faucett, of the Tata's Research Institute.	Do. p. 12 ..	....
	....	(2) Naroli Nahani, Velachha Taluka, District Naosari.	Velachha ..	Some deposits of highly arenaceous clayey substance.	Do. do.	Do. p. 12. ..	"This deposit should be tested for Fuller's Earth." IYER.

III.—GLASS, PORCELAIN, FIRE-BRICKS, ETC.

No.	Material.	Locality, etc.	Nearest Ry. Station or Port.	Quantity.	Industrial Value.	References.	REMARKS.
1	Sandstone ; sand.	Fine grained stone is found on the right bank of the Sabar-mati near Pedhamali. The coarser grained stone under the above series at this point is noted in several of the cross valleys called Kothaps.	Vijapur	Large quantity ..	A fine grained sandstone can be used in the manufacture of bottles and bangles. It is also suited as a moulding material for foundry work. Can also be used as blasting sand. The coarser grained stone may be used for the manufacture of sheet and plate glass. The occurrence of China clay at Vijapur (5 miles) will enable various mixtures to be prepared suitable for several clay-industries, as fire bricks, glass pots and other refractory wares, besides porcelain.	Iyer's Mineral Resources of Baroda, pp. 16, 21, 10, 26.	The coarser kind of Sandstone of Pedhamali is as good as that of Fontainbleau, which is considered the purest sand for glass manufacture.
2	Sand	The Orsang river bed near Bahadarpur—Sankheda, Baroda District.	Bahadarpur	Any amount ..	Though not a good material for manufacture of glass, it may be tried at least for wine-bottles. It is considered good for sand bricks.	Do. pp. 22-23 ..	
3	"	Bed of the Vatrak river at Mandwa in the Atarumba Sub-Taluka, Dehgam Taluka, Kadi District.	Nadol Dehgam	Any amount ..	This is locally used for the manufacture of glass.	Foote's Geology of Baroda, p. 134.	

III.—GLASS, PROCELAIN, FIRE-BRICKS, Etc.—*contd.*

No.	Material.	Locality, etc	Nearest Ry. Station or Port.	Quantity.	Industrial Value.	References.	REMARKS.
4	Sand	Dwarka and Aramra beach.	Dwarka and Aramra.	Any quantity ..	The Silica content is low and calcium carbonate forms the main constituent. It may be tried for the manufacture of wine-bottles.	Iyer's Mineral Resources of Baroda, p. 23.	
5	Quartz sand ..	2½ miles S. E of the Sankheda Fort and close to the right bank of Unch river.	Bhadarpur-Sankheda.	A small ridge exposed for a couple of hundred yards.	Materials for glass and China manufacture.	China Foote's Geology of Baroda, pp. 28 ; 120.	
6	China Clay ..	On the right bank of the Sabarmati river about a mile to S. E. of the village of Ransipur, Vijapur Taluka, Kadi District.	Vijapur	Known extent of the deposit is 975 feet by 170 ft., average thickness 3 feet. Quantity available 27,000 tons. Extensive deposits are likely to be found in the vicinity.	Raw material for the manufacture of fire-bricks, glass pots, porcelain and various clay-products. Also useful for Portland cement industry if pure limestone is available in the neighbourhood.	Iyer's Mineral Resources of Baroda, pp. 1 ; 8 ; 44.	

IV.—CEMENT.

No.	Material.	Locality, etc.	Nearest Ry. Station or Port.	Quantity.	Industrial Value.	References.	REMARKS.
1	Calcareous material for cement manufacture.	In the bed and bank of the River Kim, in Velachha Taluka, Naosari District.	.....	Large quantity	.. It is a stone good for the manufacture of natural cement and also hydraulic lime. Can be used also as a ballast or road metal.	Foot's Geology of Baroda, p. 133. Iyer's Mineral Resources of Baroda, pp. 35; 42.	
2	Do.	Coral limestone near Aramra reef, Okhamandal Taluka, Amreli District.	Dwarka Port ..	.....	Good for manufacturing lime and also Portland cement.	Foot's Geology of Baroda, p. 180. Iyer's Mineral Resources of Baroda, p. 43.	
3	Do.	Gopi clay in the sacred tank of Gopi or Rajpura. Cliff sections to S. W. of Beyt Island, Okhamandal Taluka, Amreli District.	Dwarka Port ..	A large area round about Rajpur.	Material for hydraulic lime and cement.	.....
4	Do.	Segar quarry stone near Dwarka, Rupen Khadi.	Dwarka Port ..	Large quantity	.. Limestone and clay found near Dwarka, are good materials for the manufacture of cement.	Mr. H. W. Anderson's special report.	
5	Milfolite	.. Harmadia, Adavi, Dolasa, in the Kodinar Taluka.	A few miles from the Velan port, on the Kathiawar Coast.	Practically inexhaustible.	Stone similar to Porbander stone and can be sewn. Also useful for the manufacture of Portland cement.	Foot's Geology of Baroda, p. 176. Iyer's Mineral Resources of Baroda, pp. 80; 85.	

V.—COLOURWASH, PIGMENTS & COLOURS.

No.	Material	Locality, etc.	Nearest Ry. Station or Port.	Quantity.	Industrial Value.	References.	REMARKS.
1	Yellow and Red Ochres.	(1) Near Ransipur, Vijapur Taluka, Kadi District.	Vijapur	Large quantity ..	For the preparation of mineral paints and ultra-marine colour and flooring and roofing tiles.	Iyer's mineral Resources of Baroda, p. 7.	
		(2) In Ghalla village, near Kathore in Kamraj Taluka, Naosari District.	Sayan	"	Do.		
		(3) Near Nahni Naroli, Taluka Velachha, District Naosari.	Velachha	Good quantity ..	Do.		
2	Red-marls	Eastern Coast of Okhamandal Taluka, Amreli District.	....	"	Material for bright colourwash.	Foote's Geology of Baroda, p. 180.	

VI.—MARBLE STONES.

No.	Material.	Locality, etc.	Nearest Ry. Station or Port.	Quantity.	Industrial Value.	References.	REMARKS.
1	Marble	Near Motipura, Sankheda Taluka, Baroda District.	Motipura .. ..	....	It is dark green, white and pale-pink, most beautiful marble in India. There is a complete set of quarrying machinery to work the marble.	Footo's Geology of Baroda, pp. 26, 119. Iyer's Mineral Resources of Baroda, pp. 77 ; 88.	A railway passes by Motipura. The stone can be conveyed cheaply to Baroda and other neighbouring places.
2	Do.	Near Wadeli, Sankheda Taluka, District Baroda.	Chuchapura .. ..	....	Marble of very great beauty and delicacy.	Footo's Geology of Baroda, p. 120.	Do.
3	Do.	In the bed and banks of the river Heran, near Sandhara, Sankheda Taluka, Baroda District.	Sankheda-Bahadarpur.	....	Beautiful pink marble for flooring purposes.	Footo's Geology of Baroda, pp. 35, 121, 122. Iyer's Mineral Resources of Baroda, p. 93.	
4	Do.	1½ miles E. S. E. of Pipalwa and 4 miles S. of Lapala Hills. Dhari Taluka, Amreli District.	Dhari or Chalala .. ..	....	Stone coloured mottled buffy white and grey which could be dressed and polished into a handsome marble.	Footo's Geology of Baroda, p. 174.	

VII.—BUILDING STONES.

No.	Material.	Locality etc.	Nearest Ry. Station or Port.	Quantity.	Industrial Value.	Reference.	REMARKS.
1	Granite	Near Virpur in the bed and banks of Sabarmati river, Vijapur Taluka Kadi District.	Vijapur	A small area 2½ miles long from N. to S. in its extreme length.	Pale-pink to greyish pink stone of great durability, remarkable for its intrinsic beauty, capable of being quarried in large masses and susceptible of very high polish.	Foot's Geology of Baroda, pp. 22, 23, 117.	
2	Do.	Bed and bank of the Orsang river at Bhulvan and Motipura, round about Bodeli, Sankheda Taluka, Baroda District.	Motipura	6½ miles from N. to S. and from 2 to 4½ miles from E to W. and 40 to 50 feet above the alluvial flat.	Decorative stone of considerable beauty. Ordinary building stone of great strength and excellent quality. Also road metal.	Foot's Geology of Baroda, pp. 24, 128. Iyer's Mineral Resources of Baroda, p. 97.	A railway runs along close to the granite area. The stone can be conveyed cheaply to Baroda and other neighbouring places.
3	Gneiss	(1) Near Jojwa Sankheda Taluka, Baroda District.	Jojwa .. ..	.....	Do.	Iyer's Mineral Resources of Baroda, pp. 98-99.	
		(2) 1½ miles to the S. E. of Tandalja in the bed of water course, Sankheda Taluka, Baroda District.	Bodeli	Abundant	Very useful for flooring, as slabs of 3" to 4" thick can be quarried.	Do. pp. 98-99.	
4	Quartzite	(1) Near Lachharas, Sankheda Taluka, Baroda District.	Indrol on Motipura-Tanakhala Railway under construction.	Practically inexhaustible supply.	Stone useful for foundations, dams, weirs, etc., also a good building stone, but unsuitable for architectural and decorative work.	Foot's Geology of Baroda, pp. 31, 122, 123. Iyer's Mineral Resources of Baroda, p. 96.	
		(2) The hills to the north of Achali, Sankheda Taluka, Baroda District.	Jojwa .. ..	.....	Slab stones 1" to 3" thick for flooring and also stones 6" to 9" thick for heavy masonry work.	Do. p. 95.	

VII.—BUILDING STONES—*contd.*

No.	Material	Locality, etc.	Nearest Ry. Station or Port.	Quantity.	Industrial Value.	References.	REMARKS.
5	Basalt	Most of the Talukas of the Naosari District.	....	....	Building stone, Road metal.	Foot's Geology of Baroda. pp. 57 to 64, 128.	
6	Do.	About 3 miles from Amreli Town in Tankshar quarry at Gavadka, 5½ miles S. W. of Amreli, Amreli Taluka and Amreli District.	Amreli	Any Amount	Good stone for building purposes.	Do. p. 172.	
7	Do.	At Katma, Akadia Mota and Jalia, Amreli Taluka, Amreli District.	Gavadka .. ..	....	Valuable stone of great strength and durability and of pleasing colour.	Foot's Geology of Baroda, p. 73.	
8	Do.	S. E. of Rupavati Tappa of Damnagar Taluka, Amreli District.	Damnagar .. ..	....	Excellent material for pillars, bases, steps, panels and other architectural work.	Do.	
9	Do.	In the bed and banks of Dev River near Waghoria, Baroda District.	Waghodia .. ..	....	Rubble stone for building purposes.	....
10	Laterite	At Kurel in Mahuva Taluka, Naosari District.	Naosari .. ..	....	Building stone. It lends itself well to being cut and dressed; also good for road-metal.	Do. pp. 81; 132.	
11	Do.	Near Gandevi in Naosari District.	Gandevi .. ..	....	Lateritic clay suitable for Mangalore tiles.		

VII.—BUILDING STONES—concl'd.

No.	Material.	Locality, etc.	Nearest Ry. Station or Port.	Quantity.	Industrial Value.	References.	REMARKS.
9	Miliolite	Harmaria, Adavi, Dolasa, in Kodinar Taluka, Amreli District.	A few miles from Port Velan on the Kathiawar Coast.	Practically inexhaustible.	Stone similar to Porbandar stone and can be sewn. Also useful for manufacture of Portland cement.	Foote's Geology, p. 76. Iyer's Mineral Resources of Baroda, pp. 80; 85.	
10	Limestone	(1) At and to the south of Rajpura Bunder on the south side and Beyt Harbour. (2) South of Bardia, Okhamandal Taluka, Amreli District.	.... One mile from the Gomti creek.	.... ....	Building stone, fine grained and of pleasing appearance. Building stone of pleasing pinkish yellow colour, suitable for decorative purposes.	Foote's Geology of Baroda, pp. 163, 179. Do. pp. 164, 180.	It would make a very pretty yellow marble, very suitable for vases, slabs, pedestals and other ornamental objects.
11	Sandstone	(1) Near Songir, on the left bank of the Heran river, also S.W. of Parvat and eastward of Lachharas, Sankheda Taluka, Baroda District. (2) 2½ miles south of the village of Amroli, Sankheda Taluka, Baroda District. (3) At Pudhera in Vijapur Taluka, Kadi District.	Sankheda - Bahadarpur, at present, Indrol on M. T. Railway under construction. Amroli Vijapur	Practically inexhaustible supply. Not known Large quantity	Valuable building stone. Also good stone for hand mills. This stone is far superior to any sandstone, viz., Dhangadhra or Ahmadnagar or Khumaj. Waste of stone can be used for manufacture of glass and for Dinas bricks. Building stone of fairly good quality. Slabs, pillars, water troughs, etc., may be made. The stone may be sewn into bricks, burnt and tried as fire-bricks and refractory blocks and be made into similar objects of a refractory nature.	Foote's Geology of Baroda, pp. 43, 124, 127. Iyer's Mineral Resources of Baroda, pp. 90, 93, 21, 22, 26. Foote's Geology of Baroda, p. 127. Foote's Geology of Baroda, pp. 67; 130. Iyer's Mineral Resources of Baroda, pp. 86, 89.	This sand is as good as the sand of Fontainbleau, which is considered the purest sand used in England for glass manufacture. This stone is soft enough to admit of being carved into ornamental objects.

VIII—MISCELLANEOUS MINERALS.

No.	Material.	Locality, etc.	Nearest Ry. Station or Port.	Quantity.	Industrial Value.	References.	REMARKS.
1	Agates ..	(1) In the Majham river, a tributary of the Watrak at Derdhapaori in Dehgam Taluka, Kadi District.	....	Large quantity ..	They are of considerable beauty, quite handsome enough to be well worth slicing and polishing.	Foote's Geology of Baroda, pp. 135, 139, 140, 181, 184.	
		(2) At Naroli Nahani in Velachha Taluka, Naosari District.	Velachha	Do.	Deposits (Agates) at Naroli Nahani contain large numbers of valuable agates heliotrope and coloured cherts. Materials for Lapidary's industry.	Iyer's Mineral Resources of Baroda, pp. 71; 77.	
		(3) At the North of Ghala in the Kamrej Taluka, Naosari District.	Sayan or Kim. ..	Do.	.....	.....
2	Gypsum ..	A mile westward of the village Kuranga, Okhamandal Taluka, Amreli District.	1½ miles from the creek. Dwarka.	Recent formation ..	For the manufacture of Plaster of Paris.	Foote's Geology of Baroda, pp. 16; 180.	

IX.—FISHERY PRODUCTS.

No.	Material.	Locality, etc.	Nearest Ry. Station or Port.	Quantity.	Industrial Value.	References.	REMARKS.
1	Chanks	From Manekpur to Adatra Point and thence to Poshitra and also around Beyt Harbour, Okhamandal Taluka, Amreli District.	Beyt Harbour	Quantity not known. The right to collect chanks is farmed out every year.	These are exported to Bengal where bangles and rings are made from them. They are also sold to pilgrims.	.....
2	Window Pane Oysters.	Balapur Bay and the area between Poshitra and the frontier, Okhamandal Taluka, Amreli District.	:.....	Quantity not known. The right to collect is every year leased out and brings in on an average Rs. 15,000 to the Government.	These yield very small pearls. They are generally exported to China where they are used for medicinal purposes. Some pearls are used in ornaments also.	.....
3	Real Pearl Oysters.	Reefs of Adatra, Borio and Mangunda, Okhamandal Taluka, Amreli District.	:.....	Quantity insignificant.	:.....	.....

BULLETIN No. II.

EXHIBIT II.

**FOREST RESOURCES
OF THE
BARODA STATE.**

NOTE.

For further Information on any of the forest products mentioned in this Bulletin, the Conservator of Forests, Baroda State, Baroda, may be referred to.

I.—TIMBER SPECIES—*contd.*

Serial Number.	Species.	Vernacular names.	Commercial uses.	Quality.	Distribution.
17	<i>Odina Wodier</i>	Modal	Spear shafts, wheel-spokes, rice-pounders, cabinet work, sleepers for temporary lines.	Moderately hard	Fairly plentiful in Vyara Range, more abundant in Venkal and in Songadh Ranges and in smaller quantities in other Ranges.
18	<i>Pterocarpus pium.</i>	Marsu-Beeya	Furniture, cart and boat-building; beams, scantlings, door and window frames, etc., one of the chief building timber of the Central Provinces.	.....	In fair amount in all the Ranges.
19	<i>Schleichera trijuga</i>	Kosam	Oil and sugar mills, rice pounders, agricultural implements and carts; one of the best charcoal wood.	Very strong and durable, but do not last well in water.	Only fairly common in Sadedvel Range and much less in other Ranges.
20	<i>Soymida febrifuga</i>	Royan	Furniture, construction of well-work, plough shares, oil-mills.	A very hard dark reddish brown wood ..	Very common in Sankheda and nearly absent in other Ranges.
21	<i>Stephegyne parviflora.</i>	Kalam	Building, furniture, combs, cups, spoons, platter and small articles of turnery.	Moderately hard and durable if not exposed to wet.	Fairly plentiful in Vyara along the banks of nallas as well in Songadh, Vajpur and Sadedvel.
22	<i>Tectona grandis</i>	Teak; Sag	Ship-building, railway carriages, house-building, carpentry and furniture.	"Teak." Moderately hard and durable. The wood of our Forests and that of the Dangs is much better as regards hardness and durability than that of Malabar.	One of the principal species of our Forests. Its best growth is in Vyara, Songadh and Sadedvel Ranges.
23	<i>Terminalia belerica</i>	Beheda	Planking, packing cases, canoes, coffee boxes.	Hard, durable under water.	In very small quantities in every Range.
24	<i>Terminalia tomentosa</i>	Sadra, Sadad	Beams and rafters, scantlings and planking for houses, bridges, carts and furniture.	Hard and durable.	One of the principal species of our Forests. It is very abundant in Vyara, Vajpur and Songadh, where it attains a good height and girth.

(B) Minor :

II.—TANNING AND DYEING MATERIALS.

1	Acacia arabica	Babul ; बाबुल.	.. Bark and pods .. ..	.. The most extensively used bark in India for tanning; brown dyes are produced from the bark.	Common in Vyara, Sankheda and Vankal Ranges; and in fair quantities in other Ranges, generally round about cultivation.
2	Acacia leucophlaca	Anyar ; अण्यार.	.. Bark .. ..	.. The most extensively used bark in India for tannin; the bark gives a black or red dye.	Very common in Sankheda Range.
3	Acacia catechu	Khair ; .. खैर.	.. Boiling chips of wood .. ..	.. This species is found in several parts of India. An extract made by boiling the wood in water is still largely used in dyeing. Catechu is exported to Europe for use in dyeing and tanning. Catechu may be applied to all fibres, though it is most largely used for dyeing cotton. The usual method of dyeing cotton consists in boiling the goods with an extract of catechu with the addition of copper sulphate, the weight of the copper salt being 10 per cent. of the weight of the colouring matter. The goods are squeezed, allowed to stand for a short time and then boiled in a fresh hot bath containing 2 per cent bichromate of potash, washed and dried. Catechu brown is one of the fastest colours known.	Plentiful in Vyara and Vankal Ranges as well in Songadh, Sadedvel and Gir and Sankheda.
4	Bauhimia racemosa	Asintra ; असिना.	.. Bark .. ..	.. The bark yields a red dye which is largely associated with tannin. The dye is not very bright, but nevertheless it may be employed for dyeing dull reds on cotton without the help of any mordant. Cotton seems to have an affinity for it. Faster results are obtained on alumina or tin mordant. Its bark is said to be used in Burma for obtaining a dull black colour on cotton. For this purpose the cotton is dyed direct in an infusion of the bark and is then worked in mud, whereby the dull red colour is changed into a black. The bark can be had in any quantity and may be of service to tent manufacturers who require a dull red colour for the inside of tents.	Plentiful in Vyara, Songadh and Sadedvel Ranges; in fair quantities in other Ranges.

II.—TANNING AND DYEING MATERIALS—*contd.*

Serial No.	Species.	Vernacular names.	How obtained.	Quality.	Distribution.
5	<i>Butea frondosa</i>	.. Khakher ; ખાખર.	.. Flowers .. ..	.. In the United Provinces, the dye extracted from the flowers is still largely used by villagers for sprinkling on their persons as a mark of festivity at Holi festival, about which time the tree is in full bloom. The dried flowers are, however, available throughout the year. The flowers contain a yellow brown to dull crimson according to the mordant used. The dyeings are fairly fast to milling.	Extremenly abundant in almost all the Ranges of the Forests of this State.
6	<i>Cassia auriculata</i>	.. Aavel ; આવળ.	.. Bark .. ..	.. Bark of the most valuable tans in India. Gives a buff colour to leather. In Madras Presidency this plant fetches a large Revenue to the Forest Department. In Gir forests of this State it is also called Rangari by the "Chammars" of Kodinar, who know the art of extracting a dye from this.	Found in Gir and Sankheda Ranges.
7	<i>Casulpinia sepiara</i>	.. Chilari ; ચીલારી,	.. Bark .. ..	.. Used for tanning	Found in Vyara, Songadh, Sadedvel and Vijpur Ranges. In creeper cutting operation may have been cut away.
8	<i>Indigojera tinctoria</i>	.. Gulee ; ગુલી.	.. Leaves .. ..	.. A blue dye is extracted.	Found especially in Gir in abundance and in other Ranges.
9	Lac dye ..	.. Lakh ; લાખ.	.. From the encrustations formed by the lac insects on certain trees.	.. The substance is of animal origin. It is the product of a small insect called <i>Coccus lacca</i> which lives on the twigs of certain trees such as khakher, pipal, ber and kosam. The incrustation produced by these insects on the twigs of the trees consists of (1) resinous matter, (2) colouring matter. The colouring matter is dissolved out by means of water or a weak alkali, the resin being left behind. The latter on melting and straining through canvas cloth constitutes shellac. The colouring matter is precipitated from its solution by means of alum and is	.....

					afterwards pressed into cakes and sent out either for export or for sale locally. Lac dye is dyed on wool chiefly on tin mordant. It yields beautiful scarlet and crimson shades.	
10	<i>Morinda tinctoria</i>	Aal or Aalee; आल, आली.	Bark of the root	..	Largely used for dyeing red and yellow in several places in India.	In abundance in the Vankal Range and in smaller quantities in Gir, Vyara and Sankheda and other Ranges.
11	<i>Odina wodier</i>	Moddel; मोदल.	Bark	..	A brown tan	Fairly plentiful in Vyara Range and more abundant in Songhad Range, especially in Mogran forests, also in other Ranges.
12	<i>Phyllanthus emblica</i>	Aamla; आमला.	Bark and fruits	..	Fruits called emblic myrabolans which are rich in tannin and are used for tanning and dyeing.	Most abundant in Sadedvel Range; common in Vyara, Vankal, Songhad and other Ranges.
13	<i>Symida febrifuga</i>	Roinee; रोनी.	Bark	..	For tanning	Plentiful in Sankheda Range, especially in Wardella forests, where a pure big patch of this species exists.
14	<i>Terminalia tomentosa</i>	Sadad or Nadra; सादरा.	Bark	..	Used for dyeing leather black	One of the principal species of the forest. (1) Very common everywhere.
15	<i>Zyziphus xylopyra</i>	Gutt Board	Fruit	..	Used in tanning to give a black dye to leather	Common all over the forests of this State.

III.—EDIBLE PRODUCTS.

1	<i>Cordia myxa</i>	Goondi	Fruits	..	.....	In small quantities in Vyara, Songadh and Sadedvel and other Ranges.
2	<i>Feronia elephantina</i>	Kavath, kot; कावठ, कोट.	Fruit	..	Pulp of the fruit is made into a jelly wood apple	Scarcely found in the forests; generally cultivated in the gardens.
3	<i>Eugenia Jambolana</i>	Jambool; जाम्बूल.	Fruits	..	Astringent, but not at all bad in tarts and puddings.	Fairly common in Sadedvel, Songadh and Vyara and other Ranges.
4	<i>Bassia latifolia</i>	Mahwa Mhowra or Mahuda. मोहवा.	Flowers	..	The corollas of these flowers are eaten fresh or dried, ground and mixed with flour for bread or are distilled into Mahwa spirit, an intoxicating liquor.	Common in Vyara, Songadh, Sadedvel and Vajpur and other Ranges.

III.—EDIBLE PRODUCTS.—*contd.*

Serial No.	Sp. oies.	Vernacular names.	How obtained.	Remarks.	Distribution.
5	Morinda tinctoria	Aal or Ales, આળ, આળી.	Fruits	Used as vegetable by the Raniparaj people	Very plentiful in Vankal and in smaller quantities in Gir, Sankheda, Vyara and other Ranges.
		Gogda, Gogdi; ગોઘડી.	Do.	Do. do.	Very plentiful in Vyara, Songadh and Sadedvel Ranges, and also elsewhere.

IV.—PLANTS WHICH ARE USED AS DRUGS.

1	Acacia leucophlaca	Anyur; આણીયાર.	Stem	Gum. Resembles gum-bassora.. .. .	Very common in Sankheda Range.
2	Aegle quicirmelos	Beelco	Fruits	For diarrhoea and dysentery	Very common in Gir, Sankheda and Vankal Ranges and in fair quantities in other Ranges.
3	Ailanthus excelsa	Limbaro	Bark	Febrifuge and tonic in dyspeptic complaints	Not a forest species but planted in public gardens and along roads.
4	Albizzia Lebbeck	Saras	Seeds	Officinal, forming part of an Anjan used in ophthalmic diseases.	Found in all ranges scattered about.
5	Bombax malabaricum	Sammar, Semal; સામર, સેમર, સેમળ.	Bole roots	"Macharas" gum. Taken with milk as tonic	Found in fair quantities in Gir, Vyara, Songadh and other Ranges.
6	Butea frondosa	Khakher; ખાખર.	Bole seeds	Ruby gum "Bengal Kino," "Chimya Gond" used as astringent. Used as a vermifuge for elephants and horses.	The commonest species of the forest and found in great abundance.
7	Cassia fistula	Garmala; ગરમાળા.	Pulp of the pods	Strong purgative	Common in Vyara, Vajpur, Songadh and Sadedvel and other Ranges.

8	<i>Garuga pinnata</i>	.. Kakad ; કાકડ.	.. Bole .. ..	.. Gum	} Ditto.
9	<i>Grewia tilicefolia</i>	.. Dhaman ; ધામણ.	.. Bark .. ..	.. For dysentery	
10	<i>Holarrhena antidysenterica</i>	.. Inderjav ; ઇન્દરજવ.	.. Root and seeds ..	.. Powerful antidysenteric astringent, febrifuge, and anthelmintic properties.	Very common in Sadedvel, Songadh and Vajpur Ranges and also seen in Vyara and other Ranges.
11	<i>Pongamia glabra</i>	.. Karanj ; કરંજ.	.. Seeds .. ..	.. Oil. Valuable medicinal oil for skin diseases and rheumatism.	Generally found along the banks of nullahs and streams in Gir and Vyara and other Ranges.
12	<i>Pterocarpus marsupium</i>	.. Beeyo ; બીયો.	.. Bole .. ..	.. Gum "Kino" of commerce. A valuable astringent containing about 75 per cent tannic acid.	Common in almost all the Ranges.
13	<i>Soymida febrifuga</i>	.. Rohini ; રોહિની.	.. { Bole Bark .. ..	.. Affords a good mucilage Used as a febrifuge and stimulant	Plentiful in Sankheda Range, especially in Wordella Forest, where a pure big patch of this species exists.
14	<i>Cymbo poyan Martinu</i> (<i>Rusa grass</i>).	.. Rusa grass	.. By wet distillation process.	.. Used as a tonic and in cases of fever .. ..	.....

V.—OIL SEEDS.

1	<i>Scheichera trijuga</i>	.. Kosam ; કોસમ.	.. The oil expressed from the seeds.	.. Used locally for cooking and burning, and has been found suitable for soap-making.	Fairly common in Sadedvel Range.
2	<i>Gatropa curcas</i>	.. Ratanjot ; રતનજોત.	.. Do.	.. Oil. Lamp oil, transparent soaps and substitute for olive oil in dressing woolen clothes.	Cultivated in the villages round about the forest as hedges.
3	<i>Pongamia glabra</i>	.. Karanj ; કરંજ.	.. Do.	.. Oil. Used in medicine and also for lighting	Generally found along the edges of streams and nullahs in Gir, Vyara and other Ranges.

VI.—FIBRE-YIELDING PLANTS.

1	<i>Acacia arabica</i>	.. Babul ; બાબલ.	.. Bark of the slender twigs For coarse ropes and suitable for the manufacture of paper.	Common in Vyara, Sankheda and Vankal Ranges, and in fair quantities in other Ranges generally round about cultivation.
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VI.—FIBRE-YIELDING PLANTS—*contd.*

Serial No.	Species.	Vernacular names.	How obtained.	Remarks.	Distribution.
2	<i>Bauhinia racemosa</i>	Asintra .. અસિંત્રા.	Bark	Strong and durable rope	Plentiful in Vyara, Sangadh and Sadedvel Ranges; in fair quantities in other Ranges.
3	<i>Butea frondosa</i>	Khakher .. ખાખર.	Bark	Strong fibre for paper-making and cordage	Extremely abundant in almost all the Ranges of the forests of this State.
4	<i>Calotropis gigantea</i>	Ankado .. અંકડો.	Stems	Fibre found to bear 552 lbs. against 407 borne by some hemp and 224 lbs. borne by "coir." Suitable for paper-making.	Found outside the forest in open spaces.
5	<i>Cordia myxa</i>	Goondi .. ગુંદી.	Bark	Ropes and for caulking boats, fuses	} In small quantities in Vyara, Songadh or Sadedvel and other Ranges.
6	<i>Grewia titiaifolia</i>	Dhaman .. ધામણ.	Inner bark	For cordage	
7	<i>Helicteres isora</i>	Marda Singh or Medasingh or Attai મરાદાસીંગ, મેદાસીંગ, અટાઈ	Bark	Ropes, rough sacking, canvas, paper-making	Generally growing gregariously on tops of hills or in open spaces in the forests. Found everywhere in abundance.
8	<i>Pongamia glabra</i>	Karanj .. કરંજ	Bark	For felt	Generally found along the edge of the nullahs and streams in Gir, Vyara and other Ranges.
9	<i>Stephegyne parviflora</i>	Kalam	Bark	For cordage	Very common in Vyara Range and in smaller quantities in all other Ranges.
10	<i>Terminalia tomentosa</i>	Sadad or sadra ..	Bark	For cordage	Found in great abundance in almost all Ranges to a great size.

11	<i>Stereulia urens</i>	Kagdolee કાગડોલી	.. Bark	.. .. ..	Strong cordage fibres	Very common in shallow rocky soils. Seen in Vyara, Sadedvel, Vajpur and Songadh Ranges.
12	<i>Ougenia dalbergiodes</i>	Tanach	.. Bark	.. .. ..	Strong fibres, suitable for rope or rough cordage	Very plentiful in Sadedvel; in smaller quantities in Vyara, Songadh and other Ranges.

VII.—MISCELLANEOUS PRODUCTS.

1	<i>Andropogon muricatus</i>	Khus-khus grass; ખસખસ	Roots	.. ..	Yields from its roots a fibre which is made into aromatic scented mats hung over doors and windows and kept wet to afford coolness in the hot weather.	.....
2	<i>Anogeissus latifolia</i>	Dhamodo; ધામડો	.. Bole	.. ..	Gum extensively used in cloth-printing	Very plentiful in Songadh, Sadedvel and Vajpur Ranges.
3	<i>Bauhinia racemosa</i>	Asintra; અસિત્રા	.. Leaves	.. ..	Cheroot wrappers, used in country cigarettes as wrappers.	Plentiful in Vyara, Sangadh, and Sadedvel Ranges; in fair quantities in other Ranges.
4	<i>Dendro calumus stric- tus.</i>	Male bamboos; વાંસ	.. Culms	.. ..	Male bamboos, building, basket and mat work, walking sticks, lance shefts, etc.	In great abundance in Vajpur.
5	<i>Odina wodier</i>	Modal; મોધળા	.. Bole	.. ..	Gum used for paper-sizing, cloth-printing, in mixing with lime when white-washing.	Fairly plentiful in Vyara Range and more abundant in Songadh Range, especially in other Ranges.
6	<i>Diospyros melanoxylon</i>	Timru; ટીમરુ	.. Leaves	.. ..	Cheroot wrappers; used in country cigarettes as wrappers.	Plentiful in Sadedvel, Songadh and Vajpur and in other Ranges.
7	<i>Abrus precatorius</i>	Chanothee; ચાંઠી	.. Seeds	.. ..	Used as goldsmith's weight	Very plentiful all over.

Note.—Areas of different Forest Ranges.

				Sq. M.					Sq. M.
Naosari District	Vyara	..	..	98	Naosari District				
"	Songadh	..	..	123	"	Vankal	..	..	116
"	Vajpur	..	..	143	Kathiawar	Gir	..	..	71
"	Sadedvel	..	..	67	Baroda District	Sankheda	..	..	11

**EX.—III.—STATEMENT OF EXPORTS AND IMPORTS
(IN INDIAN MAUNDS) OF THE BARODA STATE.**

No.	Articles.	Export.	Import.	Inter-Provincial.	REMARKS.
1	Apparel	581	21,704	127	
2	Coal and Coke	149,913	1,068,475	1,776	
3	Cotton, raw	666,775	75,858	3,147	
4	Cotton, manufactured	65,269	135,390	3,043	
5	Chemicals excepting saltpetre	695	15,208	4	
6	Drugs	4,092	9,510	250	
7	Dyes and Tans	5,726	24,793	3,548	
8	Fodder	544,898	342,587	100,172	
9	Fruits and Vegetables, Fresh	70,559	64,150	15,002	
10	Grain and Pulse	424,798	3,656,464	34,773	
11	Hides and Skins	24,454	9,920	280	
12	Horns	1,817	96	....
13	Hemp and other fibres (excluding jute)	3,279	1,930	805	
14	Jute-raw, gunny bags and jute cloth	39,929	34,017	5,693	
15	Lac	3,005	66	....
16	Leather unwrought and wrought (excepting boots and shoes).	800	....	....
17	Liquors	3,091	9,197	24,746	
18	Metals	22,545	336,415	4,042	
19	Oils (including Kerosine)	40,503	146,020	3,848	
20	Oil-seeds	747,630	507,508	244,034	
21	Opium	4,054.7	1	....
22	Paper and paste-board	442	13,690	394	
23	Provisions	105,830	174,292	29,091	
24	Railway plant and Rolling Stock	197,534	262,781	15,162	
25	Salt	7,564	265,465	4	
26	Saltpetre and other salt substances	2,588	3,413	20	
27	Silk, raw and manufactured	11.31	7,269	....
28	Spices	14,977	118,788	997	
29	Mahuva flowers .. .. .	....	5,693	....
30	Sugar	96,637	499,038	37,551	
31	Tea	62	2,667	44	
32	Tobacco, unmanufactured and manufactured.	178,623	34,395	8,321	

EX.—III.—STATEMENT OF EXPORTS AND IMPORTS (IN INDIAN MAUNDS) OF THE BARODA STATE—*contd.*

No.	Articles.	Export.	Import.	Inter-Provincial.	REMARKS.
33	Firewood	307,892	....	....
34	Wood, Timber and manufactured ..	131,869	635,559	36,470	
35	Wool, raw and manufactured ..	13,662	629	5	
36	Ghee and Butter	14,580	6,164	....
37	Fish, fresh and salted	73,064	3,330	....
38	Cotton-seeds	15,498	182,758	....
39	Bricks, stones, lime	657,345	217,691	....
40	All other articles of merchandise ..	628,265	639,432½	....
	Total ..	23,270,854—38 +985 Rs. worth.	9,542,363	573,349	
	<i>Treasure.—</i>				
	Silver coins	} Rs. 629,875	} Rs. 1,122,904	} Rs. 120,104	
	Silver bullion and ornaments ..				
	Gold coins				
	Gold and golden ornaments ..				
	Animals Number ..	82,619	41,916	5,747	

EXHIBIT IV.

**RULES FOR THE DEVELOPMENT
OF
COMMERCE AND INDUSTRY
IN THE
BARODA STATE.**

The following Rules, called "Rules for the Development of Commerce and Industry in the Baroda State," were sanctioned by His Highness the Maharaja Sir Sayajirao Gaekwad, Sena-Khas-Khel, Samsber Bahadur, G.C.S.I., Ferzande-Khas-I-Daulat-I-Inglishia, on the 2nd April 1915 and are published for the information of the public.

BARODA,
12th April 1915.

MANILAL B. NANAVATI,
Director of Commerce.

Rules for the Development of Commerce and Industry in the Baroda State.

CHAPTER I.

PRELIMINARY.

1. Whereas it is found desirable to lay down a definite State Policy for the development of Commerce and Industries in the State and to have a regular procedure to deal with the applications for State help and to decide them expeditiously, the following rules are laid down for the guidance of the State, its officers and subjects and for the information of the public.

2. These rules may be called "Rules for the development of Commerce and Industries in the Baroda State."

3. They shall come into force from 1st May 1915.

4. Rules, Circulars, Orders and Notifications published before these rules come into force, shall be repealed so far as they are contrary to the provisions of these rules. But nothing herein contained shall cancel or modify any concessions, general or specific, granted to Industrial concerns or enterprises before these rules come into force.

5. In these rules, unless there is anything repugnant in the subject or context, (1) "Director of Commerce" includes any officer who is invested by the Huzur from time to time with the functions and powers of Director of Commerce, (2) "Factory" means any Industrial establishment employing regularly not less than fifteen workmen for the production of industrial articles by the aid of machinery or other apparatus and requiring a division of labour suitable to a production *en masse*.

A Factory shall be deemed to be fitted with the "latest appliances of mechanical art" if the machinery and equipment used is fairly representative of the latest development in the particular industry abroad.

CHAPTER II.

ORGANISATION OF THE DEPARTMENT OF COMMERCE AND INDUSTRY.

6. A Department of Commerce and Industry will be organised for which a Director of Commerce and Industry may be appointed. The functions of the Department shall be as under :—

- (a) To study the industrial and commercial conditions of the State and to advise Government to take such measures as may be found necessary and advisable.

- (b) To conduct industrial experiments and to give demonstrations of successful experiments.
- (c) To advise manufacturers, merchants and artisans in the development of trade and industry in the State.
- (d) To advise Government on measures that affect commerce and industry of the State.
- (e) To assist the people in the organisation of trade, commerce and industries.
- (f) To investigate and recommend applications for State Concessions to His Highness' Government.
- (g) And to do all other duties as may from time to time be entrusted by His Highness' Government.

7. With the previous sanction of the Government, the Director of Commerce may employ experts in different lines such as Textile, Mechanical Engineering and Chemical Industries, etc., and demonstrators in various industries. The advice and assistance of this staff shall always be available to the public free of charge unless otherwise provided: this assistance may include the preparation of plans and estimates, preliminary investigations of raw materials and markets, etc.

8. With the object of carrying out the State Policy for the development of Commerce and Industry as mentioned in Sec. 6, the following special measures may be taken as occasions permit :—

- (a) So far as may be possible, all Government Stores will be purchased from local manufacturers.
- (b) Investigation of industries that might be introduced in the State, shall be made from time to time. Surveys of industrial towns and of the existing Industries—hand and power—shall also be made. Information thus collected will be published for the information of the public.
- (c) Experts may be employed and experimental works opened, if deemed necessary, to demonstrate the feasibility of industries new to India. Such experimental works will be transferred to private parties at the earliest possible opportunity.
- (d) Scholarships may be given to students of proved capacity and fitness for the purpose of studying industries abroad or in distant parts of India, that can be introduced in this State.
- (e) Warehouses may be constructed at State expense in important centres of trade for the purpose of storing dutiable articles under bond. No such Warehouse may be constructed except where the rental returns would justify the expenditure.
- (f) A permanent Industrial Museum may be organised for the exhibition of the mineral and forest and agricultural products of the State, and of industrial and agricultural appliances.

The following Rules, called "Rules for the Development of Commerce and Industry in the Baroda State," were sanctioned by His Highness the Maharaja Sir Sayajirao Gaekwad, Sena-Khas-Khel, Samsar Bahadur, G.C.S.I., Ferzande-Khas-I-Daulat-I-Inglishia, on the 2nd April 1915 and are published for the information of the public.

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- (c) To advise manufacturers, merchants and artisans in the development of trade and industry in the State.
- (d) To advise Government on measures that affect commerce and industry of the State.
- (e) To assist the people in the organisation of trade, commerce and industries.
- (f) To investigate and recommend applications for State Concessions to His Highness' Government.
- (g) And to do all other duties as may from time to time be entrusted by His Highness' Government.

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- (c) Experts may be employed and experimental works opened, if deemed necessary, to demonstrate the feasibility of industries new to India. Such experimental works will be transferred to private parties at the earliest possible opportunity.
- (d) Scholarships may be given to students of proved capacity and fitness for the purpose of studying industries abroad or in distant parts of India, that can be introduced in this State.
- (e) Warehouses may be constructed at State expense in important centres of trade for the purpose of storing dutiable articles under bond. No such Warehouse may be constructed except where the rental returns would justify the expenditure.
- (f) A permanent Industrial Museum may be organised for the exhibition of the mineral and forest and agricultural products of the State, and of industrial and agricultural appliances.

- (g) A Commercial Intelligence Bureau may be maintained by the State for the dissemination of industrial and commercial information.
- (h) Specimens of Baroda Arts and Craft may be sent at State expense from time to time to Exhibitions abroad or in other parts of India.
- (i) Exhibitions may be organised at suitable places at reasonable intervals in the State.
- (j) A Bureau of Industrial and Commercial Statistics may be opened in the Department of Commerce and Industry.
- (k) Demonstration Classes may be opened in Industrial Centres to show to the people the successful experiments made by the State Experts in Industry.

9. In addition to the measures mentioned in Sec. 8, an Advisory Committee may be appointed for the investigation and discussion of the economic problems of the State. Its objects and constitution will be as under :—

- I. The Committee shall discuss all the economic questions of the State except the land revenue and such other policy, as may from time to time be settled by the State.
- II. Unless otherwise ordered by the Huzur, it shall consist of the following members :—
 - 1. President—to be selected by His Highness' Government.
 - 4. Subas—of all Districts.
 - 1. Director of Commerce and Industries.
 - 1. Director of Agriculture.
 - 1. Conservator of Forests.
 - 1. Principal of the Kala-bhavan.
 - 1. Representative of the Baroda Chamber of Commerce.
 - 8. Representatives—2 from each District, one representing Agriculture and the other Commerce and Industry—to be selected by the District Boards.
 - 4. Officers—nominated by Government.
- III. The Committee shall meet at the beginning of every year and determine the programme of its work. It shall meet then as often as necessary.
- IV. The Committee may appoint Sub-committees for the investigation of different subjects.
- V. All resolutions passed by the Committee shall be sent to the Departments concerned. The Departments shall submit the proposals to Government and communicate to the Committee the orders passed by Government thereon.

- VI. In order to carry out investigations, Government may grant a sum of money to be spent by the Committee for which the Director of Commerce shall obtain the sanction of the Huzur from time to time.
- VII. The Committee shall submit to the Huzur an Annual Report of their work.
- VIII. The Committee may obtain through their President such information from the various Departments of the State as is likely to help them in their deliberations. All the Departments shall supply the information unless they have special reasons to withhold.

CHAPTER III.

CONCESSIONS:

A. Procedure in regard to Applications for Concessions.

10. All those who desire to enjoy State concessions defined in Section 15 of this Chapter, shall, in order to receive the same, send in a petition to the Director of Commerce on a stamp of the value of Rupees five.

11. A petition may be presented either :—

- (a) For a preliminary guarantee of concessions, or
- (b) For the definitive granting of the same, or
- (c) For prolongation of concessions enjoyed after the latter have become inoperative.

(a) Preliminary guarantee may be given in the case of factories or industrial establishments, the creation of which is contemplated. This guarantee may be given only when proofs are given of the substantial financial backing of the enterprise. Concessions thus guaranteed will become inoperative if the enterprise does not commence operations within two years from the date of the Huzur Order sanctioning such guarantee (but a new petition may be made when the definitive granting of the concessions already guaranteed is required).

(b) The definitive granting of concessions may be petitioned for at any time within two years of the day on which the industrial establishment that may benefit thereby commences work: beyond that period, the granting of concessions may not be petitioned for, except in special cases.

- (c) A petition may be presented for the prolongation of concessions enjoyed at any time within 6 months previous to the termination of the concessions: but any such petition presented later than six months after the date on which the said concessions become inoperative, shall not be considered.

12. Petitions presented with a view to obtaining State favours shall contain :—

I. In the case of factories and industrial concerns :—

1. A detailed enumeration of the articles produced or the production of which is contemplated by the industrial establishment in question.
2. A description of the process employed or to be employed sufficient to enable Experts to form a judgment.
3. The number of workmen employed or to be employed in the establishment.
4. The amount of Capital invested or to be invested in the site and buildings, the machinery and equipment of the establishment.
5. An approximate estimate of the quantity and value of the annual output.
6. An enumeration of the more important implements of production (e.g., in the case of Spinning Mills, the number of spindles; in the case of Weaving Mills, the number of looms) with a view to facilitating an estimate of the productive capacity.
7. The place where the factory is opened or is to be opened and registered in case of limited liability company.
8. Raw materials used or to be used: and whether they can be had within the State.
9. Liability of the company, limited or unlimited: its capital, nominal and paid-up.
10. Names of the Agents or Managers of the company.
11. Should the petitioner desire to complete the construction of the Factory by degrees, though by a stipulated date, the petition shall contain all the above data not only for the first year, but also for those succeeding.
12. Two copies of Prospectus and of Memorandum and Articles of Association, if it is a Registered Company, and a copy of the Agreement with the Agents or Managers. (Form 1.)

II. In the case of commercial and other concerns, the information required in Sub-Sections 7, 9, 10, 12 and such other particulars as may enable His Highness' Government to get a clear idea of the object of the undertaking shall be given.
(Form 2.)

13. On the receipt of the application, the Director of Commerce shall make such preliminary inquiry to verify the facts mentioned therein, as he may deem necessary.

B. To whom Concessions may be granted.

14. State Concessions may be granted to the following enterprises :—

- (a) To manufacturing enterprises (factories) equipped with the latest appliances of technical art, which produce articles not hitherto produced at all by manufacturers in the Baroda State, or which produce articles, the increased supply of which is desirable from economic point of view, or which may assist the development of the natural resources of the State.
- (b) To non-Government workshops (or technical schools).
- (c) To companies organised for the regular employment of a large number of workmen engaged in domestic industry.
- (d) Industrial and Agricultural Co-operations, provided the same are engaged in the production of articles falling within the scope of clause (a).
- (e) Ship-building works or ship-yards as well as repairing yards, equipped with modern appliances.
- (f) To Mining Companies.
- (g) To enterprises and concerns of general or public utility, e.g., tramways, electric works, gas companies, irrigation companies, etc.
- (h) To enterprises organised for the development of pearl oysters, shells, or other fisheries equipped with modern appliances.
- (i) To refineries of spirit or other enterprises for finishing partially manufactured products, e.g., jaggery, crude oils, country tanned leather.
- (j) To chemical and pharmaceutical works.
- (k) To hand and art industries, such as hand-loom weaving, ivory and wood-carving, dyeing and printing, etc.
- (l) To banks, warehousing companies, building associations
- (m) To commercial schools and industrial exhibitions, or
- (n) To any other enterprise, which, to Government, appears worth encouraging.

In the granting of concessions as far as possible, the Baroda State subjects shall get preference. Such industries as lead to the development of the natural resources of the State, will, also, get preference.

Only those industrial and commercial institutions that are situated in the Baroda State, shall get State help.

C. Concessions.

15. To the commercial and industrial concerns mentioned in Section 14, one or more of the following concessions may be granted by the State, to wit,

- (a) Exemption from the payment of direct (State) taxes due on the output or the earning of the factory, other than cotton excise or other direct taxes imposed by treaty obligations.
- (b) Exemption of shares and deposits from attachment by Revenue authorities except through the Civil Courts by due process of law.
- (c) Free, or at cost price, or at low rates the supply of raw materials owned by the State, including the waters and forests of the State.
- (d) To have built by the Railway Department or by the lessees of State Railways sidings or Industrial Railway Lines required by manufacturing, forestry and mining enterprise, the cost thereof to be charged to the Enterprises concerned.
- (e) Payment of subsidies or bonuses or subventions, for a period of years, to any enterprise not previously developed in Baroda or round about.
- (f) Exemption from customs or octroi duties, total or partial on :—
 - (a) Building materials.
 - (b) Raw materials including fuel.
 - (c) Half finished materials that require finishing in such factories.
- (g) Exemption from export duties on finished or semi-finished articles manufactured in the State.
- (h) Granting of monopolies in special cases where open competition is not possible or desirable.
- (i) Acquisition of suitable sites for factories, drains and other similar purposes. These sites may be :—
 1. Non-occupied Government land. Such lands may be granted free of rent for a term of years in special cases.
 2. Occupied Government land. In case of such lands acquired by Government, compensation shall be paid under the Land Acquisition Act by the concessionaires.

- (j) Making roads and railways to facilitate transportation between existing Railway Stations and Factories.
- (k) Supplying water from Government Water Works at moderate rates, say : as. 2 per 1,000 gallons when available, and laying out water pipes at State cost up to the nearest public roads.
- (l) Grants of machinery or tools in case of small trades or art crafts free or at a nominal rental or at reduced prices.
- (m) Loan of money at a reasonable rate of interest.
- (n) Lending the services of State Experts without any charge.
- (o) Preferential right to supply Government Stores, or
- (p) Any other concession suitable to particular industries.

16. A. With respect to loans to be made to Industrial Concerns, as mentioned in Sec. 15, Sub-section (m), the following rules shall apply subject to modification in individual cases if found advisable or necessary :—

- I. That Mills and Factories organised as Joint-Stock Concerns and registered under the Baroda Company's Act, will be helped.
- II. Preference will be given to such industries as may secure a direct return as in the shape of Excise Revenues or may help the development of the natural industrial resources of the State.
- III. That a sum upto $\frac{1}{3}$ rd the amount to be invested in buildings and machinery and other fixtures, will be lent by the State, the rest to be raised by means of Shares by the Promoters.
- IV. The concern will issue Debentures for the amount to be lent by the State. The period for the Debentures to be ten years.
- V. The State shall charge 5 per cent. or more as the case may be.
- VI. The State will not supply any Working Capital except in a special case when money may be advanced against Liquid Assets of the Concern, keeping a safe margin.
- VII. The Accounts of the Concern that receives a loan from the State, will be audited by competent Auditors and that the State may appoint their own Auditors besides, for which no charge will be made.
- VIII. The State shall have a right to appoint a Director on the Board of the Concern so helped.

B. In the case of Non-Industrial Concerns, loans may be made on such terms and conditions as may be found necessary or advisable on their individual merits.

C. The Director of Commerce shall ascertain from time to time on reference to the Huzur, the amount of money available for such purposes.

D. Conditions of Concessions.

17. 1. The Concern receiving Concessions from the State shall appoint competent Auditors to audit its accounts.

2. The Government shall have a right to appoint their own Auditors to audit accounts of the Concern for which no fees shall be charged.

3. In special cases the Government shall have a right to nominate their own Director on the Board of the Concern.

4. The appointment of State Auditors and Directors shall be stipulated for at the time when State Concessions are asked for and granted.

18. The Director of Commerce may, if deemed necessary, require the deposit of Caution Money for the proper fulfilment of conditions of the Concessions granted.

19. A. All Concerns that receive State help shall employ as far as possible workmen and officials domiciled in the Baroda State.

B. Factories and Industrial Establishments enjoying Concessions from the State, shall procure as far as possible all the articles for buildings and equipment as well as the materials and half-finished products required in working from home industry and produce, provided such are made or produced in the required form in the Baroda State.

C. The conditions mentioned above shall be stipulated at the time when the preliminary guarantee or definitive granting of Concessions takes place in the Huzur Order relating thereto.

20. The Factories and Industrial Enterprises receiving State Concessions shall send to the Director of Commerce and Industry a half-yearly Report, (1st) within 15th August and (2nd) within 15th of January covering,

(1) Profit and Loss during the half year,

(2) A detailed Report regarding the production and the output of Concern.

(3) Alterations in plant and equipment, if any.

21. The Concern shall also send a copy of its Annual Balance Sheet when issued. The State shall have in case of doubt every right to have the correctness of the data verified by Company's Books.

E. Cancellation of Concessions.

22. All the Concessions granted by the State shall be cancelled when,

(a) The Concessionaries fail to comply with any one of the conditions stipulated in the grant.

- (b) When the concern ceases to work continuously for two years. In the case (a), the Concessions shall abate wholly or in part, as the case may be ; in the case (b), the Director of Commerce with the previous sanction of the Minister, may, on the application of the concern and for valid reasons shown, permit the continuance of the Concessions.
- (c) The cancellation of Concessions may be published in the "Adnya Patrika," unless there are special reasons for not doing so.

F. Administrative Arrangements.

23. Questions relating to the granting of Concessions, the date when they shall come into force and the period during which they shall remain in force, shall be decided by the Huzur on the recommendation of the Director of Commerce and Industry. But all questions regarding the financial help (assistance) to Industrial and Commercial Institutions shall be first submitted to a Committee on Commerce which shall consist of

1. The Legal Remembrancer.
2. The Accountant-General, and
3. The Director of Commerce and Industry.

The Committee shall investigate all the details and formulate their proposals and submit them to the Government for final orders.

24. If for any purpose, it is found necessary that the factory should be inspected before any Concession is granted, the Director of Commerce may ask, by a written order, the Executive Engineer of the District and the Boiler Inspector to inspect the Factory and make a joint-report in the matter.

25. The Director of Commerce may also when necessary, with the previous sanction of the Minister, call any Officer in the State to help him to decide any application for Concessions or employ experts to advise him, at the cost of the Department of Commerce.

26. All contracts entered into between Concessionaires and the State shall be executed by the Director of Commerce on behalf of the State after approval of the draft by the Legal Remembrancer.

27. The concessions granted to Factories shall be published in the "Adnya Patrika" from time to time, except in such cases as the Director of Commerce may deem it undesirable to do so.

CHAPTER IV.

MISCELLANEOUS.

28. The Director of Commerce shall prepare a programme of his work at the beginning of each Official year and have it approved by Government.

He shall also prepare an Annual Report on the working of the Department and submit to Government.

29. The Director of Commerce and Industry shall keep a register of Concessions granted by the State and have them published in a book-form, from time to time.

MANILAL B. NANAVATI,
Director of Commerce and Industry,
Baroda State.

EX.—V.—LIST OF LOANS GRANTED TO INDUSTRIAL CONCERNS IN THE BARODA STATE.

No.	Name of the borrower.	Name of Factory. (purpose).	Amount of Loan.	Rate of interest.	Conditions and period.	Year in which Loan was granted.	Factory in existence or not.	REMARKS.
1	Jahveri Premchand Ghelabhai of Baroda.	Gold and Silver Ribbon Works	25,000	3 p. c.	Loan granted for a period of fifteen years.	1891-92	No	
2	Do. do ..	Agate Factory	15,000	3 p. c.	Loan granted for a period of seven years.	1891-92	No	
3	Yadavrao Raoji Tulja Mahadba of Baroda.	Factory of distilling oils from scented grasses and woods.	10,000	3 p. c.	Loan granted for a period of six years.	1892-93	No	
4	Vohra Nazarali Tyabally of Baroda.	Soap, Varnish, various dyes, Brass Works.	20,000	3 p. c.	Loan granted for a period of five years.	1892-93	No	
5	Amirudin Jivabhai and Naoroji Framji of Baroda.	Flour Mill, Oil Mill and Ice Factory.	30,000	3 p. c.	Loan granted for a period nine years.	1892-93	No	
6	Desai Chhotubhai Amratbhai of Palsana.	Flour Mill	4,000	3 p. c.	Loan granted for a period of six years.	1892-93	No	
7	Desai Harrai Bapubhai of Gandevi.	Rice Mill and a Ginning Factory at Billimora.	25,000	3 p. c.	Loan granted for a period of seven years.	1892-93	Yes	

LIST OF LOANS GRANTED TO INDUSTRIAL CONCERNS IN THE BARODA STATE—*contd.*

No.	Name of the borrower.	Name of Factory. (purpose).	Amount of Loan.	Rate of interest.	Conditions and period.	Year in which loan was granted.	Factory in existence or not.	REMARKS.
8	Motilal Nemchand of Naosari and Baroda.	Art Studio. Picture Gallery ..	3,000	3 p. c.	Loan to be repaid by five annual instalments. First instalment to begin from the 4th year.	1893-94	No	
9	Bohra Sarafalli Alabhai of Baroda...	For manufacturing sharbats, scents, acids, castor oils, etc.	15,000	3 p. c.	Loan to be repaid by ten equal annual instalments.	1893-94	No	
10	Bohra Fej Mahmad Amiruddin of Baroda.	Hand-loom Weaving Factory ..	30,000	3 p. c.	Loan to be repaid by five annual instalments. First instalment to begin from the 4th year.	1893-94	No	
11	Bohra Shekhali Fajal Alli of Kadi and Baroda.	Oil Mill	30,000	3 p. c.	Loan to be repaid by eight annual instalments, to begin from the third year.	1893-94	No	
12	Mr. Rustomji Hormasji Bana of Naosari.	To enlarge his works. (Soaps, Scents, Spirits, etc.)	5,000	3 p. c.	Loan to be repaid by five annual instalments.	1893-94	Yes	
13	Amirudin Jivabhai and Naoroji Framji of Baroda.	To extend their factory. (a second loan ; first loan No. 5) .	20,000	3 p. c.	Loan to be repaid by six annual instalments, the first to be given in the second year.	1894-95	No	
14	Mahmadkhan Lalkhan of Amreli. . .	To extend his ginning factory. Erection of a Saw Mill, Oil Mill.	10,000	5 p. c.	.....	1894-95	..	This loan was not taken by the gentleman. In all loans for Rs. 2,42,000 were sanctioned.

LIST OF LOANS GRANTED TO INDUSTRIAL CONCERNS IN THE BARODA STATE—concl'd.

No.	Name of the borrower.	Name of Factory. (purpose)	Amount of Loan.	Rate of interest.	Conditions and period.	Year in which loan was granted.	Factory in existence or not.	REMARKS.
15	Messrs. Shamal Bechar & Co., Agents Shree Saigaji Spinning Mills, Baroda.	To extend the working of the Mill.	75,000	5 p. c.	Loaned for two years (after the period fresh orders may be taken if necessary.)	1908—09	Yes	The loan was paid back af- ter two years.
16	R. B. Hargovindas Dwarkadas Kantawala, Agents, Maharaja Mills, Baroda.	Do. do.	1,65,000	5 p. c.	Do. do. do.	1908—09	Yes	Do.
17	The Baroda Tramway Co., Baroda	The Baroda Tramway Co ..	50,000	4 p. c.	The loan to be given for a period of 5 years.	1909—10	Yes	The period ex- pired in 1914. The loan is renewed for another five years.
18	Do. do.	Do. do.	50,000	5 p. c.	Loan given for three months ..	1914—15	Yes	The loan was paid back in six months in- stead of three.
19	The Billimora Hind Candle Works, Billimora.	To extend the work of the fac- tory; to buy raw materials.	1,25,000	5 p. c.	The loan is given through the Bank of Baroda. Governmnet has advanced the sum to the Bank at 3½ per cent; whereas the Bank is allowed to charge 5 p. c., to the Candle Factory as the Bank takes the risk.	1815—16	Yes	
20	Messrs. Shamal Bechar & Co. Agents, Shree Sayaji Mills, Baroda.	To buy additional looms ..	3,00,000	5 p. c.	Through the Bank of Baroda ..	1915—16	Yes	The loan has not been taken by the Mill owing to some mis- unders t a n d - i n g a b o u t t e r m s w i t h t h e B a r o d a B a n k .

EX.—VI.—LIST OF JOINT-STOCK COMPANIES IN THE BARODA STATE.

No.	Name and Address of the Company.	Date of Registration of the company : month and year.	Members or Capital of the Company.	Loan or other help from the State.	Whether the company owns debt to the Government and to what extent.	Whether the company is working or not?	Date on which the company ceased its working.	Causes of failure of the company.	REMARKS.
BARODA DISTRICT.									
1	The Pij Universal Provident Society Ltd., Pij (Petlad).	17th Oct. 1898. ...	Members. 10,000.	....	....	No	7th Jan. 1900 ..	Voluntarily wound up.	....
2	The Pij Mutual Helping Co., Ltd., Pij (Petlad).	17th Oct. 1898. ...	Do. ..	....	....	No	22nd Oct. 1900 ..	Do.	....
3	The Bachar Mutual Provident Society Ltd., Bachar (Choranda).	4th January 1899.	Members. 5,000.	....	....	No .. ..	....	....	....
4	The Changa Ramnath Mutual Helping Society Ltd., Changa (Petlad).	19th Jan. 1899. ...	Members. 2,000.	....	....	No	21st Nov. 1899 ..	Closed for want of subscription from the partners.	....
5	The Petlad Arya Vijay Provident Society Ltd., Petlad.	23rd Jan. 1899. ...	Members. 5,000.	....	....	No	1st Aug. 1900 ..	Want of members ..	....
6	The Dabhoi Laxmi Narayen Vijay Pravartak Profitable Provident Society Ltd., Dabhoi.	14th June 1899.	Unlimited number of Members.	....	....	No .. ..	....	Voluntarily wound up.	....
7	The Petlad Friendly Society Limited, Petlad.	24th June 1899. ...	Members. 500.	....	....	No	29th July 1900 ..	Voluntarily wound up.	....

LIST OF JOINT-STOCK COMPANIES IN THE BARODA STATE—*contd.*

No.	Name and Address of the Company.	Date of Registration of the company : month and year.	Members or Capital of the Company.	Loan or other help from the State.	Whether the company owns debt to the Government and to what extent.	Whether the company is working or not?	Date on which the company ceased its working.	Causes of failure of the Company.	REMARKS.
8	The Petlad Mutual Beneficial Society Ltd., Petlad.	28th June 1899...	Members. 500.	....	....	No. ..	2nd Sept. 1900. . .	Judicially wound up.	....
9	Shri Dravya Sahya Company Ltd., Ranu (Padra).	27th Oct. 1899. . .	Members. 2,000.	....	....	No. ..	7th Nov. 1902. . .	Want of members. . .	....
10	The Petlad Jaya Vijaya Life Insurance Co., Ltd. Petlad	21st Dec. 1899. . .	Members. 2,000.	....	....	No. ..	5th May 1900, . .	Inability to work, . .	....
11	Shree Shankar Vijaya Mutual Provident Fund Ltd., Karvan (Dabhoi).	24th Feb. 1900...	Members. 1,000.	....	....	No. ..	24th June 1901...	Share Capital not subscribed.	....
12	The Nootan Vilas Printing Press Co., Ltd., Baroda.	23rd Jan. 1902. . .	Rs. 25,000.	....	....	No. ..	22nd June 1905.	Judicially wound up. .	....
13	The Baroda Spinning and Weaving Co., Ltd., Baroda.	14th Feb. 1905...	Rs. 6,00,000.	....	....	Yes ..	....	....	....
14	Shree Sayaji Mills Co., Ltd., Baroda.	7th Sept. 1905. . .	5,25,000. 3,00,000.	Water concession at low rate, and a lump sum of Rs. 451 on Import duty.	....	Yes ..	....	....	....

LIST OF JOINT-STOCK COMPANIES IN THE BARODA STATE—*contd.*

No.	Name and Address of the Company.	Date of Registration of the company month and year.	Members or Capital of the Company.	Loan or other help from the State.	Whether the company owns debt to the Government and to what extent.	Whether the company is working or not?	Date on which the company : ceased its working.	Causes of failure of the Company.	REMARKS.
			Rs.						
15	Shree Sayaji Loom Works Co., Ltd., Baroda.	19th April 1906.	25,000.	....	....	No	12th Jan. 1913 ..	Voluntarily wound up.	....
16	Shree Sayaji Flour Mill Co., Ltd.	27th Aug. 1906...	81,000.	....	....	No	31st March 1915 .	Voluntarily wound up share capital not subscribed.	....
17	The Maharaja Mills Co., Ltd., Baroda.	15th Sept. 1906...	6,00,000.	As No. 14	....	Yes .. ..	....	....	....
18	The Indian Metal Sheets Factory Ltd., Baroda.	20th Oct. 1906. ..	1,00,000.	....	....	Yes .. ..	....	....	....
19	The National Metal Works Co., Ltd., Baroda.	27th Oct. 1906. ..	35,000.	....	....	Yes .. ..	....	....	....
20	Shri Sayaji Cotton-Seeds Oil Factory Ltd., Baroda.	17th Nov. 1906...	1,00,000.	....	....	Yes .. ..	....	....	....
21	Shree Sayaji Tile Works Co., Ltd., Baroda.	29th Nov. 1906...	50,000.	....	....	No	23rd Feb. 1915 ..	Voluntarily wound up.	....
22	The Gaekwad Umbrella Manufacturing Co., Ltd., Baroda.	22nd Jan. 1907...	50,000.	....	....	No .. ..	....	....	Is in liquidation.

LIST OF JOINT-STOCK COMPANIES IN THE BARODA STATE—contd.

No.	Name and Address of the Company.	Date of Registration of the company : month and year.	Members or Capital of the Company.	Loan or other help from the State.	Whether the company owns debt to the Government and to what extent.	Whether the Company is working or not ?	Date on which the company ceased its working.	Causes of failure of the Company.	REMARKS.
23	The Virkshetra Mudralaya Printing Press Co., Ltd., Baroda.	21st March 1907.	Rs. 21,000	....	....	No .. ..	....	....	Is in liquidation.
24	Shrimant Raj Kanya Indira Raja Hand Weaving and General Trading Co., Ltd., Baroda.	2nd Sept. 1907. . .	1,25,000	....	....	Yes .. ..	....	....	....
25	The Baroda Union Dyeing, Bleaching and Calico Printing Factory Co., Ltd., Baroda.	23rd Jan. 1908...	1,55,000	....	....	Yes .. ..	....	....	....
26	The Vaso Dyeing Co., Ltd., Baroda.	26th Feb. 1908...	50,000	....	....	No .. ..	....	....	Is in Liquidation.
27	The Baroda Tramway Co., Ltd. Baroda.	30th March 1908.	5,00,000	....	....	Yes .. ..	....	....	....
28	The Bank of Baroda Ltd., Baroda.	20th July 1908...	20,00,000	....	....	Yes .. ..	....	....	....
29	The Swadeshi Modern Leather Manufacturing Co., Ltd., Baroda.	30th June 1908...	1,00,000	....	....	No .. ..	....	....	Is in liquidation.

LIST OF JOINT-STOCK COMPANIES IN THE BARODA STATE—*contd.*

No.	Name and Address of the Company.	Date of Registration of the company: month and year.	Members or Capital of the Company.	Loan or other help from the State.	Whether the company owns debt to the Government and to what extent.	Whether the company is working or not ?	Date on which the company ceased its working.	Cause of failure of the Company.	REMARKS.
			Rs.						
30	The Gujarat Agriculture Live-stock Co., Ltd., Baroda.	1st July 1909. . .	51,000.	....	....	No	29th Dec. 1909 ..	Share Capital not subscribed.	....
31	The Baroda Glass Works Co., Ltd., Baroda.	29th Oct. 1910. . .	1,00,000.	....	....	No .. ..	....	....	Is in liquidation.
32	The Baroda Brush Factory, Baroda.	21st May 1911. . .	50,000.	....	....	Yes .. ..	....	....	....
33	The Alembic Chemical Works Co., Ltd., Baroda.	24th June 1913... .	5,00,000.	....	....	Yes .. ..	....	....	....
34	The Bhilapur Ginning and Manufacturing Co., Ltd., Bhilapur (Dabhoi).	12th Aug. 1913... .	50,000.	....	....	Yes .. ..	....	....	....
35	Shree Deshi Natak Co., Ltd., Baroda.	3rd Oct. 1913. . .	15,000. 35,000.	....	....	Yes .. ..	....	....	....
36	The Gujarat Cattle Breeding and Milk Supplying Co., Ltd., Baroda.	30th May 1914. . .	50,000	....	....	No	17th Aug. 1915 ..	Capital not subscribed.	....

LIST OF JOINT-STOCK COMPANIES IN THE BARODA STATE—*contd.*

No.	Name and Address of the Company.	Date of Registration of the company : month and year.	Member or Capitals of the company.	Loan or other help from the State.	Whether the company owns debt to the Government and to what extent. ^a	Whether the company is working or not ?	Date on which the company ceased its working.	Causes of failure of the company.	REMARKS.
KADI DISTRICT.									
37	Kadi Ginning, Weaving and Manufacturing Co., Ltd., Kadi.	17th Aug. 1905 .. 4th June 1906.	Rs. 60,000. 40,000.	....	....	No	27th July 1916 ..	....	....
38	Kadi Prant Deshi Hand Loom Weaving and Dyeing Co., Ltd., Mehsana.	8th Feb. 1906 ..	50,000.	....	....	Yes .. ..	....	....	....
39	The Kadi Sarswati Cotton Press Ltd., Kadi.	4th Oct. 1906. ..	75,000.	....	....	No	26th Jan. 1910 ..	....	....
40	Shree Sayaji Jubilee Cotton and Jute Mills Manufacturing Co., Ltd., Sidhpur.	2nd Sept. 1907. ..	5,00,000.	....	....	Yes .. ..	....	....	....
41	Visnagar Swadeshi Co-operative Society, Visnagar.	1st Feb. 1908. ..	10,000.	....	....	No	25th Dec. 1910 ..	Voluntarily wound up.	....
42	The Kadi Pressing, Ginning and Oil Mill Co., Ltd., Kadi.	3rd Feb. 1910. ..	1,50,000.	....	....	Yes .. ..	....	....	....

LIST OF JOINT-STOCK COMPANIES IN THE BARODA STATE—*contd.*

No.	Name and Address of the Company.	Date of Registration of the company month and year.	Members or Capital of the company.	Loan or other help from the State.	Whether the company owns debt to the Government and to what extent.	Whether the company is working or not ?	Date on which the company ceased its working.	Cause of failure of the company.	REMARKS.
AMRELI DISTRICT.			Rs.						
43	The Gujarat and Kathiawad Printing Works and Type Foundry Co., Ltd., Amreli.	11th June 1908...	20,000.	....	....	No .. ..	....	....	Is in liquidation.
44	The Amreli Kathiawad Swadeshi Weaving Co., Ltd., Amreli.	5th Aug. 1908. ...	50,000.	....	....	No .. ..	....	Share Capital not subscribed.	....
45	The Khambha Ginning, Oiling, and Grinding Factory Co., Ltd., Khambha.	30th Aug. 1912...	6,250.	....	....	Yes .. ..	....	....	....
NAVSARI DISTRICT.									
46	Shree Sayaji Chocolate Manufacturing Co., Ltd., Billimora.	2nd Aug. 1899. ...	75,000.	....	....	No	28th Aug. 1912 ..	....	....
47	The Navsari Chemical Works Co., Ltd., Navsari.	11th Sept. 1908...	2,00,000	....	....	Yes .. ..	....	....	....

LIST OF JOINT-STOCK COMPANIES IN THE BARODA STATE—*concl'd.*

No.	Name and Address of the Company.	Date of Registration of the company: Month and year.	Members or Capital of the Company.	Loan or other help from the State.	Whether the Company owns debt to the Government and to what extent.	Whether the Company is working or not?	Date on which the company ceased its working.	Causes of failure of the Company.	REMARKS.
	NAVSARI DISTRICT—<i>cont'd.</i>		Rs.						
48	Orthological and experimental Farm Co., Ltd., Billimora.	5th Dec. 1910. ..	50,000.	....	....	No	17th April 1914 .	....	....
49	Shri Saraswati Oil Mill Co., Ltd., Billimora.	13th May 1911. ...	50,000.	....	....	No	17th April 1914 .	....	....
50	Kasbapar Farmer's Co-operative Ginning Factory, Limited, Navsari.	19th Aug. 1911.	50,000.	....	....	Yes .. ..	....	....	....
	MISCELLANEOUS.								
51	The Karoli Ginning and Press Co., Ltd., Dabhoi.	8th Dec. 1914. ..	1,00,000.	....	....	Yes .. ..	....	....	....
52	The Baroda Tiles and Bricks Potteries Works Co., Ltd., Baroda.	8th May 1915. ..	60,000.	....	....	Yes .. ..	....	....	....
53	Shri Krushi Yantra Prasarak Co. Ltd., Siddhpur.	9th Oct. 1915. ..	10,000.	....	....	Yes .. ..	....	....	....

EX.—VII.—LIST OF INDUSTRIES THAT HAVE FAILED.

No.	Name of Factory.	Capital.	Joint-Stock or Proprietary.	Causes of Failure.	* Likely to revive or not ?	REMARKS.
1	Shree Sayaji Hand Loom Works.	25,000 paid up 14,820.	Joint-Stock. . .	Hand-loom made, could not be sold in good numbers.	Turned into a Foundry and a work-shop. It is working successfully.	
2	Swadeshi Modern Leather Manufacturing Company.	1,00,000.	Joint-Stock. . .	Incompetant management and inadequate finance.	It could have been revived but the management foolishly sold the machines by bits.	
3	Baroda Glass Works. . .	26,550.	Do. . .	Incompetant management. The Agent who was the expert mismanaged the factory.	It is a good industry and is likely to be revived.	
4	Gandevi Sugar Works.	75,000 (Original investment Rs. 3,00,000).	Do. . .	Insufficient raw materials in the locality. Sugarcane cultivation could have been developed, but for want of funds no serious attempts were made to find out whether the Factory would pay or not.	Likely to be revived. . .	

LIST OF INDUSTRIES THAT HAVE FAILED—*contd.*

No.	Name of Factory.	Capital.	Joint-Stock or Proprietary.	Causes of Failure.	Likely to revive or not ?	REMARKS.
5	Shree Sayaji Cotton Seeds Oil Factory Ltd.	Rs. 68,900.	Joint-Stock	(1) Inadequate Funds (2) Machinery selected was not suited for cotton-seed-oil milling. (3) Castor and other seeds could be crushed. (4) Management is in incompetent hands.	Likely to work well in the hands of Competant people.	
6	The Gaekwar Umbrella Manufacturing Co., Ltd.	25,000.	Do.	Incompetant management. .. Inadequate funds	The factory has been turned into a Foundry and a machine workshop. The other machines will be worked very probably after the war.	
7	Twine Factory .. .. .	....	Proprietary	No serious efforts were made to work the factory. Some more machines were needed but in the absence of expert advice the factory is not working.	It is very likely this factory will be revived. Inquiries are being made.	
8	Match Factory .. .. .	....	Do.	Want of suitable wood Heavy freight charges	Not likely to be revived. It was worked with very few crude Japanese machines.	

EX.—VIII.—LIST OF INDUSTRIES FOR WHICH RAW MATERIALS ARE AVAILABLE.

No.	Natural Resources.	Place.	Industry that could be started.	REMARKS.
1	Salt and Lime.	Dwarka.	Alkali Industry.	Will have to depend upon pyrites or upon Sulphur from foreign countries. Preliminary inquiries have been made and favourable reports have been received.
2	Lime and Clay.	Dwarka.	Cement.	Favourable opinion from an expert has been received.
3	China-Clay.	Ranisipur.	Ceramics (Manufacture) of China and Stone ware).	Good China can be made out of this. But experiments on a fairly large scale need to be made.
4	Cotton.	Baroda and Kadi Districts.	There is cotton enough for several cotton mills.	....
5	Oil-seeds.	Kadi District.	Oil-crushing and refining. Manufacture of Soaps, candle, glycerine.	Yellow-rape and castor-seeds of first-class quality are found in the Kadi District. They are mostly exported. Cotton-seed also is found in abundance.
6	Rice.	Kadi and Baroda District.	Starch	Information has to be collected as to the possibilities of this industry.
7	Reh.	Kadi District.	Washing-Soda	Preliminary inquiries have been made and favourable reports have been received. But experiment on a small scale needs to be done.
8	Seaweeds.	Dwarka.	Extraction of Iodine	Samples have been sent to Bombay to extract iodine on a fairly large scale.
9	Forest-woods.	Navsari District.	Wood distillation, manufacture of alcohol acetone and such other bye-products. Charcoal could be made by improved process.	Thorough survey needs to be done.

LIST OF INDUSTRIES FOR WHICH RAW MATERIALS ARE AVAILABLE—contd.

No.	Natural Resources.	Place.	Industry that could be started.	REMARKS.
10	Cement Stone.	Velachha Taluka in Navsari District.	Good cement could be made.	Experiments have to be made.
11	Ochre.	Kadi and Navsari Districts.	With China-clay, paints and pigments can be made.	. . . . .
12	Alcohol.	Baroda.	Ether, Varnishes and other pharmaceutical preparations.	There is a great difficulty in exporting these preparations to British India. They need to be removed. Lac is found in state forests.
13	Tobacco.	Baroda District.	Cigars and cigarettes.	Some experiments have been made by Private individuals But the manufacture has not been so far successful. Baroda Government should take up this question. First class tobacco is produced in large quantities.
14	Barks and other Tanning materials.	Navsari District.	Tanning extracts.	No work has been done so far.
15	Milk.	Baroda District.	Butter, Casein, Lactose, Milk powder.	Cream is exported and Casein, is prepared out of the skimmed milk. But manufacture of butter, lactose or milk-powder has not been attempted.
16	Leather.	All over the State.	Leather curing.	One factory was started. But it has failed without a fair trial.
17	Sand.	Vijapur Taluka, Kadi District.	Glass manufacture.	One factory has failed because of incompetent management. Good glass was manufactured.
18	Bones.	All over the State.	Bone crushing, animal charcoal. Manures and other bye-products.	No attempts have been made so far to manufacture.