



Report of the Miscellaneous Industries Sub-Committee of the Provincial Industries Committee,  
Bombay

5-1  
BOMBAY

PRINTED AT THE GOVERNMENT CENTRAL PRESS

Obtainable from the Superintendent, Government Printing and Stationery, Bombay, or through the High Commissioner for India, India House, Aldwych, London, W.C.2, or through any recognized Bookseller

Price—Annas 4 or 5d.

1947

# CONTENTS

## INTRODUCTION

PAGE  
i—vi

### PART I.

#### THE LEATHER AND LEATHER GOODS INDUSTRIES (INCLUDING THE OIL AND LEATHER CLOTH INDUSTRY).

CHAPTER I	..	Introductory	..	..	1
CHAPTER II	..	All-India Resources of Leather and Leather Goods (excluding Bombay)	..	..	3
CHAPTER III	..	Resources of Bombay Province (Leather and Leather Goods)	..	..	5
CHAPTER IV	..	Tanning	..	..	11
CHAPTER V	..	Tanning Materials	..	..	14
CHAPTER VI	..	Handicaps and Difficulties	..	..	15
CHAPTER VII	..	Finished Leather Goods	..	..	18
CHAPTER VIII	..	Co-operative Societies	..	..	28
CHAPTER IX	..	The Government Tanning Institute, and Leather Working School at Bandra	..	..	29
CHAPTER X	..	Gut Manufacture	..	..	31
CHAPTER XI	..	Oil and Leather Cloth Industry	..	..	32
CHAPTER XII	..	Recommendations	..	..	33

### PART II.

#### THE GLUE AND GELATINE INDUSTRIES.

The Glue and Gelatine Industries	..	..	..	..	37
----------------------------------	----	----	----	----	----

### PART III.

#### THE RUBBER AND RUBBER GOODS INDUSTRIES.

CHAPTER I	..	Introductory	..	..	43
CHAPTER II	..	The Tyre Industry in the Province of Bombay	..	..	45
CHAPTER III	..	Footwear	..	..	46
CHAPTER IV	..	Extruded and Moulded Rubber Goods	..	..	47
CHAPTER V	..	Mechanical Rubber Goods	..	..	49
CHAPTER VI	..	Proofed Rubber Goods	..	..	50
CHAPTER VII	..	Latex Rubber Goods	..	..	51
CHAPTER VIII	..	Recommendations	..	..	53

## CONTENTS

### APPENDICES.

		PAGE.
APPENDIX A	-- Letter and Questionnaire issued by the Leather-cum-Allied Industries' Panel of the Miscellaneous Industries Sub-Committee ..	54
APPENDIX B	-- Questionnaire issued by the Rubber Industry's Panel of the Miscellaneous Industries Sub-Committee (Provincial Industries Committee) Government of Bombay .. .. .	58
APPENDIX C	-- Statements showing the response to the Questionnaires and the Circulars issued .. .. .	60
APPENDIX D	-- (i) List of representatives of concerns called for interview by the Leather-cum-Allied Industries Panel .. .. .	61
	-- (ii) List of representatives of concerns called for interview by the Rubber Industry's Panel.	
APPENDIX E	-- Analysis of the evidence given by the Tanners and the Leather Goods Manufacturers before the Leather-cum-Allied Industries Panel .. .. .	62
APPENDIX F	-- Analysis of the evidence given by the Rubber Manufacturers before the Rubber Industry's Panel .. .. .	64

## INTRODUCTION

The Miscellaneous Industries Sub-Committee was appointed by the Provincial Industries Committee, Bombay, at its first meeting held on 19th July 1945. This Sub-Committee was by a Press Note entrusted with the task of carrying out a rapid survey of Rubber, Rubber goods, Leather, Leather goods, Glue and Gelatine industries, etc., and of investigating their position with a view to determine the steps which require to be taken for their development in the Province.

*Appointment of the Members of the Sub-Committee.*—The Provincial Industries Committee appointed one of its non-official members,

1. Mr. A. W. Percy .. as Chairman  
and
2. Mr. J. Ghosh .. Tanning Expert and Superintendent, Tanning Institute, Bandra.
3. Mr. R. S. Bhalekar .. Leather Expert and Superintendent, Leather Working School, Bandra.
4. Dr. A. Karl .. Special Research Officer, Poona,

to represent the Department of Industries, as members.

Besides these, the following were co-opted as members of the Sub-Committee, on the suggestion of the Secretary, Provincial Industries Committee, on behalf of the Government :—

5. Mr. P. S. Pandit .. Managing Agent, Western India Tanneries, Ltd.
6. Mr. Kaisar Ahmad .. Of Messrs. Indian National Footwear Corporation.
7. Mr. P. C. Marathe .. B.Sc., D. Tech., Consulting Chemist.
8. Mr. M. G. Kotibhaskar .. M.A., M.Sc., Tech. (Vict.), A.M.I., Chem. E. (London).
9. Mr. A. D. Wenzel .. Representative of Messrs. Firestone Tyre & Rubber Co. of India, Ltd.

The Sub-Committee at its first meeting held on 23rd October 1945, unanimously decided to co-opt

10. Mr. J. Cermak .. Of the Janda Rubber Mfg. Co., as a representative of the Footwear Industry.

and also to co-opt a representative of the Gold Filled Leather Works, Bombay, and a representative of the Rubber Manufacturers' Association, Bombay.

11. Mr. S. C. Parikh, and
12. Mr. Lalit Mohan Jamnadas

were co-opted as representing the two concerns respectively. Mr. Lalit Mohan Jamnadas, however, resigned from 7th August 1946, as he was going

The Government then appointed Mr. B. V. Trivedi, B.A., as Secretary to the Sub-Committee, from 1st December 1945.

As the scope of inquiry of this Sub-Committee was not clear as to whether it was to deal with large-scale industries only, or small-scale industries also, the matter was referred to the Secretary, Provincial Industries Committee, and Director of Industries, Bombay. It was decided by him in the beginning of February 1946, that the Miscellaneous Industries Sub-Committee, had to deal with the survey and investigation of industries having a capital of Rs. 30,000 and above and dealing with the subjects assigned to it.

At the second meeting of the Sub-Committee held on 18th December 1945, the Sub-Committee was divided into 2 panels, viz.,

1. The Leather-Cum-Allied Industries' Panel  
to report on the Leather and Leather Goods industries (including the Oil and Leather Cloth industries), and the Glue and Gelatine industries, and,
2. The Rubber Industry's Panel,  
to report on the Rubber and Rubber Goods industries, with powers to co-opt as members, persons connected with the respective industries.

The personnel of the Panels, after co-option, was as follows:—

*Leather-Cum-Allied Industries' Panel:—*

- |                          |    |                                           |
|--------------------------|----|-------------------------------------------|
| 1. Mr. P. S. Pandit      | .. | Chairman.                                 |
| 2. Mr. A. W. Percy       | .. | Member (till he resigned).                |
| 3. Mr. P. C. Marathe     | .. | ..                                        |
| 4. Mr. M. G. Kotibhaskar | .. | ..                                        |
| 5. Mr. S. C. Parikh      | .. | ..                                        |
| 6. Mr. Kaiser Ahmad      | .. | ..                                        |
| 7. Mr. J. Ghosh          | .. | ..                                        |
| 8. Mr. R. S. Bhalekar    | .. | ..                                        |
| 9. Mr. S. Raja           | .. | Member (co-opted as from 7th March 1946). |

*The Rubber Industry's Panel:—*

- |                             |    |                                                                                        |
|-----------------------------|----|----------------------------------------------------------------------------------------|
| 1. Mr. Lalit Mohan Jamnadas | .. | Chairman (till he resigned on 7th August 1946).                                        |
| 2. Mr. A. W. Percy          | .. | Member (till he resigned).                                                             |
| 3. Mr. P. C. Marathe        | .. | ..                                                                                     |
| 4. Mr. A. D. Wenzel         | .. | ..                                                                                     |
| 5. Mr. J. Cermak            | .. | ..                                                                                     |
| 6. Dr. A. Karl              | .. | ..                                                                                     |
| 7. Mr. V. S. Vaidya         | .. | Member (co-opted as from 18th March 1946).                                             |
| 8. Dr. V. R. Sharma, Ph.D.  | .. | Member (co-opted as from 26th June 1946).                                              |
| 9. Mr. K. K. Mody           | .. | Member (co-opted as from 14th August 1946 <i>vice</i> Mr. Lalit M. Jamnadas resigned). |

## INTRODUCTION:

Mr. A. W. Percy, resigned from the Sub-Committee, in the last week of April 1946, as he was going abroad. The Government, thereupon, appointed in the last week of May 1946, Mr. P. S. Pandit, a member of this Sub-Committee, as its Chairman, and Mr. L. A. Hakall, Vice-President of the Bombay Chamber of Commerce, as a member, *vice* Mr. Percy resigned.

*Contacting the Industries.*—As the response to the questionnaires issued by the Secretary, Provincial Industries Committee, and the Director of Industries, Bombay to the industrialists, was negligible, both the Leather and the Rubber Panels, drafted their own questionnaires and issued them to the industrialists concerned. (Copies of the questionnaires issued by the Panels, are attached as per appendices Nos. A and B)

The Hide Merchants and Commission Agents were requested to supply information, regarding the sources of supply, quantity and quality of the hides and skins, exported and imported, and the places to and from which they were exported and imported.

Circulars were issued to the Municipalities and the District Local Boards in the Province, requesting them to supply the information regarding number of slaughter houses, number of animals slaughtered, disposal of hides and skins, flaying and curing methods, etc. But the response to the questionnaires and the circulars (*vide* statements as per Appendix No. C), was not satisfactory. Both the Panels, therefore, requested a number of industrialists to appear before them for oral evidence and discussion. Some of them (as per list attached, *vide* Appendix No. D), appeared and supplied the Panels with valuable information and views (refer Appendices E and F).

The Sub-Committee was of the opinion, that the holding of an exhibition of the industries to be dealt with by this Sub-Committee, was essential in order to get into touch with them. The response to the questionnaires was not satisfactory, perhaps due to the lack of enthusiasm and faith, and suspicion and inefficient record-keeping, and also because of the fact that recently there has been a flow of questionnaires on behalf of the local and central Governments regarding Planning, Labour, Tariffs, etc., and the people have got sick of them, since none of these has resulted in anything tangible. The members, therefore, thought that visits by some of them to certain large industrial centres of the Province, to meet factory owners personally, would enable them to induce the manufacturers to supply the necessary information. The Government was, therefore, approached to provide for expenses of holding the exhibition and granting of appropriate travelling allowance to the members. But the Government turned down the proposal for holding the exhibition, stating that, "As the Provincial Industries Committee is not a permanent but an *ad hoc* body, and the Miscellaneous Industries Sub-Committee is only a Sub-Committee of that body, Government does not think it appropriate that the Sub-Committee should be authorised and financed to sponsor Industrial Exhibitions. It, therefore, regrets its inability to grant the request of the Sub-Committee". As for the travelling allowance to the members for visiting the industrial centres, Government's reply was not found satisfactory from the point of view of meeting the actual expenses to be incurred by the members while on tour.

The personal contact with the industrialists could not, therefore, be had, and so the Report that is submitted is based on the information received and collected by the office from official and non-official sources, and on the personal experience of the members, but without inspection of the industries, and without interviews with industrialists in the districts.

We, here, wish to record our appreciation of the assistance rendered by Mr. B. V. Trivedi, B.A., Secretary, Mr. V. G. Rane, M.A., the Sectional Head, and the staff, in the collection of the material for the work of the Panels, and in the preparation of the Reports without which the Panels and the Sub-Committee would not have been able to finish their Reports in such a short time.

The Sub-Committee had 4 meetings, and the Leather and Rubber Panels, 15 and 8 meetings, respectively.

The Leather and Rubber Panels, held their first meetings on 1st and 5th March 1946, respectively, and submitted their reports to the Sub-Committee on 16th August and 21st August, 1946, respectively. The Sub-Committee adopted them on 26th August 1946, as its final report, which is submitted, herewith, in 3 parts :—

Part I—Report on the Leather and Leather Goods Industries (including the Oil and Leather Cloth Industry),

Part II—Report on the Glue and Gelatine Industries, and

Part III—Report on the Rubber and Rubber Goods Industries.

P. S. PANDIT,

S. C. PARIKH,

J. GHOSH,

P. C. MARATHE,

J. CERMAK,

KAISER AHMAD,

A. D. WENZEL,

DR. A. KARL,

R. S. BHALEKAR.

Dated 26th/27th August 1946.

*Note.*—Mr. M. G. Kotibhaskar could not sign the Report as he was out of Bombay.

**REPORT OF THE MISCELLANEOUS INDUSTRIES SUB-COMMITTEE  
OF THE PROVINCIAL INDUSTRIES COMMITTEE, BOMBAY.**

**PART I.**

**THE LEATHER AND LEATHER GOODS INDUSTRIES.**

**(Including the Oil and Leather Cloth Industry).**

---

**CHAPTER I.**

**INTRODUCTORY.**

Tanning and manufacture of Leather goods are old crafts in India, and represent a very useful and important group of modern industrial activities. Hides and skins are the basic raw materials needed by the tanners for making leather—a commodity of universal use, both in times of peace and war. To manufacture leather of a very good quality from raw hides and skins, a most scientific and up-to-date method is necessary. Due to social reasons, tanning and leather industries are mostly confined to Dhors, Chammars, Khalpas and Mochis, i.e., the scheduled classes and as such these industries are neglected industries in India as well as in this Province. In any scheme of national reconstruction, tanning and leather goods industries must have a very prominent place, as they are of considerable value both in times of war and peace, and directly affect questions regarding military equipment, transmission of power, footwear of the public and various industrial purposes.

2. The Province of Bombay offers ample opportunities for their development as hides, skins and tanning materials are available in appreciable quantities, and demand for leather and leather goods is likely to increase with the rise in the standard of life of the people and the growth of civilisation.

3. Production of raw hides and skins is dependent on the animals that die, and those that are slaughtered. Deaths of animals are generally not recorded and so the task of the estimation of the production of hides in the Province has been rather difficult. Further the hides of all animals which die are not necessarily claimed or claimed in good condition, as some cattle die in jungles, and their deaths are not known and the flayers may not be available to remove the hides in time, in good condition. Besides generally the owner of the dead cattle is not interested in the disposal of the carcass, except in getting it removed from his yard and, consequently the animals which die a natural death are not cared for and they either degenerate by way of putrefaction or by being torn by vultures, jackals, etc.

4. The waste of carcass thus caused is enormous, not only by way of loss of tons of the most valuable materials which have a great value for the production of bye-products, but also by way of loss of hides and skins.

5. The raw materials of a country are a trust, but due to the absence of (1) a proper organisation on modern lines of the Tanning industry, (2) the scientific disposal of the carcass of dead animals, and (3) the development of trade of extracting their valuable bye-products, enormous wealth is lost every year. In spite of the availability of raw hides and skins in the Province, the Province is

obliged to import leather, to provide for the demand consisting of finished *leather*, footwear, and industrial leather equipment. This Province is well developed in a large textile industry, but the industry is in an anomalous position that though the Province produces raw materials, it is dependent at present for much of its leather equipment on imported articles from other countries. Under these circumstances it is natural that the Province should like to see every inch and ounce of the hides, skins and leather, turned into goods to be consumed first in the Province, then in the country and lastly in the foreign markets.

6. With this background in view, it would be proper to embark on a consideration of the expansion and development of the Tanning, Shoe and Leather goods industries, in the Province.

## CHAPTER II.

## ALL-INDIA RESOURCES OF LEATHER AND LEATHER GOODS.

*(Excluding Bombay).*

7. Before we could concentrate on the resources and possibilities of the Province of Bombay, it is essential to survey the all India position of this industry. Various Provinces in India could be put down in the following order from the point of view of the availability of raw hides and skins:—

8. (1) The Punjab, Sind, and North-West Frontier Province have an abundant supply of raw hides and skins. The latter two Provinces have neither developed tanning nor manufacture of leather goods. Footwear of indigenous types such as Peshavari sandals, and other types like Nagaras, etc., are produced locally. Local tanning is done round about the district of Jullunder, and also at Lahore, Multan, Sialkot and Karnal. Most of the hides and skins of these Provinces are either despatched to other Provinces or diverted to Karachi for export.

✓ 9. (2) *United Provinces.*—This Province is the most advanced centre of tanning, having many tanneries which do vegetable and chrome tanning. Government Harness and Saddlery Factory at Cawnpore, and the tanning and shoe factory of Cooper Allen & Co., have given a good stimulus to the advancement of leather tanning and manufacture of leather goods. Cawnpore is the centre for military, postal and police requirements. Agra is the centre of footwear industries and supplies civil requirements to almost all deficit Provinces of India. This Province has to import hides and skins from other Provinces to meet with its industrial demand.

✓ 10. (3) *Assam, Bengal, Bihar and Orissa.*—These Provinces have an abundant supply of hides and skins. Bengal in particular is known for its good quality of hides and skins. It has developed the tanning industry considerably. Chrome tanning is done by a number of tanneries, and by the Chinese as a cottage industry. Goat-skins of Bengal and Bihar are considered the best for Glace-kid production. Bengal has developed its industry of civilian travel requisites and produces varieties of footwear such as new-cuts, selims, chattis, etc.

✓ 11. (4) *Madras Presidency* has the largest supply of raw hides and skins. There are many tanners in this Presidency who tan for export. The export of both tanned hides and skins is the greatest from this port. To meet the requirements of export, Madras tanners get raw hides and skins from all over India. Chrome tanning has also developed to a considerable extent in this Presidency.

12. (5) *Central Provinces* also have a fairly good supply of raw hides and skins. There are no tanneries in this Province and as such raw hides and skins are exported through Bombay Port.

## PRODUCTION OF RAW HIDES AND SKINS IN INDIA.

13. As per the last survey carried out by the Central Agricultural and Marketing Department, it has been estimated that India produces approximately

Cow	..	200 lakhs pieces.
Buffalo hides	..	57 lakhs pieces.
Goat skins	..	274 lakhs pieces.
Sheep skins	..	170 lakhs pieces.

Of this production nearly 25 per cent. is derived from the slaughtered and the rest from the fallen animals.

14. Raw kips are mostly available in Bengal, Madras, United Provinces, Bihar, Central Provinces, and Hyderabad; Bengal and Madras contributing 40 per cent. of the total production.

15. Buff hides are produced all over India, the largest production being in Madras which is 25 per cent. of the total production.

16. Production of goat-skins in India, according to the last survey, was 274·9 lakhs pieces of which United Provinces contributed 20 per cent. and Bengal and Orissa each 10 per cent.

17. Production of sheep-skins is estimated at 170·8 lakhs pieces, Madras contributing 23 per cent., and Bombay, United Provinces and Hyderabad each 10 per cent.

18. *Export before War.*—With the development of tanning factories in the United Provinces, Bengal and Madras, the export of hides has diminished.

19. Tanning of goat and sheep skins has increased owing to its demand for lining of footwear and leather goods in India, but as goat-skin tanning is not done to an appreciable extent, its export has remained stationary. In spite of this demand, export of tanned skins has increased appreciably, owing to the absence of demand for raw skins (resulting in an increased demand for tanned skins) by America.

20. *Position of live-stock in India.*—It is estimated roughly that India possesses about 200 millions cattle and 90 million goats and sheep.

21. It is further estimated that 20 million cattle and 5½ million buff hides are produced annually in India, out of which 50 to 75 per cent. of cattle hides and 45 per cent. of skins are being tanned in India. Modern tanning is done chiefly in Calcutta, Madras, Cawnpore, Agra and Bombay.

## CHAPTER III.

## RESOURCES OF BOMBAY PROVINCE.

*Leather and Leather Goods.*

22. To survey the development and further expansion of this industry it is essential to take stock of various factors such as craftsmen, live-stock, raw hides and skins, tanning materials and other facilities that exist for tanning and leather goods manufacture.

23. *Craftsmen.*—As in other Provinces, this industry has been developed mostly by Dhors, Chammaras, Khalpas and Mochis.

24. According to the Census of 1941, the number of people of the castes, pertaining to tanning and leather working industries, such as Chammaras, Dhors, Khalpas, and Mochis was as follows:—

*Chammaras, Dhors, Khalpas and Mochis.*

	Males.	Females
Bombay City and Suburban District ..	15,378	12,276
Northern Division .. ..	43,609	39,387
Central Division .. ..	73,122	72,567
Southern Division .. ..	24,738	24,149
	1,56,847	1,48,379

25. The total population, therefore, of the above castes is as large as, 3,05,226. Besides these, there are other castes such as Dheds, Mahars and Kasais, who are also connected with the leather industry, and their total number is 9,21,154. Therefore, the total population of hereditary workers who can handle the leather industry and its connected trades in Bombay Province, is 12,26,380.

26. As the intelligentsia of the country do not appear to have taken any interest, the development and progress of this industry, has been negligible.

27. *Live-Stock.*—As per statistics published in the Season and Crop Report of the Bombay Province, the population of animals, and their average life and their birth and death rates as supplied by the Live Stock Expert to the Government of Bombay are as under:—

	Cattle census 1939-40	Cattle census 1944	Average life.
Cows ..	72,48,611	92,35,953	10-12 years.
Buffaloes ..	24,85,048		
Goats ..	28,54,697	27,80,277	7-8 ..
Sheep ..	20,97,486	19,81,048	6-7 ..

			Average birth rate.	Average death rate.
Cows	..	..	40%	25 to 30%
Buffaloes	..	..	50%	70%
Goats	..	..	150%	20%
Sheep	..	..	65%	20%

Cattle imported from other Provinces are about 50,000.

28. The above figures indicate a decrease in cattle population of all the important varieties which is mainly due to the slaughtering of animals for military requirements during the war.

29. But from the figures of average birth and death rates, it may safely be concluded that as the war has now ended, the population of cows, goats and sheep will be on an increase in the near future.

30. *Raw Hides and Skins.*—Hides and skins are the essential raw materials for leather and leather goods industries, and are mainly derived from buffaloes, cows, goats and sheep. There are other types of skins also, such as reptile skins and deer skins, etc., which are not so important as compared to the above four principal items, on which we will now concentrate.

31. *Buffalo Hides.*—In Bombay Province, as elsewhere in India, owing to religious scruples, killing of animals for food takes place on a comparatively small scale. The bulk of Buff hides are from fallen cattle and it is estimated that roughly only 20 per cent. are derived from slaughtered animals.

32. Buff hides are chiefly used for the manufacture of sole leather, harness, belting for mills and factories, picking bands and pickers. From what is stated before, it is not likely that production of Buff hides will be large, and as such all the hides available in this Province should be retained for local consumption.

33. *Cow Hides.*—As per reasons stated in the case of Buff hides, most of these hides also are derived from fallen animals. It is estimated that only 25 per cent. are available from slaughtered animals.

34. Better grade cow hides are used for the manufacture of upper leather, mostly chrome tanned. Hides are also dressed as case hides for the manufacture of leather goods, travel kit, school kit, etc. In addition to this, there is a good deal of consumption of cow hides in the manufacture of laces for joining-belting, for linings and in-sole for footwear.

35. The agriculturists' requirements also account for a good number of cow hides, forming as they do the chief material out of which moats, leather ropes and leather harness are made.

36. *Goat Skins.*—These are mostly from slaughtered animals and are available in regular quantities. Goat skins from the Province can be put under three main heads :—

1. *From the Deccan.*—These are suitable for chrome tanning.
2. *From Gujerat.*—These skins are heavy and spready and are mainly vegetable-tanned, because of their coarse grain, which makes them suitable for the manufacture of morocco leather.
3. *From Khandesh.*—These are definitely poorer skins not yielding the weight the Gujerat's do, and not of the superior grain of the Deccan's. These are mainly vegetable-tanned.

37. *Sheep Skins.*—As in the case of goats, these are also derived from slaughtered animals, and so regular supplies are available. The sheep skins of this Province cannot be set down to a type, as the quality varies because of the influx of these animals from places outside the Province. Most sheep skins are vegetable-tanned, as the manufacture of chrome-tanned linings is negligible. The best of these vegetable-tanned skins are utilised in the manufacture of Roller skins. Especially during the war, the manufacture of Roller skins in the Province, has been done to a very great extent from indigenous sheep skins, as it has been difficult to obtain tanned sheep skins from Madras.

Rejections from Roller skins are used in the manufacture of leather for fancy leather goods and linings for footwear.

38. *Curing.*—As a limited stock is available from slaughter houses, most of the hides have to be procured from fallen animals from distant places. To avoid deterioration, the hides have to be treated with salt. Government should, therefore, arrange for the supply of denatured salt to the trade, through the agencies connected with the trade. There are three processes:—(1) Wet salting by common salt, (2) Dry salting by the combination of khari salt and common salt, and (3) Drying on frames or spreading on ground. Sun-dried hides when exposed to hot sun are spoiled by the defect known as sun blisters. To remove wet-salted hides to tanneries, the Railway should provide wooden waggons and quick transport.

39. *Defects of hides and skins.*—The defects are generally as follows:—

1. Defects due to breeding, feeding and keeping up animals,
2. Defects due to disease, the ravages of insects and vermins and old age,
3. Defects due to wounds and injuries, viz., scars, brands, goad marks, yoke marks, tar marks, horn marks, punctures, and scratches, etc.,
4. Defects connected with bad and negligent handling of dead cattle,
5. Defects connected with slaughter and flaying,
6. Defects connected with curing and preservation of hides, and
7. Defects due to loading and adulteration.

40. These defects are responsible for the difficulty experienced in tanning and leather manufacture, and in improving the quality of production and maintaining the standard. The most glaring defects are due to bad flaying and imperfect curing which give rise to putrefaction. Flayers in the slaughter houses should, therefore, be licensed so as to prevent bad flaying. The Veterinary Department should (1) carry on propaganda, for prevention of damage by ticks and vermins, and (2) conduct research, to eliminate the defects of the animals during their life time. The Agricultural Department should also make an enthusiastic propaganda amongst farmers, for the elimination of defects such as scar marks, goad marks, etc. Government should set apart pastures for the grazing of cattle.

41. *Production.*—The supply of hides and skins depends on the live-stock population of the Province and this information is obtained by a quinquennium census, the largest being the one undertaken in the year 1943-44.

42. The following tables indicate roughly the production of hides and skins in the Province of Bombay, as based on the number of live-stock according to the census taken in the years 1939-40 and 1943-44. The percentage of the availability of hides and skins to animal population is based on the percentage given by the Government of India " Report on the Marketing of Hides in India and Burma "

Animals.			Number of live-stock according to 1939-40 census.	Percentage of hides and skins of animal population.	Estimated production of hides and skins per annum.
Cow kind	..	..	72,48,611	10.5	7,61,104
Buff kind	..	..	24,85,048	9.3	2,31,109
Goat	..	..	28,54,697	85.3	24,35,056
Sheep	..	..	20,97,486	77	16,15,064

Animals.			Number of live-stock according to 1944 census.	Percentage of hides and skins to animal population.	Estimated production of hides and skins per annum.
Cow kind	..	..	92,35,953	9.9	9,14,359
Buff kind	..	..			
Sheep	..	..	19,81,048	77	15,25,407
Goat	..	..	27,60,277	85.3	23,54,616

The above figures show a decrease of cattle population in the years of war. But in consideration of the birth and death rate figures, it can be expected that the population of cows, goats and sheep will be on an increased in the near future.

43. The above figures of production taken by themselves cannot be said to be sufficient to meet with the demands of the Province. The import of raw hides and skins is comparatively small and does not affect the supply position to any considerable extent. This short supply of the Province is further depleted by the export of raw and tanned hides and skins and the Province has consequently to depend on imports of finished leather and leather goods, from other Provinces and foreign countries.

44. *Government Export Policy.*—It will not be out of place at this stage to review the Export policy followed till to-day. The comparison of Imports and Exports from 1936-37 to 1945-46 will indicate that the raw materials essential for developing the industries are being drained to other countries, and what remains after export is of an inferior type.

## IMPORT AND EXPORT OF RAW HIDES AT BOMBAY PORT.

Year.		Import in Tons.	Value in Rupees.	Export in Tons.	Value in Rupees.
1936-37	.. ..	12	5,633	446	2,70,720
1937-38	.. ..	7	3,301	749	6,34,607
1938-39	.. ..	35	15,193	780	7,93,210
1939-40	.. ..	65	30,164	387	3,42,755
1940-41	.. ..	62	24,285	124	1,07,970
1941-42	.. ..	597	3,61,077	500	3,64,054
1942-43	.. ..	179	75,330	251	3,34,907
1943-44	.. ..	94	53,429	243	4,66,184
1944-45	.. ..	23	14,554	8	16,230
1945-46	.. ..	23	10,071	..	..

## IMPORT AND EXPORT OF RAW SKINS AT BOMBAY PORT.

Year.		Import in Tons.	Value in Rupees.	Export in Tons.	Value in Rupees.
1936-37	.. ..	483	4,14,143	2,958	48,05,350
1937-38	.. ..	549	7,49,951	3,879	67,08,027
1938-39	.. ..	491	5,30,424	3,795	44,27,212
1939-40	.. ..	864	5,12,813	3,396	52,00,909
1940-41	.. ..	401	1,83,163	2,916	31,86,744
1941-42	.. ..	545	3,14,855	6,423	77,29,759
1942-43	.. ..	283	2,60,363	5,489	1,00,82,110
1943-44	.. ..	575	5,15,695	4,940	1,00,61,469
1944-45	.. ..	367	1,66,945	2,504	57,40,403
1945-46	.. ..	474	2,70,636	782	27,72,359

From the above figures it is evident that the prices of raw hides and skins during the war have gone up to more than 300 per cent., and the export and draining of raw materials continued even during the abnormal period, at the cost of the industries in the Province.

45. The present policy of the Government to tempt the Tanners to export by offering bonus through His Majesty's Government's Ministry in Madras, has greatly deprived the country of its raw materials of good quality

46. The bonus system was introduced in Madras from 1st August 1946, as under, for procurement of tanned cows (kips):—

Annas 2 per lb. on supply of 1500-1999 bales.

Annas 4 per lb. on supply of 2000-2499 bales.

Annas 5½ per lb. on supply of 2500-2999 bales.

Annas 7 per lb. on supply of 3000 and above.

47. Under these circumstances, to improve the supply position of the Province, it is necessary that the Government should change its present export policy and prohibit all exports of raw cow and buffalo hides and sheep skins, and restrict export of raw goat skins to the extent of 30 per cent. of its pre-war export from the Province

## CHAPTER IV

## TANNING.

48. The Tanning industry of the Province can be classified as follows :—

- (1) Vegetable tanning,
- (2) Chrome tanning, and
- (3) Miscellaneous tanning.

(1) *Vegetable Tanning.*

49. (a) Bag tanning, and (b) Pit tanning.

(a) *Bag tanning*—

50. Bag tanning is done in all towns and villages by local Chammars. It is the ancient and crude way of tanning by individuals.

51. This process of tanning requires encouragement and development in rural areas. Further, demonstration parties should tour the villages to instruct village tanneries in the way of flaying and curing, and treatment by latest methods. Through co-operative societies the hides and tanning materials should be made available to them, and sales effected. This system will give the village tanners necessary facilities for quick turnover and better prices.

52. During World War II, Government controlled all the tanneries doing pit tanning in India, and 87½ per cent. of the production was utilised for military requirements. It is to the credit of bag tanning that the entire supply of civilian requirements was met by village tanners and no dearth of sole leather was felt in India. Civilians did get their requirements at all times and at all places without waiting in queues. Bag tanning requires only 10 per cent. of capital as compared to pit tanning and, therefore, even in villages, bag tanning is possible. It is, therefore, desirable that bag tanning should be encouraged to absorb the hides of fallen animals, which are not wanted by pit tanners, and to meet the future emergency. The formation of Producers' Co-operative Societies will help in increasing the output of bag-tanned leather, and meeting the requirements of the Province, if these are handled properly.

53. *Production.*—In the absence of official statistics, it is very roughly estimated that in Bombay Province out of the total production of 9,14,359 pieces of cow and buff hides, about 8 lakhs pieces are tanned by the bag tanning processes in the villages.

54. These leathers are mostly consumed for country pattern shoes, chappals, moats and other agricultural requirements. A portion of these leathers is also consumed by the manufacturers of Western type shoes. It is, therefore, found that unless buffalo hides are imported from other Provinces, and made available to village tanners, there is very little room for the expansion of the bag tanning industry in the Province.

(b) *Pit tanning*—

55. This requires a large capital and, therefore, this method is adopted by large tanneries owing to its lower cost of production. The modern process of tanning and curing was introduced by military authorities in 1857, at Government Harness and Saddlery Factory, Cawnpore. Since then, tanneries are started by individual entrepreneurs for pit tanning.

56. Pit tanning because of the better yield of leather has a lower cost of production. It is a process which takes between 3 to 4 months, and as such requires a large amount of material being in process and, therefore, locked-up finance. This process is advantageous, on account of the better yield resulting in lower cost and better quality of leather. Pit tanned leather thus formed is less stretchy and is the only kind of leather which could go in belting, in shoe manufacture, and in harness leather, etc. The processes require a scientific control and large capital and, therefore, for the village tanner, pit tanning is not feasible.

57. *Production.*—The production of pit tanned leather in the Province is about 300 hides a day, whereas the requirements of the Province may be estimated at 1,000 buffalo hides a day approximately. To make up this deficit, it is proposed that seven more tanneries for pit tanning, each to produce 100 buffalo hides a day, may be established in the next five years. The places recommended for the establishment of these tanneries are :—

*Northern Division*—(1) Ahmedabad and (2) Godhra.

*Central Division*—(3) Nandurbar, (4) Ahmednagar or Nasik, (5) Sholapur and (6) Satara.

*Southern Division*—(7) Belgaum or Hubli.

### (2) *Chrome Tanning.*

58. This industry came into prominence since 1932, when the Ottawa Agreement Preferences came into operation, and has since then steadily progressed and increased production.

59. *Production.*—The total production of chrome tanned leather in India is about 7,000 hides per day. Of this entire production, Bombay's share has been 300 hides per day. The requirement of chrome tanned leather in Bombay Province is estimated to be 1,300 hides a day. This finished leather is mostly imported from other Provinces, viz., Madras, United Provinces and Calcutta.

60. In this Province there are only three tanneries which are doing chrome tanning, and it may be possible, in the next five years, to establish five more tanneries doing 200 pieces a day for the manufacture of box and willow sides and calf.

### (3) *Miscellaneous Tanning*

61. *Glace kid, Chrome-suede, etc.*—This Province can consume 4,000 pieces of the above per day. The production at present is negligible. Most of the above leather is imported from Calcutta and Madras. It should be possible, therefore, to establish eight tanneries in next five years, to produce glace kid and chrome-suede, each producing 500 pieces daily.

62. *Oil Tanning.*—The requirement of chamois leather in this province is somewhere about 40,000 pieces per annum, which is met by the import from Madras, Calcutta and overseas. Raw material, such as heavy goat skins and fish oil are available in the Province. Bombay being a large fishing centre, will be able to provide the fish oil for the manufacture of this leather, which should be encouraged.

63. *Specially Dressed Leathers.*—Under this heading will come case hides, moroccos, roller skins, etc. Bombay specialises in the production of this class of leather by the hand process, and as many as 300 workers are employed in it. This can be contrasted with Madras which is principally exporting crust leather. The production of dressed leather in this city (done without the help of any machinery), is not sufficient to meet with the local requirements. The crust leather is distributed

by larger merchants to craftsmen, who do the finishing against labour charges. They have not the capital to do the business on their own account. In order, therefore, to meet the requirement of this class of leather four machine-operated finishing factories should be established with an output of 500 skins and 50 hides per day, one in Bombay and the other three in each of the Divisions. It is emphasised that India has been continually suffering heavily on account of lack of facilities for finishing of bark tanned crust leather, which has to be exported. If the leather is finished in India, it could be consumed in the country. The equipment necessary for such a factory will consist of drums, shaving machines, fluffing machines, glazing machines and hydraulic embossing presses. The investment necessary will be about one and a half lakhs of rupees in machinery for establishing one finishing factory only.

64. The progress of the tanning industry, as stated above, seems to be due to the declining exports of hides and skins from Bombay Province.

65. The following table shows the increase in the number of factories (Registered under the Factories Act) for processing hides and skins in the Province :—

	Year ..	1938	1942	1944
Number of factories .. .. .	.. .. .	24	54	76*
Average number of workers .. .. .	.. .. .	1,490	2,247	2,347

\*Out of these, only 16 factories, employing 907 labourers, use power.

66. The development which has taken place during the war years has to be continued, and to achieve the required production to meet the increasing demand, it is necessary that not only the present rate of production should be maintained, but should be increased further, by establishing more tanneries in this Province.

67. Machinery required for a tannery can be roughly put under the following three heads :—

1. *Beam House Machines.*

Drums.	Fleshing machines.
Latticed drums.	Scudding machines.
Paddles.	Band-knife splitting machines.

2. *Tanyard Machines.*

Drums.	Hydro extractors.
Samming machines.	

3. *Curriers' Shop Machines.*

Drums.	Glazing machines.
Putting-out machines.	Boarding machines.
Striking-out machines.	Ironing machines.
Shaving machines.	Rolling machines.
Staking machines.	Embossing machines.
Buffing machines.	Measuring machines.
Wheeling machines.	

68. In due course, however, it may be possible to manufacture simple machines in India, which possibility must depend upon the development of the engineering industry itself. The needs of the industry for machinery are urgent and, therefore, the industry cannot wait for the development of the local machine-manufacturing concerns. Government should, therefore, provide all facilities for the import of the requisite machinery until such time as the local engineering concerns can supply the same.

## CHAPTER V. TANNING MATERIALS.

69. The main tanning materials are Babul bark (*Acacia Arabica*), Tarwad bark (*Cassia Auriculata*) and Myrabolam (*Terminalia Chebula*) fruit. Besides the above-mentioned materials, Ain (*Terminalia tomentosa*) and Ghatbore (*Zizypus zylopyra*) and Aowla (*Phyllanthus emblica*) fruits, are used as tanning materials. Babul bark is available from Panch Mahals, Thana, Nasik and West Khandesh Districts. Tarwad bark is available from Belgaum, Dharwar, Bijapur, Panch Mahals, Broach, Nasik, East Khandesh and Poona Districts. Myrabolam fruits are available from Kanara, Belgaum, Thana, Nasik, Poona, Kolaba and Satara Districts. Ain bark is available in Kanara, Nasik, Thana, Satara, Kolaba, Poona and West Khandesh Districts. Chilhar bark is available in the districts of Kolaba, West Khandesh and North Thana. Ghatbore fruits are available in Kanara, Belgaum, Panch Mahals, Nasik, East and West Khandesh Districts. Aowla fruits are available in the Districts of Kanara, Belgaum, Panch Mahals, Thana, Nasik, West Khandesh and Poona.

70. The above barks and fruits are utilised in vegetable tanning in the various Districts as per ancient practice. Village tanners should, therefore, be allowed to collect barks and tanning materials for their use, from nearby forests at concession rates.

71. Wattle bark has mostly replaced Babul and Tarwad barks in cow and buffalo tanning, owing to larger percentage of tannic acid, which works out cheaper in cost than indigenous tanning materials like Babul and Tarwad, and the leather produced, in the opinion of most tanners, is preferred, owing to its lower cost of production and better tannage. Further, because of assured supplies of standard quality and steady prices, it will be very difficult to replace Wattle bark with any indigenous or foreign tanning material, and this factor is bound to affect the production of pit tanned leather in future.

72. Owing to the rise of prices of fuel, the contractors are not interested in stripping the bark from the trees, before converting it into charcoal or selling it as fuel, particularly as labour charges have gone up. Babul bark available now as compared to the pre-war days is hardly 30 per cent., whereas the consumption has gone up about three times. The prices of Babul and Tarwad, based on the tanning content, work out 50 per cent. higher than South African Wattle bark. Forest Department should, therefore, undertake plantations of Babul trees and Tarwad plants in suitable localities, and if possible, plantations of Wattle trees should be undertaken on an experimental basis.

73. The present practice of auctioning forests to contractors, prevents tanners from collecting barks from jungles. The contractors should be asked to collect barks separately to be utilised for tanning. Cheap transport facilities by rail to forward these materials to tanning centres should also be provided. Babul fuel not stripped of its bark, should be banned for transport by rail.

74. For mineral tanning, the following tanning materials are utilised :— (1) Bichromate of soda, (2) Sulphuric acid, (3) Molasses, (4) Sodium Thio Sulphate, (5) Potash Alum, (6) Lime, (7) Boric acid, (8) Ammonium Chloride, (9) Soda Ash, (10) Common salt, (11) Various oils, such as vegetable, animal and mineral oils and (12) Dye stuffs. Except items Nos. 7 and 12, all items are manufactured in the Province, which is therefore, most suitable for the purpose of chrome tanning on a large scale.

75. Research should be made in the qualities of barks and fruits, and its use be determined. Problems of research on tanning materials should be referred to the Central Research Institute, Government of India. Statistics of the availability of tanning materials, in the Province, should be maintained by the Statistical Department of the Provincial Government.

## CHAPTER VI.

## HANDICAPS AND DIFFICULTIES.

76. Bombay city is particularly faced with the question of immediate removal of the tanneries from Dharavi, wherein trade has settled since the last 80 years. Whatever may have been the circumstances requiring this shifting by the Bombay Municipality, it can be very safely said that the time chosen is particularly bad. This trade is supporting about 4,000 workers, as it is situated now, and should it be necessary to close down these tanneries, these workers will be the worst sufferers in the present days of hardship. The industry has gone through a war-time strain, and new machinery is yet unobtainable. Old structural equipment cannot be shifted. Building material is hardly available on an industrial scale, and building labour is six times its normal cost. Enforcement of shifting will only mean ruin to the industry and must, therefore, be carefully considered.

77. Bombay is the biggest vegetable and chrome tanning centre in this Province. It is one of the best centres in India, for imports and exports, the other being Calcutta. The latter is noted for chrome tanneries worked with power for mass production of finished leathers, such as Box and Willow sides, Calf and Chrome-suedes and Glace Kids, for which there is a large demand in India as well as abroad. The additional reasons in favour of Bombay are as follows:—

1. There is a large demand in this Province, to meet which the leather has to be imported from elsewhere.
2. Most of the heavy chemicals used in chrome tanning are manufactured in Bombay, and the rest are also available.
3. Tansa water with its low degree of temporary hardness is most suitable.
4. Labourers, trained to machine work, are available.
5. Parts of machinery requiring replacements are quickly manufactured by the local engineering works.
6. Heavy Buff and Cow hides suitable for textile leather are available in the Province, and Medium Cows and Goats skins can be imported from United Provinces, Bihar and Bengal by rail, or *via* Calcutta by sea.

78. For the establishment of tanneries, suitable land, with drainage, municipal water, rail and road facilities is essential. The present site at Dharavi has all these facilities for the development of chrome tanning and vegetable tanning. It, therefore, seems reasonable that the present site at Dharavi should be reserved for such tanneries, unless new land is requisitioned by Government, and made available to the industry at a concession rate, and a guarantee is given that the tanners will not be ejected therefrom.

79. It could be possible to improve upon the present site, so as to provide for the development of this and allied industries, as also for building quarters for labourers, and make it a large tanning industrial centre. This development would also prevent the export of raw hides and skins which would otherwise take place, much to the detriment of the Province.

80. In spite of the huge potentialities of the Tanning industry in the city of Bombay, this industry has lagged far behind that of Cawnpore, Madras and Calcutta, chiefly due to the short-sighted and unsettled policy of the Bombay

Municipality in keeping the threat of ejection continually hanging over the Dharavi Tanneries for several years, a situation which has prevented them from constructing improved buildings.

81. It is, therefore, recommended that, before finally deciding on the question of ejection of the tanneries from the Dharavi area, both the Municipality and the Government should make a thorough enquiry into the following questions :—

1. Whether it is necessary, in the interests of the health of the city of Bombay to remove these tanneries from Dharavi.

2. Whether it is necessary to uproot the existing tanning industry and the dependent allied industries, for the acquisition of the land to build a new residential colony for Bombay city, thus retarding the progress of the industry.

3. Whether it is not in the economic interest of the Province, to reserve the Dharavi area for tanning and allied industries and their labour.

82. It must be noted here, that the tanning industry is hardly any more objectionable than the textile industry, and is certainly not injurious to public health. The industry is mostly rural, excepting in Ahmedabad, Ahmednagar and Sholapur, where somewhat larger factories exist. In regard to sites for future factories, all the municipalities should, therefore, be warned so that a repetition of the trouble experienced in Bombay may not occur.

83. Other handicaps are the present transport difficulty, scarcity of indigenous bark and the present export restrictions.

84. *Criticism.*—The policy of Central and Provincial Governments as regards export of raw hides and skins, tanned leather and leather goods should be formulated in the interests of employment and financial economy.

85. No records are kept, through any machinery, of the movement of raw hides and skins, and tanning materials produced and sold within each District. No records of the trend of prices, in the Districts or larger trade centres, are available. It is strange that the prices of Myrabolams or hides are guided by London Markets and that the Indian producer is dependent on them. Should it be possible to increase the production of leather and finished leather for the internal market, this dictation will stop.

86. *Technical.*—There is a lack of technical knowledge in the trade regarding modern methods in tanning and finishing, and their chemical control. New designs in leather goods, new styles of articles, cheaper production, and the use of by-products, are all dependent on technical skill which is conspicuous by its absence.

87. *Research.*—It is research alone which will enable the country to keep pace with world developments, and enable it to maintain and improve the quality and price of the leather, and capture, or be captured, by other foreign countries. In spite of the existence in this Province of a few good research institutions such as the Technological Laboratory of the Cotton Committee, the Haffkine Institute, the University Department of Chemical Technology and the Industries Department Laboratory, no research is being carried out to help the tanning, leather and allied industries. Research as applied to leather and leather goods is required for :—

1. Improvement in raw materials, their treatment and marketing.
2. New tanning materials as substitutes for existing foreign ones.

3. The manufacture of extracts.
  4. New processes of leather manufacture and improvements in the existing ones.
  5. New methods and materials for finishing of leathers.
  6. The utilization of bye-products, such as hide cuttings and fleshings, for the manufacture of glue and gelatine, and leather cuttings and shavings, for the manufacture of leather boards etc.
  7. Fermentation products.
  8. Research in leather machinery.
  9. Labour efficiency methods.
  10. Statistics of raw materials, tanning materials, production, exports, imports, prices, capital, labour, imports of machinery and chemicals.
88. It is recommended that a Research Institute be established by the Provincial Government, to provide facilities for solving particular problems of individuals in the trade, as also to deal with items Nos. 1, 3, 6, 9 and 10. The rest of the items should, however, be dealt with by the Central Government.

## CHAPTER VII.

## FINISHED LEATHER GOODS.

89. Though the Province of Bombay is backward in tanning and finishing of leather, which is mostly imported from other Provinces, the leather goods industry has reached a high level in Bombay, to the extent that this industry is in a position to export most of its products to other Provinces, as well as to foreign countries. To have a correct view, the leather goods industry can be classified as follows :—

1. Industrial leather goods for Textile mills, etc.
2. Leather goods requirements for services, viz., post, police, railway and military.
3. Footwear.
4. Travellers' requisites and fancy leather goods.

## 1. INDUSTRIAL LEATHER GOODS.

90. These are pickers, belting, picking bands, buffers, laces and strapping, washers, roller skins and gloves. These are manufactured from raw hides, and chromed hides, pressed buffalo hides or sheep skins.

91. With the expansion of industries in India and with the major portion of textile mills being situated in this Province, industrial goods are in great demand, and with the improvement in quality and an effective approach to the purchasers, this industry has a fair chance of development. Before the war 90 per cent. of the industrial leather goods were imported from abroad.

92. The value of the imports of the following four items in the year 1938-39 was :—

					Rs.
Pickers	...	...	...	...	5,59,251
Picking bands	...	...	...	...	7,76,998
Roller skins	...	...	...	...	7,47,931
Leather beltings	...	...	...	...	17,11,648

Therefore, the total import of the above items was valued at Rs. 37,95,828 in 1938-39.

93. It appears from the figures available, that the total quantity of goods imported during the 5 years of war was valued at approximately 3 crores of rupees. In addition to this import, there is sufficient evidence to support the fact that the total requirement was at least of double the value mentioned above and that the additional requirement was supplemented by local production. The total consumption during the war of the above goods was, therefore, about six crores of rupees, i.e., over a crore and 20 lakhs of rupees per year. This industry has thus gained momentum in the period of war, and every encouragement including tariff protection as has been promised to other industries, should, therefore, be given by

the authorities for its future development. It may be noted that Mr. T. F. G. Hepburn, Superintendent, Government Harness and Saddlery Factory, Cawnpore, stated before the panel on leather and leather goods, Government of India, that the belting produced by the Government Harness Factory, was proved to be of equally good quality when compared to imported belting.

94. Washers are prepared in Broach, Nadiad, Bombay and at other smaller centres. The entire demand from ginning factories is met by individual manufacturers who get cheap labour.

95. There are about 30 factories in Bombay and Ahmedabad, manufacturing pickers for textile and jute mills, and about 6 to 7 in the Province, manufacturing picking bands. Laces and strappings are made as a side line by many manufacturers of leather goods.

96. Roller skins are made in Bombay and Sholapur. For obtaining satisfactory quality, faultless sheep skins of average good size with fine grains are necessary. To develop their production, therefore, export of such skins should be prohibited.

97. Belting is an item which should engage the special attention of manufacturers. Heavy buffalo hide, pit tanned, greased and compressed, is an important factor in its production and development. With the expansion of industries, belting will be more in demand and will consume a large portion of buff leather of heavy type for which there is not much demand at present, except for export to Middle East.

98. Hand gloves prepared from chrome hides and skins are used in mechanical workshops, laboratories and foundries.

99. The export and import figures, given below, will give a fair idea of the demand of this industry.

Year,	PICKERS.			Imports.	
				Cwt.	Rs.
1934-35	...	...	...	3656	5,50,162
1935-36	...	...	...	3823	5,93,148
1936-37	...	...	...	3562	5,10,110
1937-38	...	...	...	4819	7,22,677
1938-39	...	...	...	3902	5,59,251
1939-40	...	...	...	4907	7,41,201
1940-41	...	...	...	3598	6,47,930
1941-42	...	...	...	3040	5,63,235
1942-43	...	...	...	1991	5,28,073
1943-44	...	...	...	2735	9,22,063
1944-45	...	...	...	1796	7,14,952

Year,	PICKING BANDS AND STRAPS.			Imports.	
				Cwt.	Rs.
1934-35	...	...	...	3301	6,95,440
1935-36	...	...	...	3629	7,38,850
1936-37	...	...	...	2674	5,54,120
1937-38	...	...	...	4435	9,52,255
1938-39	...	...	...	3927	7,76,998

PICKING BANDS AND STRAPS—*contd.*

Year.				Imports.	
				Cwt.	Rs.
1939-40	...	...	...	3748	8,11,996
1940-41	...	...	...	2572	7,17,886
1941-42	...	...	...	7748	30,98,588
1942-43	...	...	...	4974	21,09,879
1943-44	...	...	...	6182	27,14,408
1944-45	...	...	...	4060	1,78,958

## ROLLER SKINS.

Year.				Imports.	
				Cwt.	Rs.
1934-35	...	...	...	672	5,63,520
1935-36	...	...	...	766	6,30,426
1936-37	...	...	...	608	5,19,098
1937-38	...	...	...	859	7,51,056
1938-39	...	...	...	926	7,47,931
1939-40	...	...	...	909	7,40,328
1940-41	...	...	...	772	7,37,272
1941-42	...	...	...	676	7,38,323
1942-43	...	...	...	554	5,68,730
1943-44	...	...	...	957	11,10,022
1944-45	...	...	...	673	8,63,560

## LEATHER BELTING.

Year.				Imports.		Exports.	
				Cwt.	Rs.	Cwt.	Rs.
1934-35	...	...	...	17,52,300		7	855
1935-36	...	...	...	16,72,861		36	5,295
1936-37	...	...	...	.....		8	230
1937-38	...	...	...	19,53,187		20	2,572
1938-39	...	...	...	17,11,748		2	80
1939-40	...	...	...	17,61,169		38	3,115
1940-41	...	...	...	17,35,248		.....	.....
1941-42	...	...	...	24,47,883		71	11,294
1942-43	...	...	...	19,27,084		37	13,178
1943-44	...	...	...	50,11,774		11	3,296
1944-45	...	...	...	40,64,434		.....	.....

Raw hides and skins are available in the Province for industrial goods, but some have to be imported from other provinces.

## (2) LEATHER GOODS REQUIREMENTS FOR SERVICES.

100. *Post, Police, Railway and Military.*—These requirements are generally ordered out by the Central and Provincial Governments by way of tenders. It is, therefore, left to the individual firms to enter this line, as these requirements are not of an every day concern. Most of the Police requirements of this Province are generally met by the manufacturers of this Province. Tenders called for by the Government are issued to the registered suppliers, whose names are on the list of the Government. All tenders of the above requirements should be sufficiently advertised.

## (3) FOOTWEAR.

101. Owing to different customs and religions and climatic conditions in the Province, requirements in foot-wear differ: Bombay with its population of nearly 30 millions including States, is essentially a shoe-wearing Province, even though chappal is the predominating type of footwear worn. Bombay is divided into two distinct types of people, Gujrathis and Maharastrians, so far as footwear styles are concerned. Bombay City has a distinct feature of its own, being the largest cosmopolitan city in India. Gujrathis wear a lighter type of footwear and Maharastrians wear a heavier type, whereas Bombay is a customer of the modern footwear as much as it is a patron of chappals and other Indian style footwear, like Newcuts, etc. The Manufacturing of these chappals as well as other types of footwear consumed in the Province, is still confined to the method known as the Cottage Industry.

102. Footwear can be divided into two main categories:—

(A) Indigenous footwear, and (B) Western type footwear.

103. (A) *Indigenous footwear* This consists of old fashioned 'jutties,' plain and embroidered, half slippers. 'sapats,' 'jodas' and 'mojdis.' These articles are mostly manufactured and used in the rural areas, where they are prepared from buff sole and cow hides, and sheep and goat skins, which are tanned and finished in the villages.

104. *Chappals and Pathan sandals.*—This variety has come into prominence, and its production is increasing day by day, to such an extent that the chappals manufactured in this Province are exported to other Provinces and overseas. The leathers used for this variety of footwear are coloured kids, calf, suede, chrome, nubuck and various other fancy leathers for uppers, and tanned buffalo hides for soles.

105. According to the report of the Central Agricultural Marketing Department, the pre-war annual production of indigenous footwear was estimated at 700 lakhs of pairs, made in India, out of which about 50 lakhs of pairs were produced annually in Bombay Province (according to the estimate of the Director of Industries). During the war, the production of Peshawari sandals and chappals has increased in this Province by roughly 50 per cent., and if export and transport facilities are made available, the production may increase further by another 50 per cent.

106. (B) *Western type footwear.*—The varieties are:—

- (1) Full boots.
- (2) Shoes—Golf, Oxford and Derby type.
- (3) Slippers—Albert, Selim, New-cut, Nagara and Glacian types.
- (4) Ladies sandals and shoes with different types of heels.

107. The entire production of western type footwear of this Province is made on wooden lasts. There are no factories in this Province to produce machine-made shoes.

108. Materials used are buff hide soles, and uppers of chrome, calf, glace kid, suede, nubuck and 'sambar.' 50 per cent. of chrome leather, 20 per cent. of calf and glace kid, of each variety, and 10 per cent. of suede nubuck and 'sambar' combined, is required in the production of Western type footwear.

109. *Shoes.*—Though the prices have increased, the demand has in no way slackened. During the war, the production has not been sufficient for the requirements of the Province, and about 30 per cent. of the requirement is satisfied by the import of footwear from other places such as Agra, etc.

110. *Slippers.*—There is quite an appreciable demand for light footwear also, such as slippers which are manufactured locally.

111. *Ladies' sandals.*—Bombay has, by force of circumstances, become the leading producer of ladies' footwear, especially sandals of the modern type. To-day the production of ladies' sandals, etc., is entirely confined to the hand-made system. These sandals are made of kid, suede, chrome and various other fancy leathers with leather sole. Amazingly enough, Bombay is the largest producer by hand, of a special type of sandals called wedge-heeled shoe with platforms, and these shoes produced in Bombay are sold all over India. In spite of the lack of facilities provided for these hand workers, in respect of training in designing, etc., the product is definitely good. It can be further improved by the introduction of proper materials and small tools and machinery.

112. *Children's shoes.*—The production of children's shoes in this Province is only 20 per cent. of the present requirement and the balance has to be imported from Agra. This line has, therefore, a good scope for its future development.

113. According to the estimate of the Director of Industries, Bombay, about one million pairs of Western type shoes were used in Bombay Province, per annum, in pre-war days. But now as the village population is drifting to the towns, and with the increase in their earnings and change of habits, more footwear is in demand. The production, therefore, will have to be increased by 100 per cent. in the first five years.

114. There is no mechanised shoe factory in this Province. Whatever steps are taken to supplement the present production on a mechanised basis, under no circumstances anything should be done, which would damage or discourage the existing cottage industry employing thousands of workmen with their families. It is, therefore, extremely essential that some improvements should be introduced even in these cottage shoe-producing methods, such as trimming of the heels and soles and finishing of the shoes by means of small hand-propelled, or wherever possible, power-propelled machines, which would not cost more than a few hundred rupees. It may require a small outlay in the beginning, but it will not only improve the product but also increase the production capacity. As it is, the upper stitching and closing are entirely done with the help of Singer Sewing Machines. There seems to be no difficulty in inducing the craftsmen producing footwear by hand labour, to use a few cheap machines, such as sole-rolling, sole-moulding, channel-opening and trimming machines. These machines cost a few hundred rupees and are operated by hand and are within the reach of most of the cottage

manufacturers. The results are to be seen to be believed. The footwear thus produced will be 50 per cent. better than the present one, and will fetch a better price too. Similarly, small plants for securing the soles and heels, and brushing and polishing, will be extremely helpful to produce a better shoe and the entire machinery will not cost more than a few thousand rupees. The introduction of this improved method will not be possible by individual or private efforts. It is, therefore, the duty of the Government and the Industries Department, with the assistance of the leaders of the industry, to take necessary steps to secure the co-operation of the craftsmen concerned, and the first step towards this will be to import a few machines and place them at the disposal of the manufacturers at various centres, either on a hire system or a hire purchase system. The Government must agree to invest about 2 lakhs of rupees for the sake of improving one of the main industries of the province.

115. At the same time it is important that every encouragement should be offered to those who are desirous of setting up a mechanised industry, to obtain facilities for the import of capital goods as well as technical assistants. The facts cannot be denied that there is a shortage of footwear in the Province, the same as it is in the rest of the country, and hand-made footwear is not sufficient to cover the needs of the people. Therefore, it is essential to see that while all assistance is given to the hand method of producing shoes to improve the quality and the output, a few wholly mechanised factories are also put up.

116. In respect of the mechanised industries, one particular aspect deserves attention first, and that is the lack of technical supervisors as well as trained workers. Steps should be taken to arrange that Government Training Institutions, as well as other large mechanised factories in India, admit and train the personnel in machine methods. Facilities should also be offered to enterprising manufacturers to obtain, if necessary, technical assistance from abroad.

117. The capital required for setting up a factory producing 800 pairs daily is about rupees eight lakhs, including the cost of machine equipments, buildings, stock of raw material and working capital. Two such factories, one at Ahmedabad and the other at Poona, should be encouraged as facilities for electricity, transport, labour and raw material are available and the climatic conditions are favourable. The list of machinery required for a fully mechanised factory is as follows :—

- (1) Upper cutting presses with knives.
- (2) Upper skiving machines.
- (3) Upper folding machines.
- (4) Upper closing Sewing Machines.
- (5) Bottom cutting presses and full set of bottom preparation, like channel opening and channel closing etc.
- (6) Sole pressing machine.
- (7) Insole attaching machines.
- (8) Pulling over machines.
- (9) Side lasting machines.
- (10) Toe lasting machines.
- (11) Heel lasting machines.
- (12) Welt stitching machines.
- (13) Sole stitching machines.
- (14) Heel attaching machines.
- (15) Finishing machines.

118. These are the major machines required which must be imported from abroad to start with. There is absolutely no facility for manufacturing these locally. However, small machines like finishing sets, etc., may be produced locally, but they also involve a special technique in their manufacture and Government should give them deliberate encouragement for the production of these machines.

119. Shoes require 2 lbs. of leather per pair, and chappal roughly 1 lb. per pair. Leather required for 12 million pairs (10 million indigenous and 2 million Western type footwear) would be about 18 million lbs. Taking an average of 25 lbs. as the weight of each raw hide, 7,20,000 pieces of hides will be required.

120. There are four mechanised shoe factories existing in India to-day, namely (1) Cooper Allen & Co., (2) Bata Shoe Co., (3) Cawnpore Tanneries and (4) Dayalbagh Tanneries, Agra, which have their own tanneries and they depend on their own production for manufacturing shoes. They have also a surplus of sole leather to sell in the market. The finished leather produced by them is barely enough to meet their own requirements. There are approximately ten other tanneries, besides the Chinese Tanneries in Calcutta, producing finished leather, viz. Chrome Box, Willow Calf and Suede leather, and they produce enough leather to meet the aggregate demand of the shoe makers and fancy leather goods manufacturers, all over India, and have a surplus for export at present. The production of glace kid is of a negligible quantity and, therefore, hardly adequate to meet the Indian demand. Planning for starting machine-worked shoe factories in India, at this juncture, is, therefore, a necessity, there being enough Indian leather to feed several such factories. The future development of chrome and glace-kid tanneries is dependent on the demand to be created by the power-worked shoe-factories, for without such shoe factories in India, there is bound to be an over-production of finished leather in future, when we shall be entirely dependent on the ceiling prices fixed in foreign countries irrespective of our cost of production of finished leather. Thus shoe factories and chrome factories are inter-dependent. The development of machine-worked shoe factories seems essential and, therefore, should be undertaken on a moderate scale for the first five years to be trebled in the following five years, so that these parallel industries of finished leather and large-scale shoe manufacture may be developed simultaneously, without being dependent on the dictates of foreign markets, which necessarily cannot encourage the growth of an infant industry like ours. For when the slump comes, in spite of surplus raw hides and skins, cheap labour and a growing demand of shoes and other footwear in India, we shall be controlled by the arbitrary fixation of prices set by foreign markets for raw hides, finished leather and footwear.

121. It is, therefore, recommended that :—

1. Two shoe factories be established in the first five years, one at Ahmedabad and the other at Poona, producing 800 pairs per day each.
2. Six similar factories be started in the following five years, near convenient industrial centres.
3. Government should give facilities for the import of machinery for shoe manufacture from U.K., U.S.A. and the Continent.
4. Government should help in procuring suitable sites at concession rates and provide other facilities such as electric power and transport, etc.

122. Footwear industry being mostly a cottage industry is worked by mochhis either at home or in small establishments. Marketing is done through local dealers who pay them advances in cash or kind and buy their entire production.

123. *Grindery*—The accessories essential for the production of footwear are as follows :—

1. Wire Nails—sizes  $\frac{1}{2}$ ",  $\frac{3}{4}$ ", and 1" of 17 gauge.
2. Panel Pins.
3. Blue tacks.
4. Iron tips.
5. Eyelets.
6. Thread.
7. Laces.

With the exception of laces and thread, the Indian footwear industry depended to a very large extent on the imports of the accessories mentioned above. During the war, however, the imported material was almost entirely distributed amongst the Contractors for War Supplies. There was no other source for the civilian footwear manufacturers to get their accessories from, as these were not produced on any appreciable scale in the country. One or two factories, however, came into existence during the war, but they depended for their prosperity on inflated prices, and these factories are not expected to withstand competition from the imported material, as not only the quality required improvement, but also the production is uneconomical. No steps can be taken for increasing the production of footwear in the country at a reasonable price until and unless the Government take immediate steps to procure the supply of these very important accessories for footwear industry, either by obtaining machinery for increasing the production locally, or by securing supplies from abroad.

124. *Lasts*.—One of the most important requirements in the scientific manufacture of modern footwear is a last either of wood or of metal. Like all other things, the manufacture of last in India is also at an extremely primitive stage. Steps should be taken to encourage the manufacture of lasts in this country by means of machinery so as to make a sufficient number of lasts available to the industry. There is thus a great scope for the development of this industry, provided that simultaneously the sources of leather and other materials required are also increased.

125. Rubber heels and rubber soles are also used extensively in the manufacture of footwear and there is a good scope to develop this industry.

#### (4) TRAVELLER'S REQUISITES AND FANCY LEATHER GOODS.

126. This industry is a cottage industry and is localised in Bombay city. Its entire production is hand-made, using sewing machines for stitching small and fancy articles.

127. *Varieties*.—Suit cases and attache cases are prepared from sheep and goat skins or hides. They are framed by steel patties of  $\frac{1}{2}$ ",  $\frac{1}{8}$ " or  $1/16$ " thickness. Base is made either of straw board or fibre board and lined with textiles. Iron frames fitted with locks, rivets, rings plates and corners are also prepared for fitting purposes. Production of tanned goat and sheep skins cases is greater than that of hide cases. Owing to cheaper cost, sheep and goat skin cases are in great demand in this Province as well as other Provinces, and a fair proportion is exported.

128. *Medical Cases, Wallets and Purses.*—These are manufactured in Bombay and its suburbs on a very large scale, employing about 5,000 men, and involving an estimated turnover of about 2 crores of rupees annually.

129. These articles were manufactured in Bombay before the war and exported to other provinces and overseas. This industry secured an impetus during the war, and the production increased from the pre-war figure of about 15 to 20 lakhs to nearly 2 crores of rupees per annum. These items require specially dressed leathers, most of which have to be imported from other places, such as Cawnpore, Madras and Calcutta. In order that this trade may continue to flourish, the required leather should be manufactured in the Province itself.

130. *Brief cases, hand-bags, cash-bags, kit-bags, etc.*—These are either made of sheep skins or hides. A layer of straw board and textile lining is used for this. These articles are also fitted with a type of iron frames which were mostly imported. But during the war a firm in Amritsar started the manufacture of these frames but much remains to be done to satisfy the requirements of local manufacturers.

131. There was an ample development, during the war, in the production of fancy leather goods such as ladies' bags and purses, toilet cases, writing cases, etc. In pre-war days, these items, which were made out of Rexine or imitation leather, were mostly imported. The present turnover of these items, manufactured in Bombay, is estimated at about one crore of rupees per annum. But the war-time development was chiefly due to the demand of the Military personnel, which has now ceased, resulting in an over-production. It is, therefore, deemed necessary that export of these manufactured articles be permitted to the Middle East and other countries.

132. Bombay proper is the chief consuming centre of cheap as well as costly varieties of fancy goods. Other important centres consuming the goods are Ahmedabad, Poona, Nasik, Ahmednagar, Sholapur, Baroda and Surat. A fairly good amount is consumed in the Punjab, Sind, N.W.F.P., U. P. and Madras. Fancy goods, such as ladies' hand-bags and toilet cases manufactured in Bombay are in demand in Bengal.

133. The export of this commodity has been substantial. In the year 1934-35, the export was valued at Rs. 1,00,000, and has increased to nearly Rs. 5,71,880 in the year 1942-43. The production capacity has tremendously increased and there is, therefore, a large surplus for export.

134. Special raw materials in the form of reptile skins and printed leathers are required in the manufacture of these items, and as such exports of these skins should be discouraged to prevent the extinction of this industry.

135. The finished leather required for manufacturing these items is inadequate to meet with the demands of the manufacturers and it is, therefore, recommended that immediate steps should be taken to increase the output by the establishment of new finishing factories for leathers in the Province, capable of handling the line.

136. There is, however, a shortage of other leathers such as tanned sheep skins, chrome, suede, calfs, glace kid, 'sambar' and fancy skins in the Province. These are mainly imported from Madras, Mysore, Trichinopoly, Cawnpore and Calcutta. It is, therefore, recommended that production of these types of leather be undertaken immediately by local tanneries.

137. *Metal fittings*.—The following are the articles required for the leather goods industry :—

- (i) Darings,
- (ii) Buckles,
- (iii) Corners,
- (iv) Plates,
- (v) Solid and hollow rivets,
- (vi) Locks,
- (vii) Press buttons,
- (viii) Bifurcated rivets, and
- (ix) Zip fastners.

Excepting bifurcated rivets and zip fastners which are being imported, the other items are manufactured in Bombay, Aligarh and Delhi, but difficulties are experienced by the manufacturers in producing raw materials of stable quality, viz., steel plate and wire. These materials should be made available to the manufacturers of these articles for regular and standard production, at controlled rates.

138. *Transport*.—The evidence placed before us shows that, so far, this industry has been treated extremely unsatisfactorily by the transport authorities. We have been informed that frequent representations have been made to the authorities concerned, including the Railways, but without any result. Unless we provide better transport facilities, both for transport of leather and other materials to the manufacturing centres, and for finished products from the manufacturing centres to the markets, planning will not bring about any progress for the industry.

139. It is, therefore, recommended that the whole question of the present difficulties with regard to transport should be thoroughly re-examined and not only should the present difficulties be removed straightway, but also adequate facilities be granted in future. One serious complaint brought before us by the members of the industry is with regard to the movement of their finished products i.e., the classification under which the foot-wear and leather goods are accepted by the Railway authorities. It is very strange that the leather goods industry, which is comparatively a smaller industry than the foot-wear industry in Bombay Province, has been allowed quicker movements than footwear. It is stated that leather goods can also be moved by passenger train, whereas footwear is not allowed the same facility. This anomaly must be rectified immediately, and foot-wear and leather goods must be permitted freer movement.

## CHAPTER VIII.

## CO-OPERATIVE SOCIETIES.

140. This Province is unique in respect of bag tanning, as there are tanneries in almost all the towns and villages. Some of them are very small indeed, and in some there are only one or two village tanners working. To improve their conditions it would be better if they worked on Co-operative lines so as to produce more for higher profits. All assistance should, therefore, be given to them to form co-operative societies, the functions of which can be divided under the following heads :—

1. Collection, preservation, and distribution of raw hides and skins to tanners.
2. Collection and distribution of tanning materials.
3. Purchase of tanned and finished leather from tanners, and their distribution to industrial centres.
4. To encourage local production of leather goods and footwear, by encouraging the local craftsman to prepare goods of standard quality required by big centres, and to supply them according to their demands, and
5. Co-operative distribution of finished goods.

141. Members of the co-operative societies should be enlisted from the working class of this trade.

142. Since the question of co-operation in this industry can be more competently handled by the Co-operative Department in consultation with the Department of Industries, we have refrained from making any detailed proposals.

## CHAPTER IX.

GOVERNMENT TANNING INSTITUTE AND LEATHER WORKING SCHOOL,  
BANDRA.

143. These two Institutions are run under the Director of Industries, Bombay. The courses of study in these two Institutions are as follows :—

- (a) Two years Advanced Course in Tanning.
- (b) One year Course for Artisans in Tanning.
- (c) Two years Advanced Course in Shoe and Leather Goods Working.
- (d) Two years Artisan Course in Shoe and Leather Goods Working.

144. The above two Institutions were established by the Government in 1939, with the object of imparting training in the art of manufacturing leather and leather goods, and footwear, both by theory and practice. The buildings in the institutions as planned, were to be built in four stages. The first two stages are completed, and the remaining two viz. hostel for the student's quarters for the supervisors and the menial staff which were kept in abeyance due to the war, may now be taken up.

145. The Institution has at present provision for training five Advanced students and twenty Artisan students, every year. In consideration of the requirement of trained personnel in these lines for post-war expansion, the existing provision cannot be considered adequate, and further development, therefore, of these institutions is essential. It is also necessary that a more comprehensive and a thorough practical course should be started.

146. The present equipment both for the Chemical Laboratory and the Model Tannery is barely sufficient to impart training to the existing number of students. A few additional pits, machinery and equipment for Laboratory should be provided for the Tanning Institute, to improve the standard of instruction. Similarly, no arrangement exists in the Leather Working School, to impart training in the manufacture of machine-made shoes, leather goods and industrial leather goods.

147. The needs of the two Institutions, therefore are :—

(a) *A Chemical laboratory for students.*—There exists at present a very small chemical laboratory, which can accommodate only five students at a time, for work.

The extension of this laboratory is necessary with a view to increase the number of students in the Advanced Course, in future.

(b) *Laboratory for Research Investigation and a Test House for the benefit of the trade.*—No separate room and equipment is provided, at present, for the staff to carry on their work. A separate chemical laboratory should, therefore, be provided.

(c) *A Microscopical and Bacteriological Laboratory.*—It is necessary to have such a laboratory, fully equipped and staffed, to impart training in the subject to the students, as well as for carrying out investigation and research, directly connected with the industry. It is impossible to think of a Tanning Institute as complete, without such a laboratory. Provision for chemical and physical testing of leather, tanning materials and leather auxiliaries, etc., should be made in this test house which will form an important part of the Institution.

148. *Model Tannery.*—Though the existing model tannery is equipped with a number of machines for tanning, a few more additional important machines should be added to this, to make the tannery a perfect model unit. These machines are—

- (1) Boarding machine,
- (2) Automatic Spraying machine,
- (3) One hot plating machine for ironing and embossing,
- (4) One power driven measuring machine.

149. In the bark tanning yard, the existing pits are not sufficient for tanning leather by the pit tanning process systematically. A few more masonry pits for vegetable tanning are also necessary. A few more machines may be installed immediately to prove the quality of leather. The machines are :—

1. Stoning jacks, and
2. A drum setting machine.

150. Besides these machines, a small bark mill (disintegrator), may be installed to save labour and waste of tanning materials.

151. The total cost of machinery will be approximately Rs. 60,000 including freight, packing, insurance and import duty.

152. With the addition of this equipment, more students can be trained and given more comprehensive practical training by giving them regular work in the tannery. It will also help the small tanners, who generally come to the Institute for such help.

153. A complete set of machinery for a model shoe factory and a complete set of equipment for an industrial leather goods factory may be provided in the Leather Working School to impart training in these subjects.

154. The institute has been incurring an expenditure out of all proportion to the benefit that is derived from it. Only five boys are taken for training each year for the Advanced Course, and the provision for their proper training in commercial practice is poor, because the grants for current expenditure are given once a year, and according to Government rules, the amount realised from the sale of products cannot be used by the Superintendent over and over again. The training, only in the process of tanning or leather work, cannot avail much to the trainee after he leaves the Institute, unless he learns also to do the work on commercial lines, i.e., to learn all the economic factors involved in the production of the goods.

155. We are emphatic that such institutes should be run in a manner so that the students learn, not only the technical, but also the commercial aspects of the trade, and for this purpose, we would recommend, that a larger grant, sufficient to run the tannery continuously, be made to enable the students to learn the art thoroughly, and also study for themselves the different factors entering in the cost of their products. This is not likely to involve the Government in any appreciable loss if at all. This might also help the institute to pay better wages to the workers, and make them stick to their jobs.

156. The research side of this institution should be developed immediately, by providing it with more material and research workers, so that in the years to come the non-recurring expenditure of the Government on this institution will be thoroughly justified.

157. The institutions are located at present on a site, which is difficult of approach. It has been very inconvenient to the students and the staff, to attend the institutions. Staff quarters and students' hostels are, therefore, badly required to overcome this inconvenience.

## CHAPTER X

## GUT MANUFACTURE.

158. In the Province of Bombay there are a few gut manufacturers, but only one of them, Messrs. A. D. Mayer & Co., has a regular established factory of about 40 years' standing. The others are not regular manufacturers, and do very little work from time to time, the statistics of which are not available.

159. Gut manufacture depends on the slaughter of animals, whose intestines form its raw material. Bombay manufacturers depend for the supply of intestines on the Bandra slaughter house. Their daily supply is as follows:—

Intestines of Cows	...	...	...	200 to 250
„ „ Buff	...	...	...	17
„ „ Sheep and Goats	...	...	...	3,000 approximately.

160. *Use.*—Guts are generally used for gutting rackets, casings for sausages, etc., and for surgical requirements.

161. The intestines of goats and sheep are mostly in use for manufacturing guts, and the intestines of cows and buff are used in the manufacture of casings for sausages.

162. Casings for sausages, etc., are exported to overseas, where they are mostly in demand.

163. This industry is run in Bombay by Messrs. A. D. Mayer & Co., on a large scale basis, its monthly production being 1,10,000 yards of casings. This industry does not require any machinery in its manufacture, and is better done by hand. There is a sufficient number of trained workers in this line.

## CHAPTER XI.

## OIL AND LEATHER CLOTH INDUSTRY.

164. Bombay Province has only one established factory producing Oil and Leather Cloth. This factory viz., Ahmed Abdul Karim Bros., Ltd., is situated at Ambernath, an industrial town on the G. I. P. Railway, in Thana District. This factory was started in the year 1941, and so, it is a war-time-industry. Its production in the years 1943 and 1944, was about 2,00,000 yards, and 3,25,000 yards, respectively. It produces—

- (1) Rexine (imitation leather cloth),
- (2) Oil cloth, and
- (3) Book-binding cloth, etc.,

the first being used for cushion coverings in trains, buses, etc., and the second being used for domestic purposes.

165. The raw materials required are (i) cotton cloth, (ii) canvas, (iii) linen, (iv) colours and (v) chemicals for preparing paste and varnish.

166. The manufacturing process and the cloth required for each variety are different. Rexine requires grey cloth such as grey drill, sheetings, shirtings, etc. while oil cloth requires coarse canvas or linen, generally made from jute fabrics. The cloth and some chemicals and colours are available in India, but for pigment, colours, and Ethyl Acetate, which are not available in sufficient quantities here, the industry has to depend for its supply on the U.K. and the U.S.A.

167. Due to the restrictions of war, import of oil cloth and rexine, etc., was not possible and hence the industry has had a good scope for development. But with the cessation of hostilities, and with the possible facilities for imports, the industry may not be able to withstand foreign competition, unless protection is afforded by way of high import duties on foreign goods.

168. The industry, even during the war, had to labour under certain handicaps such as a lack of technicians, requisite machinery, cloth and other raw materials in sufficient quantities.

169. The location of the factory at Ambernath, being very convenient from the point of view of transport facilities, labour, power, etc., is able to cater well for the home market, which exists all over India. Bombay Province is the chief consuming centre, consuming about 75 per cent. of its total production.

170. It is, therefore, recommended that the Government should help the industry by—

(a) providing facilities for :—

1. Technical training,
2. Import of chemicals and colours,
3. Import of requisite machinery, and
4. Supply of sufficient cloth of the proper variety, and

(b) by levying protective duties on competing foreign goods, to enable the infant industry to flourish.

## CHAPTER XII.

## RECOMMENDATIONS.

171. The following is a summary of the recommendations :—

1. Tanning and Leather Goods industries should be made more attractive to the intelligentsia and the investors.
2. Export of hides and sheep skins outside India should be prohibited. The export of Goat skins, however, may be permitted to the extent of 30 per cent. only of its pre-war quantity. These restrictions are most essential to satisfy the increasing demand of the tanneries in the Province.
3. Import of raw hides and skins from other Provinces and outside India, should be made easy. Wooden wagons, for transport of raw and wet-salted hides and skins to tanneries, be made available to avoid damage done to them by heat in transit.
4. Government should arrange for the supply of denatured salt to the trade through the agencies connected with the trade.
5. The existing conditions in the slaughter houses should be improved, and flayers therein be (i) trained in modern methods of flaying, (ii) supplied with suitable safety flaying knives, and (iii) licensed so as to prevent bad flaying. Licenses should be made subject to cancellation for continued bad work.
6. The Veterinary Department should (i) carry on propaganda for prevention of damage by ticks and vermins, and (ii) conduct research to eliminate the defects in animals during their life-time.
7. The Agricultural Department should make an enthusiastic propaganda amongst farmers for the elimination of defects such as scar marks, goad marks, etc.
8. Government should set apart pastures for the grazing of cattle to avoid under-nourishment.
9. Demonstration parties should be sent out into villages to instruct village flayers in proper methods of flaying, and traders in the proper method of curing and treatment of hides.
10. Producers' co-operative societies should be started to provide hides and tanning materials to village tanners, and to effect sales of their products, with a view to increase the production of bag-tanned leather.
11. Seven more tanneries for pit tanning, each to produce 100 hides a day, should be established in the next five years, to meet the requirements of pit tanned leather in the Province. Places recommended are : Ahmedabad, Godhra, Nandurbar, Ahmednagar or Nasik, Sholapur, Satara and Belgaum or Hubli.
12. Four more tanneries, each to produce 200 pieces a day, for the manufacture of box, willow sides and calf, should be established, in the next five years, to meet the requirements of the Province.
13. Eight tanneries, each to produce 500 pieces daily of glace kid, chrome suede and morocco leather, should be established in the next five years.

14. The oil tanning industry should be encouraged, as raw materials viz. heavy goat skins and fish oil, are available in the Province.
15. To stop the over-measurement of leathers, a Leather Measurement Act for the whole of India, should be promulgated by the Central Government.
16. Four machine-operated finishing factories, each with an output of 500 skins and 50 hides a day, be established, one in Bombay and the other three, one in each of the three divisions, to meet the requirements of specially dressed leather.
17. Village tanners should be allowed to collect barks and tanning materials for their use from nearby forests, at concession rates.
18. Forest contractors should be made to strip off barks containing tanning materials, before using the wood as fuel or for the manufacture of charcoal, etc. Babul wood, not stripped of its bark, should be banned for transport by rail.
19. Forest Department should undertake plantations of Babul trees and Tarwad plants in suitable localities and, if possible, plantations of Wattle trees should be undertaken on an experimental basis.
20. Cheap transport facilities by rail, to send tanning materials to tanning centres, should be provided.
21. Research should be undertaken in the qualities of bark and fruits, to determine their use. Problems of research on tanning materials should, however, be referred to the Central Research Institute, Government of India.
22. Statistics of the availability of tanning materials in the Province should be maintained by the Statistical Department of the Provincial Government, and should be made accessible to the industry.
23. The question of the shifting of tanneries from Dharavi, be dropped for the present, and the matter be investigated thoroughly by the Government and Municipality of Bombay, on lines suggested in the Report.
24. Facilities should be provided for imparting technical knowledge regarding modern methods in tanning and finishing, by developing the training institutes, as well as by arranging with large mechanised factories in India, to admit and train candidates in machine methods, in evolving new designs, and in the methods of utilising waste, such as leather cuttings and fleshings, etc., in the production of bye-products such as glue, leather board, etc. Some of these facilities are already available at the Government Harness and Saddlery Factory, Cawnpore. In the interests of Indian students, it is recommended that this factory should not be closed down, as suggested in the Report of the Panel on Leather and Leather Goods, Government of India, but on the other hand, a Section of Chrome Tanning, and a Mechanised Boot Factory should be added to this establishment to provide for the training of students in these branches as well. (Similar facilities are difficult to obtain for Indian students in Western countries).
25. Research in items Nos. 1, 3, 6, 9 and 10, as stated in paragraph 87 in Chapter VI, should be undertaken by the Provincial Government, and arrangements should be made with the Central Government, for conducting research in the remaining items.

26. Heavy import duties on industrial leather goods should be levied in the interests of Indian manufacturers producing these goods. Imports of belting below 4" should be restricted.

27. Shoe making as a cottage industry should be encouraged by introducing improvements in methods of production, and by providing it with cheap and small machinery.

28. At least two mechanized shoe factories, each to produce 800 pairs of shoes per day, should be established at Ahmedabad and Poona.

29. Manufacture of grindery for footwear and other leather goods, should be encouraged by providing the manufacturers with suitable machinery and technical help.

30. Export of finished leather should be restricted, and that of travel and fancy leather goods should be freely permitted to foreign countries.

31. Higher priority should be accorded to raw hides, raw skins, footwear and leather goods for purposes of transport by rail, and differential treatment between leather goods and footwear should be avoided in movement by rail.

32. Government should help the manufacturers by (i) arranging for import of machinery, (ii) the supply of raw materials and (iii) introducing them to foreign markets through the respective High Commissioners for India.

33. An advisory committee should be formed representing (i) Leather Goods Manufacturers, (ii) Tanners and (iii) Raw hide exporters, to advise on the export policy to be pursued by Government.

34. The entire working and the difficulties of the Government Tanning Institute and the Leather Working School, Bandra, should be urgently investigated on lines suggested in Chapter IX of the Report.

## PART II.

## THE GLUE AND GELATINE INDUSTRIES.

1. The glue industry is a subsidiary of the tanning industry because the waste fleshings, hide cuttings and picker cuttings, which are of no use for being made into leather are put to use for the manufacture of glue. Glue is also made from fish as well as bones, the latter being available in India in great abundance. We are, however, here concerned with the manufacture of glue from waste tannery products.

2. In the Province of Bombay, there are at present five manufacturers of glue, all of whom have come into existence under the stress of war. The most important of these is the Western India Match Co. Ltd., Ambernath, G. I. P. Rly., which produces about 150 tons of glue per year for its own use. The others are in the infant stage and have so far produced quantities which will be uneconomical in normal times. They have, however, plans for expanding their industries.

3. The position regarding the consumption of glue in the Province, may be gauged in the following figures of imports, for the quinquennium ending 1940 :—

*Imports.*

Year.	Cwt.	Rs.
1935-36	7,174	1,46,906
1936-37	5,959	1,36,140
1937-38	6,694	2,15,421
1938-39	7,201	2,10,864
1939-40	6,959	2,68,308

4. The figures of all India imports of glue for the quinquennium ending 1940 are as follows :—

*Quantity.*

	1935-36.	1936-37.	1937-38.	1938-39.	1939-40.
	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.
Share of Bengal ...	5,834	6,178	5,006	6,164	6,132
Share of Bombay ...	7,147	5,959	6,694	7,201	6,959
Share of Sind ...	2,210	2,073	1,889	2,742	1,647
Share of Madras ...	3,244	3,559	3,100	3,154	4,680
Share of Burma ...	2,172	1,878	.....	.....	.....

## Value

	1935-36.	1936-37.	1937-38.	1938-39.	1939-40.
	Rs.	Rs.	Rs.	Rs.	Rs.
Share of Bengal ...	1,62,922	1,67,811	2,19,589	2,39,382	2,63,299
Share of Bombay ...	1,46,906	1,36,140	2,15,421	2,10,864	2,68,308
Share of Sind ...	40,335	34,370	50,769	69,246	43,766
Share of Madras ...	70,730	79,752	1,09,557	87,482	1,49,356
Share of Burma ...	52,959	52,648	.....	.....	.....
Total ...	4,73,852	4,70,721	5,95,336	6,06,974	7,24,719

It may be noted here, that the report of the Panel on leather and leather goods, Government of India, has, through inadvertence, given the figures of imports as tons, instead of cwts.

5. Before 1942, there does not appear to have been any production of glue in the Province, except perhaps on a cottage scale for personal use. The shortage due to the non-availability of imports during the war, and the high prices that prevailed, have brought into existence the factories referred to above, and they are producing a fair quality of glue, some of it being equal to the best foreign glue. Regarding the raw-materials of this industry, no statistical data is available, but from information that has been gleaned from different sources, it appears that this Province produces hide and skin cuttings and fleshings, to the tune of about 1,200 tons a year, from all the organised as well as cottage tanneries. This quantity has been arrived at, on the basis of 10 per cent. of fleshing and cuttings from the weight of hides and 2 per cent. of the weight of skins, estimated to be produced in the Province. The other raw materials available for the production of glue, in the Province, are the waste, i.e., worn out pickers from the cotton mills, and the waste picker cuttings from the picker manufactures. The available quantity of the raw material from these two sources has been estimated to be about 450 tons a year. The yields of glue expected from dry fleshings are 16 to 18 per cent., from hide cuttings 33 to 40 per cent., and from picker cuttings 50 to 55 per cent. In the case of used pickers from mills, the yield of glue is the same, but 10 to 15 per cent. allowance has to be made for the weight of the iron nails and grease which have to be removed.

6. The total quantity of glue available from the above raw materials will be roughly as follows :—

Fleshings and hide cuttings ...	1,200 tons at 25 per cent.	Tons. 300
Waste pickers ...	360 tons at 45 per cent.	160
Hide cuttings in the manufacture of pickers, etc. ...	30 tons at 55 per cent.	16 5

476·5 tons.

7. Allowing 5 per cent. for the usual losses in handling and lack of careful preservation, we may assume for our purpose that this Province has under

the present conditions raw materials of the kinds mentioned above, sufficient to yield glue between 400 to 450 tons annually.

8. The other materials which are available in the Province for the manufacture of glue are bones and fish. The glue made from these raw materials has specific uses.

9. The following extract from the Annual Statement of the Sea-Borne Trade of British India will give an idea about the exports of bones and bone meal outside India and through the Bombay Port. No statistics are available of the fish that could be utilised for the manufacture of glue.

*Quantity.*

	1935-36.	1936-37.	1937-38.	1938-39.	1939-40.
	Tons.	Tons.	Tons.	Tons.	Tons.
Share of Bengal ...	18,689	12,831	23,301	17,355	27,008
Share of Bombay ...	6,333	9,654	11,555	4,001	2,932
Share of Sind ...	7,510	11,157	12,488	5,885	11,859
Share of Madras ...	9,175	22,036	21,426	13,255	10,229
Share of Burma ...	1,187	1,569	.....	.....	.....

*Value.*

	1935-36.	1936-37.	1937-38.	1938-39.	1939-40.
	Rs.	Rs.	Rs.	Rs.	Rs.
Share of Bengal ...	9,10,382	6,30,666	12,53,202	9,23,485	14,66,012
Share of Bombay ...	4,25,492	9,11,208	13,16,223	3,21,125	2,05,868
Share of Sind ...	3,22,379	4,84,332	5,94,919	3,10,359	5,30,179
Share of Madras ...	6,67,589	14,86,327	20,32,538	11,15,268	8,62,240
Share of Burma ...	73,602	1,04,427	.....	.....	.....
<b>Total ...</b>	<b>23,99,444</b>	<b>36,16,960</b>	<b>51,96,882</b>	<b>26,70,237</b>	<b>30,64,299</b>

10. Judging from the requirements of this Province from the pre-war imports, the scope for the manufacture of glue is limited. The economic unit of a glue factory in normal times would be about a ton of glue per day but larger units would be in a better position to compete with the imported material. The raw materials available for this manufacture are just enough for the purpose. It is quite likely that the consumption of glue in the Province has gone up by at least 50 per cent. during the war, and it is hoped, that some at any rate, of this extra consumption has come to stay, if not the whole.

11. While considering the scope for the expansion of the glue industry, we must take account of the fact that the Western India Match Co., Ltd., Ambernath, have about two years ago set up a plant for the manufacture of glue with a rated capacity of 220 tons per year. Since they will produce this quantity for their own consumption, and will be in the market for raw materials, the available raw material for other factories will be further narrowed down. Much also will depend upon the encouragement given to tanneries, as the meagre raw materials from tanneries may dwindle down, if the tanneries and picker manufacturers do not prosper. It must also be remembered that the raw materials coming from tanneries are spread all over the Province and the cost of collection and transport to the factory would not be negligible. Bombay town which is the largest centre of tanneries in the Province, is not the most suitable place on account of its humid climate for the manufacture of glue. In other countries where the conditions such as the availability of cheap raw materials, the nearness of the market, etc., are favourable, dehumidification plants are installed to facilitate the manufacture of glue, and if the manufacturers find a balance of advantage in favour of Bombay, they may resort to the installation of dehumidification and air conditioning plants.

12. From the considerations put forth above, it will be clear that, (a) there is scope at present for one fairly large glue factory in the Province, if tannery waste and worn out pickers only are considered, (b) in order that such a factory should not be handicapped for raw materials, the exports of fleshings, hide cuttings from picker and other manufactures as well as waste pickers from mills should be stopped. Even if this was done, two factories (including the one of the Western India Match Co., Ltd.) will find it difficult to get sufficient quantities of raw materials from the tanneries within the Province, unless they resort to the use of bones or import part of their requirements from outside the Province such as Cawnpore, Madras, Delhi, etc.

13. The importance of developing the glue industry in the Province is indeed great both in peace and war time. The production of glue is considered to be the measure of the industrialization of a country, because glue is used practically in every important industry such as the textile, the wood and furniture industry, the leather industry, the paper, straw-board and printing industry, the building trade, match, paint and varnish and the chemical industries. It will give a fillip, even if to a small extent, to the tanning industry, as an efficient glue industry will help the tanneries by offering them better prices for their waste products. In fact the tanneries and the glue factories will help each other—a circumstance which will lead to the healthful existence of both.

14. The technique of the production of good glue is somewhat difficult, but there is a factory which has reached the excellence attained by the best manufacture in Europe and America. This should be a circumstance in favour of encouraging the establishment of the manufacture of glue on a stable basis.

15. As regards location, dry atmosphere and low temperature in the summer being more favourable for drying, an operation which has an important bearing on the capital cost of the industry, places like Poona and Deolali are considered more favourable. These places have a low rain-fall and are, therefore, dry, and the temperatures in summer are not so high as in Baroda or Ahmedabad. A suburb of Bombay in close proximity of the main tanneries would be also suitable, if dehumidifying plants are installed, as Bombay will furnish the major quantity of the raw material and is also the biggest market for the finished product.

small factories, which have made a success of glue manufacture, are unable to carry on simply due to the high prices prevailing on account of the shortage created by war. Since imports from abroad with very large units have started coming in, it is imperative that the Government of Bombay should immediately adopt a policy of delimiting the trade of the indigenous manufacturers. The present is the crucial moment: the trade all over the world is far from normal. The industry is still in the melting pot. The inflation, the creation of a market not only in India, but in several other countries which have been affected by the war, and fancy prices may be offered by some foreigners in the glue industry. In other countries like Brazil, Argentina, the United States, the United Kingdom and other Western and Eastern European countries, conditions are favourable for the production and export of glue to countries where the price is not depreciated. There are big cartels who are controlling the price of the inferior subsidiary raw material, in their manufacture, and are offering a high price for our raw materials, to secure their requirement of the cost of glue in the cost of finished product, a valuable item. Large combines and cartels of glue manufacturers, in their export drive, dump their glue at prices, which are below the cost of the infant Indian industry to face without an adverse effect. The production of consumers' goods is one of the means by which the Government can help the glue and gelatine industries which could be started without having to wait for foreign machinery. Instead, therefore, of increasing imports which will affect the infant industry adversely, the Government should be taken to encourage the establishment of the industry.

It has been suggested that the exports of fleshings, hide cuttings and other waste should be stopped, a time lag may have to be allowed for the industry to get ready to absorb all the raw material. Three to four years would be enough for the Indian manufacturers, to put their factories on a scale commensurate with the time the Government announces prohibition of exports. In the meantime, the prices may not drop to an uneconomical level, as a result of the export of consumers' goods all over the world.

Instead of levying an import duty of 30 per cent. on dry glue, and a 10 per cent. duty on liquid glue, imported from abroad. If the export of raw materials is restricted, there seems no need for the increase of import duties. For instance, such as under-selling the local products by foreign manufacturers could approach the Tariff Board for increasing the grant of a temporary subsidy.

The production of a refined variety of glue and its manufacture being analogous to the production of leather, should be undertaken by the glue manufacturers. The figures showing the production of glue during the quinquennium ending 1940, are as follows:—

			Imports.	
...	...	...	Cwts.	Rs.
...	...	...	70	5,231
...	...	...	.....	.....
...	...	...	.....	.....
...	...	...	160	14,812
...	...	...	984	83,609
...	...	...		

20 When there is a shortage of the tannery wastes and waste pickers and hide cuttings, to satisfy the requirements of the glue manufacturers, they can switch on to the use of bones or import raw materials from other Provinces, and this contingency the glue manufacturer will have to provide for, from the start. If he has to use bones, he may have to make super-phosphates to utilize the phosphorus they contain, or make other products like phosphoric acid and salts of this acid. This will necessitate the installation of extra machinery and even the establishment of a sulphuric acid factory and the plentiful supply of bones at a reasonable price to assure the success of the industry.

21. The machinery that may have to be imported will be the dehumidification and air conditioning units. The rest of the machinery can be made in India.

22. The industry is of such small dimensions that neither Government ownership, nor participation by foreign firms, is called for. It has been established that this industry, run on a cottage scale, does not become economical enough to compete with the product of organised industry abroad.

23. This industry holds out definite prospects of an export trade for India. Cawnpore, Calcutta and Madras are much larger centres of tanning and they have raw material which will produce glue far in excess of India's requirements, at a reasonable price, if the industry is encouraged in its infancy, and protected against the onslaughts of unfair foreign competitors, who would try to kill our industry by their technique of dumping, to remove competition, and thus to create a monopoly for themselves in the world market.

24. Although our present inquiry is restricted to the manufacture of glue as a bye-product of the tanning and allied industries, we cannot pass over the possibilities of the manufacture of glue from bones, which are available in plenty and are exported in large quantities. For glue it is a cheaper raw material than the tannery waste, but according to the new schemes envisaged by the Planning Department, Government of India, for the manufacture of artificial nitrogenous and phosphatic manures, there will be a good demand for the bones now exported, if the schemes materialise. The manufacture of glue, therefore, will be a bye-product of super-phosphates manufacture, and the glue manufactured by this process will be a sizeable industry, in which case a good export market for glue will have to be developed. 40,000 to 45,000 tons of bones and bone meal are exported annually from all India, Bombay's share being on an average 10 per cent. of the total. The yield of glue obtained from bones is about 15 to 18 per cent.; therefore, 600 tons of glue, in addition, could be manufactured from the bones which are, at present, exported from Bombay. The development of the manufacture of glue, therefore, has to be visualised and planned in view of this more important and cheaper raw material, which would also provide a valued manure for our agriculture.

#### 25. RECOMMENDATIONS—

1. The exports of fleshings, hide cuttings and waste pickers should be stopped, after three months from the time Government adopt the policy of deliberately encouraging the manufacture of glue in the Province.
2. Government should give assurance that the export of bones will be prohibited, provided sufficient capital is forthcoming, and factories are in a position to absorb all the bones that are being exported.
3. For such manufacturers as may desire to install machinery for dehumidification and air conditioning, import permits may be arranged and also the necessary dollar exchange allowed, if such machinery could be advantageously purchased from U. S. A.

## PART III.

## THE RUBBER AND RUBBER GOODS INDUSTRIES.

## CHAPTER I.

## INTRODUCTORY.

Rubber industry is an important factor in civilization. It plays such an important part in arts and industries that no nation can afford to be without it, both in peace and war. The speedy development of automobile transport is dependent on an adequate growth of the rubber industry. In wireless, air-craft, electrical and chemical industries, dress, sanitation, sports and other civilian needs, rubber has an unique position, as it cannot be replaced by any other material. Enormous increase in the production of rubber goods during the last two decades, shows their utility, and it is in the interests of every country to encourage the development and expansion of this industry.

2. Rubber industry (manufactures) in India, and particularly in Bombay Province is of comparatively recent origin. Immediately after the first war, a few factories sprang up and due to fierce foreign competition and lack of adequate provision for the investigation of scientific and technical problems connected with the industry, and want of persons with requisite knowledge of the technology, they could not thrive.

3. With the advent of the last war, this infant industry received a new impetus. The out-break of hostilities in Europe and Asia put almost a complete stop to the import of rubber goods. This restriction of imports coupled with large needs of the war programme of the Government, stimulated the manufacture of rubber goods and besides the existing factories, a large number of new factories sprang up in an incredibly short time.

4. According to the estimate of 1943, Bombay Province has 39 factories out of 115 factories in India, and, as many of them have started during the war years, the industry can be termed a war time industry.

5. As the industry has grown during the war under abnormal conditions, and as a great part of the production programme was concentrated to meet the demands made upon it by the war departments of the Government, it is not possible to estimate the figures of production, or to gauge the capacity of the industry. Attempts to arrive at such estimates, with the help of the monthly returns submitted by the different manufacturers of Bombay Province, also, were unsuccessful, since no reply has as yet been received to a request made to the Controller of Rubber, Government of India, to provide the necessary statistics and information.

6. Rubber industry in India possesses natural advantages for its development and expansion in the form of abundant supply of raw materials, cheap power, supply of labour and good market. Most of the raw materials, except sulphur, carbon black and accelerators, are available in the country. Rubber is available in sufficient quantities and so there is a sufficient source of supply of raw material in the country for the expansion of the rubber manufactures. Raw rubber being available from South India, Burma and Malaya, the industry has scope for development in any Province, having transport and other facilities for the industry.

7. The Province of Bombay with its 39 rubber goods factories out of a total of 115 in the country, has a great scope for the expansion of the industry in the

Province. Moreover, Bombay, situated on the west coast, and with its vast hinterland fed by railways and other transport facilities, enjoys an excellent position for the development of the industry.

8. This Province (as also India as a whole), is completely dependent on foreign countries for mechanical equipment and technical knowledge. Mechanical equipment due to war time restrictions could not be had and so the industry had to depend in many cases on improvised machinery with the result that the cost of the articles produced was comparatively high. The war-time production methods also are responsible for the wear and tear of the machinery, and so for the development of the industry an early replacement of the existing mechanical equipment by up-to-date machinery from abroad is necessary to meet the increasing demand arising out of the road programme of the Government, the needs of India's expanding industries, and the evergrowing civilian requirements.

9. Rubber industry can be classified under the following heads :—

- (i) Tyres and tubes,
- (ii) Footwear,
- (iii) Extruded and Moulded goods,
- (iv) Mechanical rubber goods,
- (v) Proofed rubber goods,
- (vi) Latex rubber goods.

## CHAPTER II.

## THE TYRE INDUSTRY IN THE PROVINCE OF BOMBAY.

10. There is at present only one factory in the Province, undertaking the production of automobile and cycle tyres and tubes, viz., the Firestone Tyre and Rubber Company of India Ltd., Bomlay. It was established in 1939, and started its production in January 1940. The products made are giant, motor car, motor cycle, and cycle tyres and tubes, and all materials for the repair and retreading of tyres, including ready-made patches, both cured and uncured.

11. The materials required for the manufacture of the above articles are rubber, tyre cords, steel bead wire, and various pigments and chemicals. Rubber is obtained from the rubber producing States of Travancore and Cochin in South India, and is adequate in both quantity and quality. Cotton cord is manufactured in Bombay, but the majority of cotton used in the fabrication of this cord is imported either from Egypt or the Sudan, as Indian cottons do not as yet have a sufficiently long staple to meet the exact specification necessary. While certain pigments and chemicals are obtainable locally, a large majority must still be imported, either from the U. K. or the U. S. A., as they are not as yet obtainable from the indigenous industry.

12. The production of automobile tyres involves a highly technical process as a slight mistake in their balancing or in the required uniformity, shape, etc. proves a danger to human life. The method of production of these tyres requires mathematical and accurate calculations, regarding its weight and dimensions, and hence the industry requires highly qualified technicians.

13. The capacity of the Firestone Plant is approximately 360,000 giant and motor tyres and tubes annually. Against this capacity, it is estimated that Bombay Province requires a total of 90,000 tyres and tubes yearly, at present. This figure, however, is likely to be raised much more in the near future due to the rapid industrialisation in the country, particularly with the establishment of the automobile industry in the Province, and the road programme of the Government.

14. Present production facilities are more than adequate not only for Provincial requirements, but also for India's requirements, and from surveys which have been made as to the increase of India's motor transport, it is felt that the factory would not require expansion or additional facilities for the production of tyres and tubes, for approximately five or six years to come.

15. This industry is a large scale industry employing a heavy and specially designed equipment and a very specialised process. As such, the need is paramount for the establishment of an institute to impart technical knowledge in rubber industry, and for the establishment of a Central Laboratory to test the quality of the materials and the products.

16. In view of the huge production and powerful organisation of the existing foreign owned tyre and tube factories, there seems very little chance for any new Indian owned concern to enter this field.

## CHAPTER III.

## FOOTWEAR.

17. Rubber footwear can be divided into three kinds, viz., (i) Canvas shoes with rubber soles, (ii) Leather shoes with rubber soles, and (iii) All-rubber shoes and gum-boots. This footwear is factory-made and is of the Western type. Raw materials required for this industry are rubber, canvas and other textiles, and chemicals, such as zinc oxide, carbon black, accelerators, etc. Most of these raw materials although some of them imported, are available in sufficient quantities in India, and with the present rapid development of the chemical industry in the country it is hoped that some more of these will be available. There are three factories in Bombay for manufacturing rubber footwear and their production can be estimated at :—

- (i) Canvas shoes with rubber soles—50 lakhs pairs.
- (ii) Leather shoes with rubber soles—3 lakhs pairs.
- (iii) All-rubber shoes—3 lakhs pairs.
- (iv) Gum boots—1 lakh pairs.

All the production, however, is consumed in the Province and, therefore, there is great scope for expansion. Essential equipment required is rubber processing machinery and shoe-making accessories.

18. Rubber footwear is comparatively cheaper than leather footwear, and is in demand mostly by lower middle class and poor people. It is used by people in higher society as a temporary wear in monsoon or as sports wear and it does not affect the leather shoe industry to any appreciable extent.

19. With the rise in the standard of living, and a fair chance of development for purposes of export to other Provinces, and abroad, the present production of rubber footwear can be increased at least 100 per cent. each in the next five years.

20. The existing machinery is insufficient and worn out to meet with the increased production and, therefore, it is recommended that Government should help the industry in importing adequate machinery.

## CHAPTER IV.

## EXTRUDED AND MOULDED RUBBER GOODS.

21. In the Province of Bombay, there are about sixteen factories engaged in the manufacture of extruded and moulded rubber goods. Some of the important items manufactured by these factories are retreading of automobile tyres, ebonite rods and sheets, hot-water bags, ice bags, horn bulbs, rubber balls, heels and soles, cushion tyres, rubber tubing, hose pipes, car tyres, rubber washers, valves, rings, and many other items in moulded and extruded rubber and ebonite goods. Unfortunately, the estimates of the production of this type of rubber goods, for the period of Rubber Control, are not published, and, therefore, not available to the industry. Most of the rubber goods produced in the Province of Bombay are consumed also in the Province.

22. With the termination of the war, the controls on rubber goods are being relaxed, and brisk activities in the manufacture of the above type of rubber goods, have started, but it is as yet too early to estimate the production of moulded and extruded rubber goods. However, there is one danger, which should not be lost sight of. In the absence of any standard specifications, the manufacturers are always tempted to reduce the cost of the materials by reducing the quality, and this type of competition can only be prevented, if standard specifications are laid down by a bureau of standard and it is made compulsory for every manufacturer to comply with these standards.

23. There is also another danger and that is from the foreign manufacturers of rubber goods. The equipments of Indian manufacturers are old and worn out and require prompt replacement. Failing this, the Indian rubber industry will not be able to face the competition from the foreign manufacturers. The Government should actively assist the rubber manufacturers to get their equipments and plants, either from U. K. or from U. S. A. as early as possible by granting import permits and making available necessary dollar exchange.

24. Raw materials required for the production of compounded rubber in the manufacture of extruded and moulded goods are:—(1) Raw or crude rubber, (2) Plasticisers and softeners, (3) Fillers, (4) Accelerators, (5) Anti-oxidants, and (6) Sulphur. Most of the materials are available with the exception of sulphur, carbon black and accelerators, etc. Raw rubber is available in sufficient quantities. Most of the chemicals like zinc oxide, stearic acid, magnesium carbonate, etc., are manufactured locally.

*Machinery and Equipment.*

25. (i) Mixing Mill or a Banbury Mixer.  
 (ii) Extruding or Tubing Machine.  
 (iii) Moulds (simple and complex).  
 (iv) Vulcanisers (steam press or autoclaves).

26. Mixing is the most important stage in rubber manufacture, and the present mixing capacity is inadequate. Immediate importation and replacement of Banbury machines or other suitable mixing mills should be facilitated.

27. Extruding or tubing machine is used to produce materials of long lengths of tubing rods and other shapes.

28. Extruded goods are made in more or less sufficient quantities for the Province, but equipment is of an inferior type. Maintenance cost is high, owing to

requent necessity of replacements and repairs. There are no modern extruders with arrangements for continuous vulcanisation. Feed control preventing overloading of the machines is missing everywhere. Cost is consequently high and production and quality comparatively low.

29. Moulded goods are being avoided by the manufacturer owing to the high cost of moulds. Good moulds could be produced in the Province provided the industry can interest some engineering firms in this line. It will, however, not be a paying proposition until, and unless the Industry can secure adequate hydraulic presses with temperature control devices. Hand presses, at present in use, are mostly made for some particular job and are of inferior construction and do not meet with the requirements. Good quality and economical production are not possible with such equipment.

30. It is the unanimous opinion of the manufacturers that the industry is badly in need of processing machinery of a modern type and Government aid to procure such machinery is urgently solicited.

## CHAPTER

## MECHANICAL RUBBER GOODS.

31. Increasing quantities of rubber are being utilised in the manufacture of great variety of goods, which are employed in conjunction with a number of mechanical devices, and are, for convenience, classed as mechanical rubber goods. Typical examples of such products are, rubber-lined hoses of all descriptions, industrial belting, engine mountings, insertion sheetings, rubber-covered rollers, and shock absorbers of various description. The manufacture of these articles requires a high degree of skill, and, although the equipment necessary for their production is similar to that used in other branches of rubber goods manufacture, the production of such articles in Bombay Province is very inadequate. Almost all the requirements of the railways, fire services, petrol stations, etc., are met by goods imported either from abroad or from other Provinces. With the prospects of increasing industrialization, the demand for such goods is bound to increase, and it is necessary that the production of these articles is encouraged. The chief requirement being a high degree of skill in rubber goods manufacture, it is unlikely that much progress would take place, unless adequate facilities for the training of skilled personnel are made, and encouragement given to the existing manufacturers, by assisting them in securing suitable rubber manufacturing equipment.

## CHAPTER VI.

## PROOFED RUBBER GOODS.

32. Waterproof cloth, hospital sheetings, insertions and sheet rubber goods can be classified under this head. Raw materials required are rubber, canvas, and chemicals. Equipment required is calenders, spreaders and drying chambers. As stated above, most of the raw materials are available in India. Annual output of ground sheets and hospital bed sheets is 9 lakhs pieces and 3 lakhs pieces, respectively, and about 50 per cent. of the produce is consumed in the Province.

33. Calender is the most important machine required in the manufacture of rubber sheeting. Hardly any manufacturer has this piece of equipment in Bombay Province. It is not possible to manufacture sheetings or proofed fabrics economically without such machines. Processes substituting calendering have been evolved, and are in use, but are much too expensive to stand foreign competition, even with high tariff protection. Calenders in other parts of India are also of the obsolete type and not very economical. Mass production of these articles at reasonable price will not be possible unless modern up-to-date calenders are made available to the Industry.

## CHAPTER VII.

## LATEX RUBBER GOODS.

34. The items manufactured from rubber latex are :—

(i) Gloves, (ii) meteorological balloons, (iii) domestic materials like feeding bottle nipples, valves, teats, droppers, rubber sheets, umbrella rings, etc., (iv) contraceptives, Dutch caps, check pessaries, protection sheaths and finger stalls, bathing caps, etc., (v) other varieties such as toy balloons and inflated toys, bottle caps, fountain pen tubes, ear plugs, and elastic threads, etc.

35. Gloves are manufactured for different purposes depending upon the specific requirements and so great care and technical knowledge are required for their manufacture. Meteorological balloons are made in large sizes depending upon the weight of the apparatus they are required to lift for observations. The total weight of the balloon itself, has to be carefully kept down in relation to its diameter, and lift it can provide.

36. Latex is a white milk-like liquid and is procured from rubber plantations in South India and is sufficient to meet the present demand of the Indian latex industry. Other compounding materials such as sulphur, accelerators colours, deodorants, etc., are added, according to the specific requirements. Colours are essential in toy balloons, and deodorants are essential in such articles as are used on the human body, so as to remove the natural smell of rubber. Bombay is an important centre of latex rubber manufacture, as it produces about 75 per cent. of this kind of manufacture in India.

37. The latex manufacturing industry can be both a small scale industry of the cottage type, as well as a large scale industry depending upon the amount of consumption of its products. It is possible to start manufacture of latex articles on a small scale with limited capital. To have an increased output, it is advisable to equip the factory with machinery to preserve the quality of the product uniformly, and to have the production of the value of Rs. 5,000 per day, the following equipment seems necessary :—

1. Tanks for creaming latex,
2. Water-jacketed tanks fitted with stirring equipment for vulcanising latex,
3. Ball mills for dispersing and mixing chemicals and colours,
4. Storage tanks for processed latex,
5. Tanks or vats for holding latex for dipping,
6. Varieties of formers fitted on suitable frames,
7. A dipping machine,
8. Drying chamber with heating elements and exhaust fans,
9. Hot air vulcanisers,
10. Tables for stripping and powdering the goods,
11. Shelves for drying the stripped goods,
12. Tanks for washing the articles,
13. Trays, etc., for testing or finishing the articles to remove tack,
14. Testing bench and laboratory for testing the quality of the goods and for experimental work,
15. Packing tables, etc.

38. Besides the above, other equipment depending upon the nature of the article manufactured, can be supplemented. Most of the equipment can be manufactured or assembled in India, without much difficulty. Authoritative data on the consumption of the articles in our country is not yet available, but sales statistics indicate that the Bombay market alone can consume the following quantities per day :—

Nipples	...	...	...	600 gross.
Valves	...	...	...	50 „
Teats	...	...	...	60 „
Sheaths	...	...	...	50 „
Balloons	...	...	...	1,500 „
Check Pessaries	...	...	...	2 „
Diaphragms	...	...	...	6 doz.
Surgical gloves	...	...	...	6 „
Industrial gloves	...	...	...	6 „
Washing sheaths	...	...	...	5 gross.
Finger stalls	...	...	...	1 „
Fountain pen tubes	...	...	...	50 „
Umbrella rings	...	...	...	5,000 gross, in the season.

39. Provided suitable facilities for technical training in latex technology are available, and adequate protection afforded from foreign competition, latex goods industry in India has a bright future, and should be able to meet all the requirements of our country.

## CHAPTER VIII.

## RECOMMENDATIONS.

40. The rapid expansion of this infant war-time industry is likely to be retarded, owing to (i) the lack of up-to-date equipment and technical knowledge, (ii) the likely deterioration in standards and specifications, and (iii) the possibility of fierce foreign competition. The natural advantages which the industry now possesses in the nature of raw materials, capital, cheap labour and power, and a large market, cannot, therefore, be exploited unless the Government renders adequate assistance to the industry.

41. It is therefore recommended that :—

1. Government should afford immediate facilities for the import of new machinery and equipment from foreign countries,
2. Government should facilitate import of chemicals and raw materials,
3. Government should establish a Central Laboratory for physical and chemical testing of the products of the small rubber factories, which cannot individually afford to provide a well equipped laboratory,
4. Government should establish a Central Institute of Rubber Technology (i) for conducting research, (ii) for training the necessary personnel, and (iii) for the dissemination of scientific and technical knowledge connected with the industry,
5. Government should also arrange for the establishment of a Rubber Section in a technological institute such as the Victoria Jubilee Technical Institute to train candidates in rubber science and technology,
6. Government should establish a Bureau of Standards to maintain the standard of Indian manufacture at a high level.
7. Government should purchase all the rubber goods required by the Government Departments, from local manufacturers, as far as possible,
8. An Association of Rubber Manufacturers be established to help them generally, and particularly, in guiding sales and output, with a view to avoid over-production of particular item,
9. Adequate tariff protection be granted to the industry to enable it to stabilise itself in course of time, and
10. Requirements in capital equipment of the existing manufacturers be given preference over those of fresh entrants into the industry.

42. With adequate Government help on lines stated above, it can safely be said that the Rubber industry may justly become one of the important industries in the near future.

## APPENDIX A.

*Letter and Questionnaire issued by the Leather-Cum-Allied Industries' Panel.*

No. M. I. S. C. Questionnaire,  
Narandas Building, 3rd Floor,  
Ballard Estate, Sprott Road.  
Bombay.

Date,

Secretary,

Miscellaneous Industries Sub-Committee,  
Bombay.

Dear Sirs,

In accordance with the decision of the Provincial Industries Committee, appointed under instructions from the Department of Planning and Development, Government of India, a Miscellaneous Industries Sub-Committee for having a rapid economic and industrial survey of Leather, Leather goods, Rubber and Rubber goods, Glue and Gelatine and allied product industries is constituted with a view to determine the steps which need be taken to increase production and expand the above industries in the Province. To have this the enclosed questionnaire has been prepared. You are, therefore, requested to supply all the information that is required by the form and also some other information which you think would be useful in submitting the report by the Committee.

The information asked for is required for industrial survey purposes only and accordingly while the figures and information should be substantially accurate, absolute exactness, such as is essential in business accounts, is not required. All information supplied to the Committee will be treated as strictly confidential. It will be utilized only for the collective survey of the industries of the Province referred to above, and no figures for the individual concerns will either be disclosed or published at any time.

It need hardly be stated that the success of such enquiry will depend largely upon the wholehearted support and co-operation of the industrialists of the Province. I shall be most thankful, therefore, for an early return of the questionnaire duly completed together with copies of Annual Reports of industrial establishments and any supplementary information that the industrialists may wish to furnish.

A very early reply will oblige.

Yours faithfully,

B. V. TRIVEDI,

Secretary,  
Miscellaneous Industries Sub-Committee.

Questionnaire issued by the Leather-cum-Allied Industries' Panel of the Miscellaneous Industries  
Sub-Committee (Provincial Industries Committee) Government of Bombay.

NAME .....

ADDRESS .....

1. What are your products. (Finished or Semi-finished) .. .. .
2. What are the raw, semi-finished and finished products you require and where do you get them from ? .. .. .
3. In your view is the raw material available in the Province, sufficient and to the mark for the production of the finished goods for the Province ? If not what have you to suggest for more production and improvement in quality ? .. .. .
- 3(a). Have you any difficulty in obtaining raw materials for tanning and manufacturing processes i.e. in the procurement of chemicals and accessories and if so, what is the help required ? .. .. .
4. Is it advantageous to prepare artificial leather in our Province ? If yes, suggestion if any. .. .. .
5. Is it possible to substitute the raw materials obtained from foreign countries by any Indian ones ? (Rubber) ? .. .. .
6. Where is your market, (i) in the Province, (ii) out side the Province, or (iii) Abroad ? .. .. .
7. Are you a wholesaler and/or also a retailer ? Have you agencies, agents or distributors for the distribution of your goods or do you distribute or export your goods directly to the dealers ? .. .. .
- 7a. Is your organisation for distribution of your finished goods satisfactory ? Do your sales expenses form a fair proportion ? What difficulties do you experience in sales at present or expect to come up in future ? .. .. .