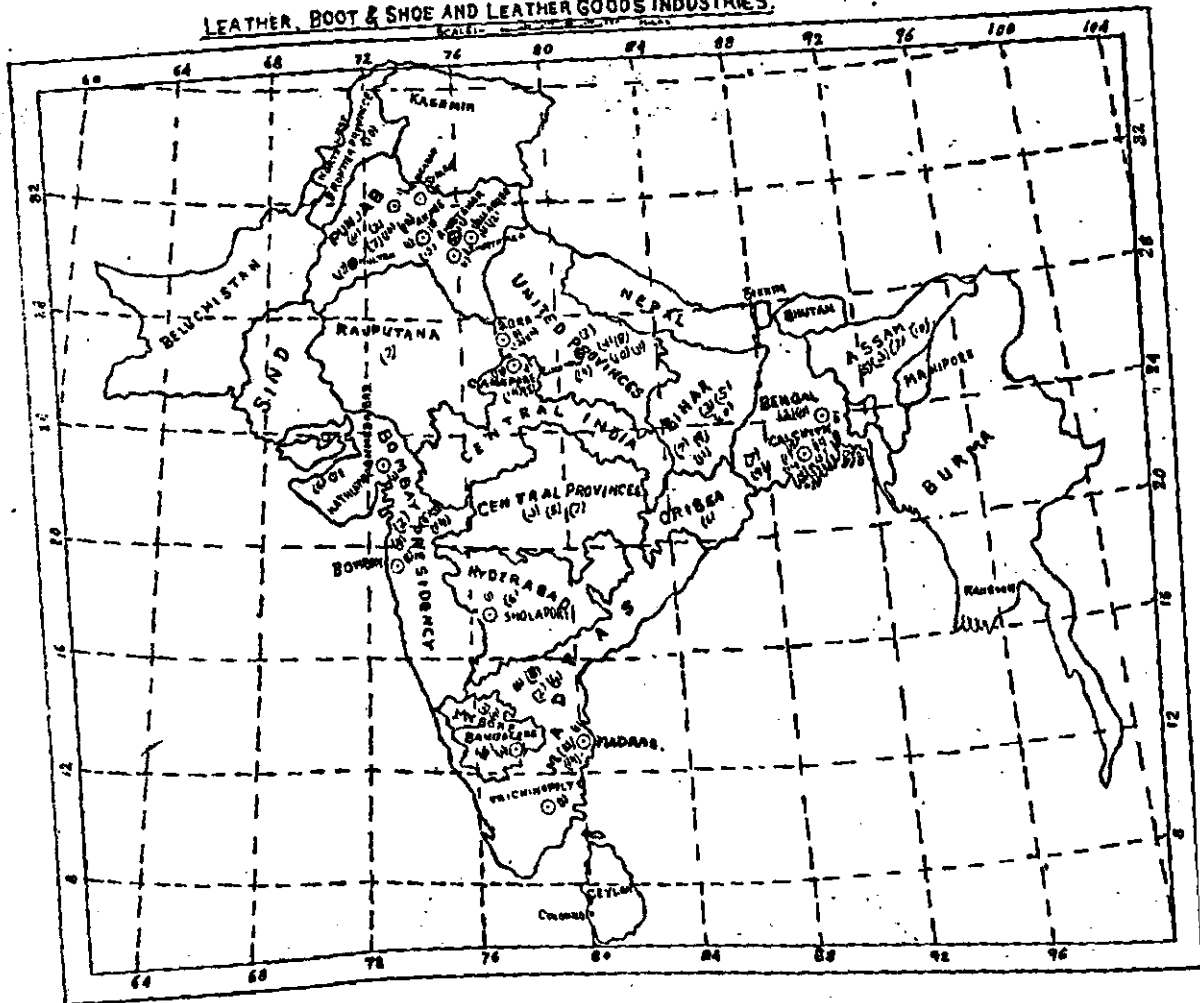


INDIA

IN RELATION TO

LEATHER, BOOT & SHOE AND LEATHER GOODS INDUSTRIES.



REFERENCES

1	SEATS OF ORGANISED TANNERIES	Calcutta, Dacca, Cawnpore, Agra, Jullundur, Lahore, Madras, Bikaner, Shimla, Kanpur, Allahabad, Bombay, Sholapur, Bangalore, Trichinopoly, Madras
2	PROVINCES WHERE PIT TANNED SOLE LEATHER IS ALREADY DONE	PUNJAB, UNITED PROVINCES, BENGAL, MADRAS, HYDERABAD, BOMBAY
3	PROVINCES RECOMMENDED FOR STARTING MANUFACTURE OF PIT TANNED SOLE LEATHER	BIHAR, ASSAM, CENTRAL PROVINCES
4	PROVINCES WHERE MANUFACTURE OF CHROME TANNED BOX SIDES IS ALREADY DONE	PUNJAB, UNITED PROVINCES, BENGAL, MADRAS, HYDERABAD, BOMBAY
5	PROVINCES WHERE MANUFACTURE OF CHROME TANNED BOX SIDES IS ALREADY DONE	PUNJAB, UNITED PROVINCES, BENGAL, MADRAS, HYDERABAD, BOMBAY
6	PROVINCES RECOMMENDED FOR STARTING MANUFACTURE OF CHROME TANNED BOX SIDES	CENTRAL PROVINCES, BIHAR, ASSAM
7	PROVINCES WHERE B & I TANNING IS DONE	MADRAS, ORISSA, BOMBAY, HYDERABAD, KATHIWAR
8	PROVINCES RECOMMENDED FOR STARTING MANUFACTURE OF B & I TANNED HIDES & SKINS	PUNJAB, BIHAR, BENGAL, ASSAM, CENTRAL PROVINCES, RAJPUTANA, KATHIWAR
9	PROVINCES WHERE MANUFACTURE OF GLAZED KID IS ALREADY DONE	MADRAS, UNITED PROVINCES
10	PROVINCES WHERE MANUFACTURE OF GLAZED KID IS ALREADY DONE	MADRAS, UNITED PROVINCES
11	PROVINCES RECOMMENDED FOR TAKING UP MANUFACTURE OF GLAZED KID	BIHAR, BENGAL, BOMBAY
12	PROVINCES WHERE GOOD QUALITY BUFFALO HIDES ARE AVAILABLE	NORTH WEST FRONTIER PROVINCES, PUNJAB, UNITED PROVINCES, BIHAR, ASSAM
13	PROVINCES WHERE BEST QUALITY CATTLE HIDES FOR CHROME TANNING ARE AVAILABLE	UNITED PROVINCES, BIHAR
14	PRINCIPAL CENTRES OF BAG TANNING	Jullandar, Amritsar, Lahore, Madras, Calcutta
15	PRESENT PRINCIPAL CENTRES OF MACHINE MADE SHOES	Cawnpore, Agra, Lahore, Calcutta, Madras
16	PRESENT PRINCIPAL CENTRES OF COMMERCIAL SADDLERY MANUFACTURE	Mosley, Mumtaz, Calcutta, Agra, Cawnpore, Lucknow, Lahore, Bombay, Madras
17	PRESENT PRINCIPAL CENTRES OF LEATHER GOODS MANUFACTURE	BOMBAY, CALCUTTA, CAWNPORE
18	TRADING LADIES HAND BAGS, PURSES & TRAVEL GOODS	

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2. *Vegetable tanning materials* (para. 51).

3. *The Indian tanning industry.*

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Chrome tanning.—Box and willow sides, kips and calf (para. 89)—Glazed kid (para. 103)—Chrome suede and imitation sambar (para. 110)—Neobuck leather (para 112)—Chrome patent leather (para 115)—Chrome pickingbands (para. 121).

4. *Technical Training and Research.*

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5. *The Leather Footwear Industry* (para. 148).

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9. *Department of Leather Industries and Leather Industries Council.*

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CHAPTER I

Introduction

The Leather and Leather Goods Industries Panel was set up by the Department of Planning and Development of the Government of India to make recommendations to the Government regarding the development of those industries in India. In the General Directive issued to the Panels (Appendix I) it was suggested that the recommendations should be so framed as to enable the Government to prepare a detailed phased plan for the five years following the cessation of hostilities, as the first stage of a 15-year plan of development and should cover the 12 points in the Directive. These were the terms of reference to the Panel.

Constitution of the Panel

2. The Panel was composed of the following members initially:—

Chairman

Rai Bahadur B. M. Das, M.A. (Cal.), M.Sc. (Leeds), Superintendent, Bengal Tanning Institute, Government of Bengal.

Members

Sir M. Balasundaram Naidu, Hides & Skins Merchant, Ritherdon, Vepery, Madras.

Mr. Jamal Moideen, Leather Merchant, Madras.

Mr. A. C. Inskip, C.B.E., E.D., General Manager, M/s. Cooper, Allen & Co., Cownpora.

Mr. Kaiser Ahmed, Hides & Skins Merchant, Bombay.

Mr. Bool Chand, Dayalbagh Industries, Dayalbagh, Agra.

Capt. P. S. Choudhury, Directorate General of Supply, New Delhi.

Secretary

S. Datta, Assistant Industrial Adviser, P. & D. Deptt., New Delhi.

Later on the following members were co-opted.

Members

Mr. P. S. Pandit, Messrs. Western India Tanneries Ltd., Bombay.

Mr. S. K. Sen, Messrs. National Tannery Co., Ltd., Calcutta.

Mr. H. Raney, Messrs. Modern Indian Art Crafts, Bombay.

After the sudden and lamentable death of Mr. S. Datta, Mr. A. K. Datta was appointed to act as Secretary to the Panel.

Preliminary Report of the late Mr. S. Datta

3. As promised in paragraph 2 of the Government Directive, the Panel Secretary prepared a preliminary report giving factual informations concerning these industries, copies of which were circulated to members. The report has been very helpful to the Panel which expresses its appreciation to the late Mr. S. Datta for the pains he took in preparing it. The Panel also places on record its deep appreciation of the valuable services rendered by Mr. A. K. Datta in the concluding and reporting stage of the work of the Panel. In particular, the Panel thanks Mr. A. K. Datta for planning and working out the materials in Chapter XIII embodying the Materials and Personnel Budgets which have helped to concretise the development plan adumbrated by the Panel by bringing our means and ends in realistic relation with one another and into a broad, integral picture.

Panel Meetings

4. The Panel held eleven meetings as under:

- 3 at Calcutta,
- 1 at Madras,
- 1 at Bangalore,
- 1 at Bombay,
- 1 at Lahore,
- 1 at Jullundur,
- 1 at Cawnpore,
- 1 at Agra, and
- 1 at New Delhi.

A draft Report was presented at the meeting of the Panel held in Calcutta in April 1946. The draft Report which was approved by the Panel, was then circularised to all the Provincial and State Governments for scrutiny. At the New Delhi meeting held in August 1946, the Panel discussed the draft Report with the representatives of Provincial and State Governments. The representatives generally approved of the draft Report and offered their suggestions and views on a number of points. At the final meeting which was held in April 1947 in Calcutta, the suggestions and viewpoints were carefully considered by the Panel at the time of finalising the draft Report.

Contacting the Industries

4a. To elicit the views of members of the industries, questionnaires were drawn up, which were sent to some of them individually as well as to the Trade Associations where they exist and to Provincial Directors of Industries. Written replies were obtained from some. A number of industrialists and Directors of Industries were also requested to appear before the Panel for oral evidence, some of whom responded and furnished the Panel with valuable information and views. In most cases the Directors of Industries sent their technical officers to give oral evidence. The questionnaires had to be different for the principal centres of production due to differences in their conditions of production. The questionnaires and records of replies have been submitted to the Government of India in a separate volume along with the report.

Visits to Industrial Concerns

5. To get first-hand information on the working conditions, plants, and varieties and standards of products manufactured, the members of the Panel visited a number of tanneries, shoe factories and other leather goods manufacturing concerns at the centres where they held meetings. The Panel offers its thanks to the management of those concerns for the courtesy extended and trouble taken in showing the members round and explaining the processes. A list of the concerns visited is given in Appendix II.

6. The Panel now begs to submit the following report to the Government of India through the Industrial Adviser

Sd/-B. M. Das (Chairman).

Members:
 Jamal Moideen
 P. S. Chaudhury
 M. Balasundaram Naidu
 A. C. Inskip
 S. K. Sen
 Bool Chand
 P. S. Pandit
 H. Raney
 Kaiser Ahmed

A. K. Datta, Secretary.
 April, 1947

CHAPTER II

Background

7. Tanning and shoe and leather goods making are very old crafts in India which have been practised by the traditional leather working classes, the *chamars* and *mochis*, since time immemorial. Those classes belong to the depressed communities and the bulk of them are uneducated and poor. But the age-long practice handed down from father to son over several generations has enabled them to evolve techniques of their own by which they turn out even to-day large quantities of tanned leather, footwear and leather goods for home and export markets.

8. In leather production these indigenous techniques are represented by (i) bag tanning of buffalo hides and also of appreciable quantities of cow hides all over India; (ii) the *nari* process of tanning by which the popular red shoe upper leather is produced from goat skins and the book binding leather known as "Kabuli Bheries" is made from sheep skins by the *Khaticks* in the Punjab and (iii) the South Indian process of tanning cow and light buffalo hides and sheep and goat skins for export.

9. In shoe and leather goods production, the indigenous techniques are represented by the innumerable types and varieties of indigenous footwear which are still popular in India and a number of varieties of leather goods, for instance Bhisti's water bag, leather jar for holding *ghee*, leather bucket for lifting water from wells, smithy bellows, leather shields, leather reins, leather-covered boxes, etc.

10. The indigenous techniques include the essential skilled and unskilled operations which are involved in modern advanced tanning, shoe and leather work and the Indian *chamars* and *mochis* are well versed in them. There are processes in leather, shoe and leather goods making which people of no other community except the *chamars* and *mochis* will agree to perform. Hence this community is the reservoir in India from which the supply of labour both skilled and unskilled, for this industry has been drawn. In the whole of India according to the census of 1931, there were 16,455,487 *chamars* and *mochis* whose distributions as amongst the provinces is shown in Appendix III. The *chamar* and *mochi* population in an area has an important bearing on the extent to which tanning and shoe and leather goods industries can be carried out there. The intelligentsia of the country do not appear to have taken any interest in these industries, and this fact has stood in the way of their development and progress.

11. For tanning, the *chamars* use the astringent vegetable materials, mainly barks, fruits and leaves of trees from the forests and jungles in the neighbourhood and the tanning properties of a large number of these are known to them. Many of these indigenous tanning materials are only of local importance on account of the inadequacy of their supply and the unsatisfactory leather they produce. Three of them, however, *viz.*, *babul* bark, *avaram* bark and *myrobalans* have proved to be wider importance.

12. Western processes of vegetable tanning and currying were introduced in India as far back as 1857 by the British military authorities to make leather for military equipment. About the year 1867, the Government Harness and Saddlery Factory was established at Cawnpore. This factory has since then been tanning and currying harness leather and fabricating harness and saddlery and other military equipment for the Army in India.

13. Another important landmark in India's leather and shoe industries was the establishment of the tannery and shoe factory of Messrs. Cooper, Allen & Co. in 1881. This firm started tanning and manufacture of military footwear according to western methods by machinery. Later on, it started the manufacture of the western types of civilian shoes as well by machinery.

14. A few tanneries were later on started at Cawnpore, chiefly by hide-dealers, with the object of tanning the limed hides rejected by the Government Harness and Saddlery Factory. These tanneries followed the western vegetable tanning process carried out in pits in leached liquors. One of these, the Cawnpore Tannery started by Haji Halim made conspicuous progress and its vegetable tanned cow hides, coloured brown and black, were very popular in the Agra shoe industry till chrome upper leather replaced it completely. Shewan's tannery was also started about this time and its vegetable tanned leathers enjoyed a reputation for quality. Cawnpore thus became a big centre of production for western types of leather and footwear.

15. Chrome tanning was introduced in Madras in 1903 by Sir (then Mr.) Alfred Chatterton. Mr. Chambers of Chrome Leather Coy., Madras, Dr. (later on Sir) Nilratan Sircar of the National Tannery, Calcutta, Mr. M. S. Das of Utkal Tannery, Cuttack and Mr. N. S. T. Chari of Mysore Tannery, Bangalore developed and expanded the chrome tanning industry in India. Other chrome tanneries were started in Calcutta, Cawnpore, Madras and Bombay, after the world war in the twenties. Messrs. Bata Shoe Co., Ltd., came into the field in the thirties.

CHAPTER III

India's Resources of Raw Hides and Skins

16. Hides and skins are the essential raw materials of leather and leather goods industries and they are mainly derived from buffaloes, cows, goats and sheep. It is apprehended that during the war, the livestock resources of India have been considerably depleted. A fresh census of livestock should, therefore, be taken. Before the war, India used to derive from its livestock, the following quantities of hides and skins annually:—

TABLE I

Buffalo hides	...	...	...	...	57 lakh pieces
Cow hides (usually known as kips)	...	...	...	...	200 " "
Goat skins	...	...	...	...	275 " "
Sheep skins	...	...	...	...	171 " "

17. The Hides Cess Enquiry Committee reporting in 1930, estimated the total value of hides and skins produced in India at Rs. 18½ crores while the reports on the marketing of hides and of skins published by the Government of India in 1943 put the value at Rs. 9.64 crores.

18. The production of hides and skins in the different British Indian provinces and the Indian States is shown in Table II below:—

TABLE II

Annual production in lakh pieces

Place of origin	Buffalo hides	Cow hides or kips	Goat skins	Sheep skins
1	2	3	4	5
Kashmir State	...	1.8	3.1	4.6
N.-W. F. P.	1.8	2.4	5.7	5.3
Punjab	4.9	9.4	13.7	15.1
Rajputana States	1.9	6.6	21.3	13.7

1	2	3	4	5
Central India	0.7	2.8	4.7	0.6
Sind	0.4	1.7	6.3	1.9
Kathiawar, Guj'at and Baroda States	1.3	2.8	7.4	5.5
Bombay Province and States	2.7	8.9	18.8	18.0
Mysore States	0.8	3.4	3.3	5.7
Travancore . . . . .	...	2.0	0.6	1.3
Madras Province	15.1	38.6	19.9	39.9
Hyderabad State	2.2	13.2	16.3	17.1
Central Provinces	6.4	12.9	11.3	1.3
Eastern & Central Provinces and States.	3.0	4.7	7.1	1.8
United Provinces and States	5.6	16.0	53.2	17.0
Bihar	5.2	16.5	28.8	3.0
Orissa	0.6	5.3	3.3	0.8
Bengal	1.7	43.2	29.6	3.5
Assam	0.4	4.3	1.5	...
Other Areas	2.4	3.6	14.0	13.7
Total India	57.1	200.1	274.9	170.8

19. It will be seen that as regards cattle hides, Bengal and Madras are pre-eminently the largest producing provinces, each being responsible for the production of nearly a fifth of the total in India. In buffalo hides, Madras is the largest producer and contributes about a fourth of the total. In goat skins, U.P. is the largest producer and contributes about a fifth of the total. It is followed by Bengal and Bihar, each contributing about a ninth of the total.

Characteristics of Indian Hides and Skins

20 *Buffalo hides*.—These are large, thick and usually heavy in weights in comparison with cow hides. In India, they are used for making such heavy leathers as sole, harness, belting, picking band, etc. The largest use, however, is for making sole leather. Buffalo hides vary in characteristics according to their province or origin. Those of the N.-W.F.P., the Punjab and Delhi are usually heavier than the buffalo hides of the areas in south. U.P. buffalo hides have a good and clean grain and are spready but not quite so thick as those of the Punjab. The better grades of them are suitable for harness leather; C.P. buffalo hides are fairly heavy and suitable for sole and those of Madras are mostly light and many of them are not quite suitable for sole leather. The bulk of these are lightly tanned along with cow hides in South Indian tanneries and exported as East India tanned kips. About 25 per cent. of the Indian buffalo hides are derived from slaughtered animals and the rest from the naturally dead stock.

21. *Cow hides or kips.*—Compared to cattle hides of Europe and America, these are lighter, thinner and smaller in size. They are very suitable for making leather for shoe uppers, lining, etc. Better grades of them having sound grain and good substance are suitable for chrome tanning, while the others are vegetable tanned. Like buffalo hides, about 25 per cent. of the cow hides are derived from slaughtered animals and the balance from the fallen stock. They have several defects which greatly reduce their value and utility for making good leather. The most prevalent among the defects are warbles, holes, tick and pock marks, brands and flay cuts and scores. The incidence of the defects and other characteristics vary from province to province.

22. Cow hides of the Punjab and N.-W.F.P. are comparatively large and heavy and are not suitable for making chrome upper leather of good quality. About cent. per cent. of the N.-W.F.P. and 50 per cent. of the Punjab cow hides are from slaughter animals. Some of the U.P. cow hides are also heavy but quite a large number of them are of medium weight, substance and size. These latter, derived specially from Bareilly, Rampur, Moradabad, Lucknow, Agra, Muttra, etc. are the best cow hides in the whole of India for making high class chrome upper leather. Hides of these districts and others lying in the west of Cawnpore, known as *pacham* hides are in great demand from chrome tanners in all parts of India.

23. Bihar hides derived from Dinapore, Durbhanga and Muzaffarpur are mostly of medium size, substance and weight and are suitable for chrome upper leather. Bengal cow hides are mostly small size, light weight and poor substance. A large proportion is tick infested and bears pock marks. A great bulk of the Bengal cow hides is eagerly bought by Madras tanners because they are particularly suitable for making tanned E.I. kips light weight and even substance which fetch a higher price in U.K. than those tanned kips which are heavy and butty.

24. *Goat Skins.* Their characteristics vary widely with the region of origin. Thus, goat skins of the N.-W.F.P., the Punjab, Sind and Kathiawar are large, heavy and coarse grained. They are suitable for bark tanning to make Morocco and other varieties of vegetable tanned light leather where smoothness of grain is not essential. They are not suitable for making high class glazed kid by chrome tanning. Those of U.P. and Deccan are somewhat smaller and lighter than the Punjab skins but are medium grained and are not quite suitable for high class glazed kid.

25. Goat skins of North Bihar and Bengal are small, light and of fine grain. Some of the skins of these provinces, *via*, *Muzaffarpores*, *Daccas*, *Dinajpores* and *Kusthias* are recognised in the United States of America as the best raw material for high class glazed kid.

26. *Sheep Skins.*—These also vary widely in characteristics from province to province. The skins of the Punjab are comparatively large and heavy, of loose texture and poor quality. Those of U.P. and Rajputana are similar to the Punjab skins. The sheep skins of Orissa are small and of good quality and those of Madras, specially the hairy sheep skins, are the best in texture, producing tight grained leather.

27. The most outstanding characteristics of Indian sheep skins is their low fat content compared to the sheep skins of other countries. On account of this, Indian sheep skins after tanning can be dyed and finished without degreasing. Sheep skins of other countries are usually so fatty that unless they are degreased, they cannot be satisfactorily dyed and glazed.

Defects of Indian Hides and Skins.

28. The defects of the Indian hides and skins are due principally to the following causes:—

- (i) The generally inferior breeds of livestock,
- (ii) Malnutrition of the animals in many cases,
- (iii) Maltreatment of the animals like branding and striking with sharply pointed goading sticks,
- (iv) Animal diseases,
- (v) The prevalent practice of allowing the cattle to linger on till old age,
- (vi) Negligent flaying, producing cuts and scores in hides and skins,
- (vii) Infestation by animal pests like warbles, ticks-etc., and
- (viii) Defective curing for preservation.

29. The Hide Cess Enquiry Committee appointed by the Government of India in 1929 dealt thoroughly with these defects and made specific recommendations for their remedy. In the Committee's view, many of the defects can either be minimised or entirely eliminated by reasearch and educative propaganda which, as the Committee recommended, the Government should undertake because the defects have been causing an annual loss of 3 to 4 crores of rupees to India. The defects are also responsible for the difficulty experienced by the Indian tanning and leather industries in improving the standards of quality of their products. The most prevalent of these defects which cause great damage, is the infestation of cattle hides by warbles and ticks. Research on these has been going on for some time at the Imperial Veterinary Research Institute at Mukteswar. The results of these researches deserve to be applied on a large scale throughout the country to free Indian livestock from these two damaging pests.

29a. Another conspicuous defect is bad flaying of hides and skins, derived both from slaughtered and naturally dead animals. Flaying in the organised slaughter houses already existing in the country should be improved by better equipment of the slaughter houses and licensing the flayers. Facilities for training flayers should be set up in different provinces. For the improvement of flaying of naturally dead animals, the trained flayers should be employed in Rural Union Board centres and village *chamars* who do the flaying at present should receive training from them. The *chamars* should be organised into co-operative societies to facilitate proper flaying and marketing of hides and other products from the carcass.

Import of Raw Hides and Skins into India.

30. Normally India imports a small quantity of raw hides and skins, mostly over land frontier routes and they are usually of poor quality. In the quinquennium ending 1938-39, the average annual imports were 10 lakh pieces of hides and 53 lakh pieces of skins. The proportions of buffalo and of cow hides and those of goat and of sheep skins are not shown in the import statistics but one would not be far out, if these were taken to be roughly in equal proportions. Including imports, raw hides and skins available in India just before the war were approximately represented in table III below:—

TABLE III.

(In lakh pieces)

Description	Indian Production	Import	Total
Cattle hides	200	5	205
Buffalo hides	57	5	62
Goat skins	275	26.5	301.5 (say, 300)
Sheep skins	171	26.5	197.5 (say, 200)

Export of India's raw hides and skins

31. On account of their abundant supply and desirable characteristics, Indian hides and skins attracted the attention of tanners in Europe and America over a hundred years ago. In case of hides, the volume of this export trade progressively increased with occasional fluctuations due to famines upto the year 1913-14 when the first world war broke out. After that it declined steadily and lower prices per piece of the exported hide were realised. This is shown in Table IV below:—

TABLE IV.

Export of raw hides from India and Burma.*

(In lakh pieces)

Quinquennium ending	Average annual export of kips	Value per piece		Average annual export of buffalo hides	Value per piece	
		Rs.	As.		Rs.	As.
1913—14	92.6	6	6	28.9	7	3
1918—19	55.2	6	11	13.4	8	5
1923—24	55.5	5	0	8.7	5	6
1928—29	60.4	4	11	10.3	4	9
1933—34	37.4	3	1	5.3	3	14
1938—39	46.1	2	6	6.2	2	15

(Report on the Marketing of Hides: pages 30 and 34).

*Although figures for Burma are included, they do not much effect figures for India as the former are comparatively small.

32. Export of raw goat and sheep skins, however, did not decline as is shown in Table V taken from *Report on the Marketing of Skins*, pages, 19 and 22.

TABLE V.

Export of raw skins (goat and sheep) from India.

Period	Annual export of goat skins in lakh pieces	Value per piece		Annual export of sheep skins in lakh pieces	Value per piece	
		Rs.	As.		Rs.	As.
Quinquennium						
1920-21—1924-25	235.5	1	8	10.6	1	1
1925-26—1929-30	255.0	1	11	8.3	0	15
1930-31—1934-35	209.7	1	3	14.2	0	11
YEAR ENDING:—						
1935—36	283.9	1	0	17.1	0	13
1936—37	251.6	1	2	11.3	1	5
1937—38	241.4	1	4	14.2	0	15
1938—39	239.4	1	1	13.2	0	12

33. The reason for the steady decline in the export of hides was the development of the hide tanning industry in India and the consequent increased consumption of hides by it during the period between the two world wars. Goat skin tanning, however, did not develop appreciably in India; consequently, the volume of export of goat skins remained more or less steady. The bulk of the available Indian sheep skins has been tanned in India since a long time. After meeting the requirements of the home market, only a small surplus which was available, used to be exported. This exportable surplus also remained steady during the period.

TABLE VI.

Disposal of the available hides and skins in India (about 1938-39).

Description	Total available (including imports in lakh pieces)	Tanned in India		Exported as raw	
		In lakh pieces	in percentage of total	In lakh pieces	in percentage of total
Buffalo hides	62	55.8	90	6.2	10
Cow hides (kips)	205	158.9	77.5	46.1	22.5
Goat skins	300	60.6	20	239.4	80
Sheep skins	200	186.8	93.5	13.2	6.5

34. Thus at the beginning of the last war, India was tanning practically all of her available buffalo hides and sheep skins, leaving a very small percentage for export as raw. She was also tanning more than three-fourths of her cow hides, leaving barely one fourth for export as raw. But the picture was different in the case of goat skins of which 80 per cent. was exported as raw, because goat skin tanning had not then developed in India.

35. *Export of raw hides and sheep skins is now unnecessary and prejudicial to the Indian Tanning Industry.*—If surpluses for export of raw hides and sheep skins were small before the war, they are considerably smaller now, because the tanning industry in India in all its sections has expanded further since then, due to the war impetus. Export of these hides and skins now will deprive the Indian tanning industry of its essential raw material because it now requires the whole of the available supply and as such export would be prejudicial to its vital interests. *Export should be stopped.* The producers of Indian hides and skins do not get a higher price from the exporters than from the tanners in India because there is very keen competition among the Indian tanners themselves. On the other hand, it is a definite economic gain to India as a whole to tan all its available hides and skins and *export the surplus leather.*

36. Taking the average of the values realised per piece of hide and skin from export as raw and as tanned, the following figures are obtained covering a very long period.

	Rs. As. P.
Average value received per piece of tanned hide exported ...	7 1 0
Average value received per piece of raw hide exported ...	4 9 0
Increased value received by India per piece of tanned hide exported ...	2 8 0
Average value received per piece of tanned skin exported ...	1 10 6
Average value received per piece of raw skin exported ...	1 3 10
Increased value received by India per piece of tanned skin exported ...	0 6 8
	(say 0 7 0)

37. Thus, the export of every piece of raw hide and skin means a loss of Rs. 2-8-0 and 0-7-0 respectively to India. Calculating on this basis, during the quinquennium ending 1938-39, India's total loss from exporting raw hides and sheep skins, which she could have most probably tanned before exporting, if they were retained in the country, amounted to Rs. 1,36,52,500 or in round figure Rs. 1½ crores annually.

38. In respect of goat skins, however, as the manufacture of glazed kid (which is the most suitable leather for which the fine grained goat skins of India should be utilised) had not developed, their export in the raw condition was unavoidable before the war. As glazed kid manufacture has not yet developed adequately in India, the export of finer types of goat skins will have to go on for sometime in the immediate future also. Vigorous attempt should be made for the development of the industry in this country. There is, however, no reason why the coarser types of goat skins which are unsuitable for glazed kid manufacture in Europe and America should have been exported as raw, rather than in the tanned condition. Export of goat skins should now be controlled and proportionately restricted as the manufacture of half-tanned goat skins and glazed kid increases according to the programme indicated in paras. 69 and 94. According to this, the export of goat skins should now be restricted as under:

- (1) immediately by 42.5 per cent. (of the pre-war export of about 240 lakhs) of which 72 lakhs would be coarse-grained and 30 lakhs fine grained;
- (2) after the first five-year period, by 55 per cent. that is to say, 72 lakhs coarse-grained plus 60 lakh fine grained; and
- (3) after ten years by 72 per cent. that is to say, 72 lakh coarse-grained plus 100 lakh fine-grained.

Curing and Preservation.

39. Raw hides and skins are cured for preservation in India by wet salting with common salt, dry salting with either *khari* salt alone or a mixture of *khari* and common salt and by air drying either stretched on frame or simply by spreading on the ground. As it is desirable that hides should no longer be exported dry and dry salt curing should also be stopped in the interest of the Indian tanning industry, only goat skins for export may continue to be dry salted as at present. To facilitate wet salt curing even by the village *chamar* and small butcher, denatured salt should be made available widely in rural areas and the present restrictions in the way of securing its supply should be relaxed. The salt Department should arrange with its authorised agents to carry stocks of denatured salt and sell it to hide and skin curers and to make the agents themselves responsible for keeping the necessary accounts rather than the illiterate *chamar* or the butcher (*Report on the Marketing of Hides* page 73.) The Railways should provide wooden wagons for the transport of wet salted hides to keep them cool during transit. Again, raw hides and skins should be treated as perishable goods and their quicker transport arranged. Mr. S. K. Sen a member of the Panel drew its attention to a new curing process recently developed in Argentine by a Company, Accel Argentina S. R. Ltd. The process is called Accel Process by which hides and skins are de-haired, bated and conserved by drying for export. All these operations are carried out in drums and for drying quickly infra red lamps can be used. Sun drying can also be done. The process has been patented by the above firm and persons in India interested in the process may correspond with it.

Summary of Recommendations.

40. (i) A fresh livestock census should be taken as soon as possible,
- (ii) Statistics of available hides and skins in India should be brought up-to-date without delay,
- (iii) Warbles should be exterminated by an organised campaign of treating the cattle in the affected areas with Derris Dressing,
- (iv) Ticks should be exterminated from the affected areas; chiefly Bengal, Orissa, Madras, Bombay and Assam by an organised campaign of dipping the cattle in tickicidal solutions or by spraying the solution on the cattle,

It is realised that extermination of these widely prevalent pests will take a long time. But the Panel's recommendation is that a start in this work should be made forthwith.

- (v) Research on warbles and ticks should be carried out on a more extended scale than is being done now,

(vi) Flaying should be improved by:—

- (a) Setting up well-equipped slaughter houses in cities, towns, subdivisions and centres of village unions and causing them to be worked under the supervision of Veterinary Officers,
- (b) Introducing suitable safety flaying knives,
- (c) By training flayers in the correct method of work and licensing the flayers of the slaughter houses. The licence should be subject to cancellation for continued bad work, and
- (d) The *chamars* should be organised into co-operative societies to facilitate proper flaying and marketing of hides and other products from the carcass.

(vii) Branding of cattle should be stopped by legislative measure.

(viii) The Cruelty towards Animals Act should be extended to rural areas to prevent the maltreatment of animals and damaging of hides with sharp goading sticks.

(ix) The damage to hides and skins caused by animal diseases should be minimised as far as possible by greater veterinary care and attention.

(x) The breeds of Indian livestock should be improved by setting up Government Stock Breeding Farms in the different provinces,

(xi) Adequate pasture lands and fodder should be provided for the livestock,

(xii) Dry and dry salt curing for hides and sheep skins should as far as possible be discontinued and wet salting substituted and for this denatured salt should be made available to hide and skin curers with facility unimpeded by restrictions of the Salt Department. Specifications for wet salted hides should be formulated and introduced in the hide trade,

(xiii) To prevent damage to wet salted hides and skins from heating during their transport, wooden wagons should be provided by the Railway,

(xiv) Inter-Provincial traffic in raw hides and skins in India should be restored forthwith to its pre-war freedom,

(xv) The war-time practice of issuing priority certificates for wagons should be abolished and until total abolition is possible, hides and skins should be placed on a higher priority and they should be classified as perishable goods for Railway transport.

(xvi) Export of cow and buffalo hides and sheep skins should be prohibited. To meet the needs of the Indian tanning industry, export of goat skins should be restricted by 42.5 per cent. of pre-war export immediately and by 55 per cent, and 72 per cent. after five and ten years respectively.

CHAPTER IV.

Vegetable Tanning Materials.

41. It has been stated above (Para. 11) that many vegetable materials are known to the Indian *chamars* and used by them in their tanning processes. There are hundreds of such tanstuffs found in different parts of India. A recent publication of the Forest Research Institute, Dehra Dun (Indian Forest leaflet No. 72, 194) describes 300 of these. The indigenous tanstuffs which had been used in India in large scale tanning for the production of more or less standard types of leather, are the bark of *babul* (*Acacia arabica*), bark of *Avaram* (*Cassia auriculata* and *myrobalans* (Fruits of *Terminalia chebula*). *Babul* bark has been the principal tanning material in Northern India, from the Punjab to Bengal, since a long time, used alike by the rural tanning industry and the large organised tanneries at Cawnpore, Agra and Calcutta. Blended with myrobalans in suitable proportions and properly adjusting the pH of the tan-liquor, it produces an excellent sole leather from buffalo hides and equally good harness leather from buffalo and cow hides. For about 80 years, the Cawnpore tanneries have used it for making these leathers with entire satisfaction. The bark was obtained by them from trees in areas close to Cawnpore and as the felled trees have not been replaced and also as the tanning industry has expanded, Cawnpore's demand for *babul* bark is now far in excess of the supply. The shortage of *babul* bark has been made up by the bark of wattle (*Acacia mollissima* wild, black wattle) imported from South Africa. The larger tanneries in Calcutta adopted wattle bark several years before the last war. Wattle bark has thus practically replaced *babul* bark in the organised tanning industry of Northern India. The small scale cottage tanners known as bag tanners are, however, still using *babul* bark. Some of the bag tanners in Calcutta are using wattle bark to some extent and they would use more if they could get the supply. It thus looks as if *babul* bark would be entirely replaced by wattle in North Indian tanneries as soon as the present restriction on its import is lifted.

Avaram.

42. In South India and Bombay Presidency, the bark of *avaram* was the principal tanning material for a long time and was used for tanning both hides and skins to produce the tanned E.I. kips and goat and sheep skins for the export trade. *Avaram* bark has properties which make it specially suitable for the production of these types of leather. Its tannin, even in very weak solution,

penetrates the pelt quickly and combining with the fibres loosely, produces a soft leather of an agreeable light cream colour. The carriers and leather dressers in the U.K. and elsewhere in Europe liked the *avaram* tanned kips and skins on account of their agreeable colour and soft and kindly feel and particularly because they could easily strip these leathers of their feebly combined tannin and give them a retannage with either chrome or tanning extracts to make semi-chrome or substantial vegetable tanned leather for various purposes. But with the expansion of the export leather tanning industry, the so-called "half tanning" industry in South India, the supply of *avaram* bark from the existing forest resources with available labour for collection and stripping of the bark, fell short of the mounting demand. Wattle bark was at first imported from South Africa in 1923 and experiments were done with it in tanning hides. Eventually difficulties were solved and wattle was successfully introduced in the Madras kip tanning industry where *avaram* has been entirely replaced by it. In skin tanning, however, *avaram* is still used but in the course of the Panel's tour in South India, report was received that experiments had been in progress with the object of replacing *avaram* with wattle in skin tannage also.

43. The difficulties with *avaram* are that (a) the forests where the plants occur in such dense growth as to make the collection of bark worthwhile are often far away from the tanning centres; (b) the yield of bark is very low being less than 10 per cent. on the weight of the sticks so that a head load of sticks produces only 4 or 5 lbs. of dry bark; (c) the sticks from which the bark is stripped being very narrow, generally about $3/4$ inch in diameter and never exceeding $1\frac{1}{2}$ " ; stripping becomes laborious; and (d) as the leaves and twigs of *avaram* are largely used by agriculturists as green manure, a large percentage of the available supply is lost to the tanning industry. All these factors have tended to reduce the supply and raise the price of this very desirable tanning material to an uneconomical level so that eventually it had to be discarded in favour of wattle in hide tanning and is being threatened to be replaced by wattle in skin tannage as well.

Wattle Bark.

44. The position in India now is that two of its well established vegetable tanstuffs have been practically discarded in favour of the important wattle bark because the latter is stronger in tannin contents, reliable in quality, available in adequate quantity in neatly packed and pressed bales and produces quite satisfactory leather. Ever since 1923, the import of South African wattle into India has been increasing as the following table shows:—

TABLE IX

(Figures for quantity and value in lakhs)

Quinquennium ending	Quantity	Value
	Cwt.	Rs.
1918-19	...	...
1923-24	0.24	1.18
1928-29	1.41	12.11
1933-34	2.28	14.30
1938-39	3.54	17.94

45. Wattle bark has come to stay in the Indian tanning industry and is gaining in popularity. To make India self-sufficient in its essential vegetable tanstuffs, it is necessary to establish wattle plantations as has been done in South Africa and Kenya. In South Africa about half a million acres of land were under wattle and the total value of bark and extract produced was Rs. 2½ crores in 1937. Experiments have proved that black wattle (*Acacia mollissima*) can be successfully planted in South India. Plantations on the Nilgiris, Palins and Kodaikanal have been successful. The Forest Department, Madras has adopted a scheme to increase wattle plantation in the province. The Forest Department may also investigate the possibilities of introduction of large scale wattle plantation in Orissa, C.P., Assam and other suitable provinces.

46. In order to make India self-sufficient in respect of vegetable tanstuffs it may be thought desirable to attempt to reintroduce *babul* and *avaram* bark but the prospect is not at all bright. Firstly, those who have become used to the stronger and neater wattle, would not revert to *babul* or *avaram*; and secondly, it would hardly be possible for *babul* and *avaram* barks to compete successfully with wattle bark in price per unit of tannin. But it is worth while to keep these two tanning materials as a stay-by in case foreign supply of wattle is cut off for the organised tanning industry, and also to meet the demand of the bag tanners of Northern India who still use *babul* bark on a large scale, and the skin tanners of South India who still use *avaram* bark for tanning skins. Suitable regions for the growth of *babul* appear to be Sind, Punjab, U.P. and C.P. and those for that of *avaram* are southern and western India and Rajputana where the possibilities of their commercial plantation should be investigated by the Forest or Agricultural Department or by both.

Plantation of sumach (*Rhus coriaria*)

47. As India does not as yet possess a satisfactory tanning material like sumach, a great deal of difficulty is being experienced in developing the light leather tanning industry in the country. Attempts should be made to plant sumach in India.

Tanning Extracts

48. Use of these is increasing in the Indian tanning industry and the demand is being met chiefly by the import of *Mimosa* extract i.e., the extract of wattle bark, from South Africa. India produces in its two tanning extract factories, one at Raniganj and the other at Kharagpur, certain quantities of myrobalan extract. Before the war, the bulk of the extract used to be exported. As myrobalan extract cannot be used alone in extract tannage, the production of this only, cannot make India self-sufficient in tanning extracts. It is very necessary that an industry for the manufacture of extracts from suitable indigenous tanstuffs should be established in India. Likely materials are *babul* bark, *avaram* bark and mangrove bark, specially the bark of *goran* (*Ceriops roxburghiana* of the Sunderbans, Bengal). The most suitable place for the establishment of an extract factory for the production of Mangrove extract is Sunderbans in Bengal where its possibilities and prospects should be investigated. Similarly, Sind, Punjab and U.P. are suitable places for the manufacture of *babul* bark extract and possibilities and prospects of establishing a *babul* bark extract factory in each of these places should be studied. The existing resources of *babul* trees and possibilities of their commercial plantation in U.P. should be surveyed. If adequate supply of *babul* bark proves forthcoming, a plant for the manufacture of *babul* bark extract may then be added to the myrobalan extract factory recommended below for C.P. An increase in the manufacture of myrobalan extracts in India is feasible. But the output will have to be sold in export markets. If sufficient market is available, an increase

in the production of myrobalan extracts may be made in India by establishing more extract factories in addition to the two which are already in existence. Most suitable places for them appear to be C.P. and Orissa, specially the former province, where myrobalan resources are adequate. In manufacturing all tanning extracts, the most up-to-date plant capable of producing extract in dry powder form by using the modern spray driers which are in extensive use at present in Germany, England and America, should be employed. The old form of solid extract in lumps is getting obsolete in Europe and America.

49. In Europe tanning extract has been manufactured from sulphite cellulose liquor which is a waste of paper mills. As paper mills are growing in number in India, attempts should be made to utilise their waste liquors in a similar way for the Indian tanning industry, if possible. Much, of course, depends upon the species of wood used in paper making.

Synthetic tannins (Syntans).

50. That India is short of commercially exploitable vegetable tanstuffs has been indicated in the report. An effective way of making good a part of this shortage is manufacture and use of synthetic tannins. In this India can follow the example of Germany. That country has practically two vegetable tanstuffs, pine and oak barks, both in short supply and of low tannin contents (about 10 per cent. tannin) which is not even as much as that of India's *babul* bark. According to BIOS Final Report No. 760, page 6, the total consumption of Germany in 1937 was 83,200 tons of tanstuff on pure tannin basis of which 16,000 tons were derived from syntans manufactured in Germany. During the war the production was further increased. The chemical factories of I.G. at Leverkusen, Ludwigshafen and Hoechst are the principal manufacturers and the products are called Tanigans. In 1937 these three factories produced 10,000 tons. The production was increased to 50,000 tons in 1943. A great deal of information on the processes and plants for the manufacture of Tanigans, has been collected by technical investigators who had been to Germany for the purpose and has been published in their reports. These should be carefully studied by organic chemists in India and as technical investigators are still being sent to Germany a number of Indian Organic Chemists should go to Germany to study and collect first hand information on this important subject. With the knowledge they will acquire, it will be possible to start manufacturing synthetic tanning materials similar to tanigans, provided the necessary raw materials, namely the crude catechols, cresols, phenols and naphthalene obtained from coal tar distillation are available in India in required quantities. The present position of India in regard to these important Coal tar distillation products should be thoroughly investigated forthwith. The Panel draw particular attention of the Government of India to the very important subject of initiating the Manufacture of syntans in India and holds the view that the manufacture is possible if proper steps are taken at once. The matter brooks no delay. Manufacture of syntans has been started and going on for sometime already in U.S.A. and U.K. New plants are being further installed there. Production either in variety or volume, does not appear to have reached the level attained in Germany.

Summary of Recommendations.

51. (a) As the Panel views with great concern the increasing dependence of the India vegetable tanning industry on imported wattle bark, it strongly recommends that measures be taken up to introduce large scale wattle plantation in this country at once.

(b) To study the wattle plantation industry of South Africa, an expert delegation consisting of a silviculturist, a soil expert and a tanner should be sent to Kenya or South Africa as soon as possible.

(c) The possibilities of *babul* and *avaram* plantations on a commercial scale should be thoroughly investigated.

(d) *Babul* trees should be planted in increasing number in forests and along irrigation canal banks. An intensive propoganda should be made by provincial and State Departments of Industries to prevent the wastage of *babul* bark by burning the timber as fuel without stripping the bark, with a view to conserve this valuable material for tanning. The Government should also arrange with the railways, facilities for the transport of *babul* bark from the producing to the consuming centres at reasonable freight rates.

(e) As India does not yet possess a satisfactory tanning material for light leather tanning, the possibility of growing sumach (*Rhus coriaria*) in India should be thoroughly investigated.

(f) Attempts should be made to establish a tanning extract industry in India and with a view to do this, investigation on indigenous tanstuffs should be made and experiments to manufacture extract from suitable tanning materials *e.g.*, *babul* and *goran* barks and other Indian tanning materials in pilot plants should be carried out. A few students should be sent abroad, preferably to U.S.A., with scholarship to learn the technique of extract manufacture.

(g) Attempts should be made to manufacture sulphite cellulose extract from the waste liquor from paper mills.

(h) Research should be carried out to make synthetic tannins in India. Indian Organic Chemists should study reports on German tanigans and some of them should be sent to Germany to study the technique of Tanigan products and get first hand knowledge of process and plant.

(i) A survey of the position in India of the raw materials, *viz.*, such coal tar distillation products as crude catechols, cresols, phenols and naphthalene, regarding their quality and available quantity, should be made.

CHAPTER V

The Indian Tanning Industry.

52. The Indian Tanning Industry may be conveniently divided into three section. *viz.*, Vegetable or Bark Tanning, Chrome Tanning and Miscellaneous Tanning. The types of leather produced under each are mentioned below:—

I. Vegetable or Bark Tanning.

- (i) Bag tanned leather.
- (ii) Tanned E. I. kips, goat and sheep skins.
- (iii) Pit tanned heavy leathers, *e.g.*, sole, harness, and belting.
- (iv) Pit tanned dressing leather.
- (v) Pit tanned Patent Leather (Hood varnish).
- (vi) Pit tanned light leather.

II. Chrome Tanning.

- (vii) Box and willow sides, kips and calf.
- (viii) Glazed kid.
- (ix) Chrome suede and imitation sambar.
- (x) Chrome lining.
- (xi) Neobuck leather.
- (xii) Chrome patent.
- (xiii) Chrome picking bands.
- (xiv) Chrome lace.

III. Miscellaneous Tanning.

(xv) Alum tanned leather.

(xvi) Formaldehyde and oil tanned leather chamois.

53. Of the above mentioned varieties (i), (ii), (iii), (vii), and (viii) constitute the bulk of the production of the entire industry and they are grouped in this report under the head Major Types and the rest under Minor Types.

MAJOR TYPES.

(i) Bag Tanned Leather:

54. It is a vegetable tanned crust leather produced by *chamars* by the indigenous methods of tanning commonly known as bag tanning.

It is done practically all over India by the *chamars* but it is more concentrated in the Punjab where 5,000 to 6,000 *chamars* are reported to be engaged in it. The most conspicuous centre in the Punjab is the area round about Jullundur. Appreciable quantities of bag tanned leather are also produced in Lahore, Multan, Sialkot, Wazirabad, Shahabad, and Karnal.

55. In normal time, according to the Report on the Marketing of Hides, the *chamars* tanned annually 91 lakh pieces of buffalo and cow hides by the indigenous process of tanning, which is chiefly bag tanning. The value of bag tanned leather before the war could be put at Rs. 3½ crores annually. During the recent war, bag tanners were very active, so much so that they made it very difficult for organised tanners (who were making leather for defence services by pit tanning under Government control) to get adequate quantities of buffalo hide.

56. **Post-war Target**—As it is expected that shoe wearing habit will be more and more general in India, the demand for and fabrication of all types of footwear including the indigenous types will also increase correspondingly. An expansion of bag tanning during post-war years can, therefore, be reasonably expected. The most essential requirement for its expansion is to make a larger number of hides than hitherto available to the industry, by restricting export. Bag tanners have hitherto been working individually. It would be a great help to them if the advantages of co-operative purchase and sale were made available to them. There is considerable room for the improvement of the quality of bag tanned leather. The Peripatetic Tanning Demonstration Parties of the Department of Industries in the Punjab and Bombay are reported to have helped to effect appreciable improvement of the local bag tanned leather by giving technical guidance to bag tanners. As for target at the end of the first 5 post-war years, an increase of at least 5 per cent. in the output over the pre-war figure appears to be practicable. The pre-war output was 91 lakh pieces; so during the first 5 years, output of bag tanned leather should be increased by 4.5 lakh pieces. As raw hides are available in all the provinces and as it will be possible for deficit areas to get supply from surplus ones, bag tanning should be carried out in all the provinces to provide local *chamars* with work. Mr. H. Raney, one of the members of the Panel, considers the target of 5 per cent. increase as inadequate. But this target has been proposed as it is apprehended that sufficient raw buffalo hides may not be available during post-war years to enable bag tanners to tan more than that indicated by this target. The target, however, is meant as a minimum. If more hides are available and there is a market for the increased production of bag tanned leather, the cottage tanners will, of course, tan more.

Summary of Recommendations.

57. (i) The export of raw hides should be stopped.

(ii) Wherever possible, bag tanners should be organised and brought under co-operative societies by the Provincial Governments.

(iii) The bag tanners should be encouraged to improve their product by the Peripatetic Demonstration Parties of the Provincial Governments, who should give them technical help and guidance.

(iv) The output of bag tanned leather should be increased by at least 5 per cent. or 4.5 lakh pieces over the pre-war figures by the end of the first 5 years. The bag tanners should process inferior grades of hides to make cheap leather and bag tanning should be carried out more or less in all the provinces to provide work for the local *chamars*.

(ii) Tanned E. I. kips, goat and sheep skins:

58. These are lightly tanned kips, light buffalo hides and goat and sheep skins which are exported in large quantities. On account of the intrinsic value of these lightly tanned Indian hides and skins, demand for them from overseas markets has been steadily increasing during the past 70 years. The industry is chiefly located in Southern India. A certain quantity of E. I. tanned kips is also produced in Orissa which is sent to Madras for sale, and eventually exported. Although, the industry is practically confined to South India and the latter tans all its kips, buffalo hides and sheep skins, and also a portion of its goat skins, it has to import large quantities of kips and sheep and goat skins from the Punjab, U. P., Bihar and Bengal to supplement its own supply of raw hides and skins in order to meet the export demand for these leathers. During the quinquennium ending 1938-39, India was exporting on an average the following quantities of the different types of E. I. tanned leather.

TABLE X
Export of E. I. tanned leather.

Type of leather	Quantity (in lakh pieces)	Value (Rs. in lakhs)
E. I. tanned hides	48	258
E. I. tanned skins	172.8	304.6

59. The main reason why E. I. kip tanning developed in South India is the availability of the vegetable tanstuff *avaram* which has suitable properties as explained in Chapter IV. Up to about 1921-22, this tanning material blended with a certain proportion of another local tanstuff, *Konam*, (*Cassia fistula*) was used. It has already been stated that *avaram* has now been replaced by South Africa wattle in kip tannage but is still retained in skin tanning.

60. Volume and value of production.—On an average during the quinquennium ending 1938-39, the total production may be taken to be as follows:—

TABLE XI

Description of leather	Exported		Retained for domestic consumption		Total production	
	Number	Value	Number	Value	Number	Value
	lakhs	Rs. in lakhs	lakhs	Rs. in lakhs	lakhs	Rs. in lakhs
1. Hides including kips & buffaloes	48	258	38	162	86	410
2. Sheep & goat	172	304	18	22	190	327

Total Rs. 737 lakhs.

61. The E. I. kip and skin tanning industry thus represented a production of leather worth Rs 7.37 crores annually (pre-war).

62. **Effect of the War.**—During the war, production suffered considerably due to lack of hides and skins which could not be transported to South India on account of transport difficulties and also because Northern India (principally Cawnpore and Calcutta) tanned more hides during the war than they used to do before it. Mr. Malvenan in his note to the Panel has given figures showing that during the five years from 1935 to 1939, the average monthly export of tanned kips including cow and buff calf and buffalo hides was 5,100 bales from Madras port and it reached the peak figure 7,000 bales monthly in 1939. This is equivalent to about 70 to 80 lakh pieces per annum. During the decade 1925-35, this average was only 3,000 bales. The phenomenal increase from 3,000 to 7,000 bales shows what the Madras hide tanning industry can do if there is sufficient demand and if it gets the hides required. Due to lack of hides, many hide tanneries in South India lay idle during the war. At the time of the Panel's visit to Madras, it actually found the pits of a couple of tanneries it visited, lying more or less empty. According to figures given by Mr. Malvenan, H. M. G.'s purchase of E. I. tanned kips for export to U. K. in 11 months from June 1944 to April 1945 was a little over 1,700 bales monthly. It is estimated, Mr. Malvenan continues, that an equal quantity was tanned and sold to the civilian trade, making a total output of 3500 bales monthly. This is a 50 per cent. reduction on 1939 export to U.K.

63. Skin tanning in Madras, according to Mr. Moideen, one of the members of the Panel, has considerably suffered during the war and is still suffering. Mr. Moideen reports that E. I. tanned skins were one of the very first commodities to be brought under control at the very commencement of the war. Their export to any other country except U.K. and U. S. A. had been prohibited till April 1946. Since then the restrictions have been relaxed to some extent. They are generally shipped under two categories, viz., C. I. F. and consignment marks. The former consist of medium and inferior tannages while the latter are of superior and superfine tannages. The export of the former is permissible to U. K., U. S. A. and other permissible destinations. While that of the latter is confined to the U.K. only. Ceiling prices for tanned skins for both C. I. F. and consignment marks were fixed in U. K. and U. S. A. at par with pre-war prices and in some cases only 20 per cent. above pre-war prices, while prices of other commodities have gone up to about 250 per cent. above pre-war level. In June 1946, U. K. gave an enhancement of 20 per cent. on the ceiling prices, which was followed by U. S. A. also but as the law regulating controlled prices in U. S. A. lapsed at the end of June 1946, the prices of E. I. tanned skins rose by another 80 to 100 per cent. and U. S. A. was the chief operator in the market. Subsequently, due to some arrangement or some other cause, U. S. A. has gone out of the market completely and U. K. being the sole purchaser, has pulled down the ceiling prices in level with those which existed before June 1946. Prices of consignment goods are fixed by a Valuation Committee set up in England representing the purchasing interests only and then the goods are distributed to carriers, etc., by the said committee under a different name as Allocation Committee. In order not to injure the interests of the London brokers the consignment marks are not being allowed to be exported against direct sales on C. I. F. basis. Thus the industry was compelled to send skins of superior and superfine tannages also under C. I. F. marks which usually consist of medium and inferior class tannages, to escape from the Valuation or the Allocation Committee. From the middle of 1946, the Leather Control in U. K. have been assuring a hundred per cent. increase over the ceiling prices which existed upto June 1946 on all consignment goods. This attracted more shipments on consignment basis. This assurance was extended for goods shipped

by the 15th of January, 1947. But some goods which were ready but could not be shipped by that date due to lack of shipping space, have been shipped by steamer till the end of January, 1947. The Leather Control at London have been giving the trade to understand that all such goods will be included in the 100 per cent. scheme. But since then they have enunciated a new theory that the valuation committee would determine their values in keeping with the assurances, but that they could not find buyers at that level of prices. In all fairness, it should be obligatory on the Leather Control to obtain values in keeping with the assurances given before the time of shipping. Ceiling prices have been fixed in U. K. for raw sheep skins but they work out at a higher level than ceiling for tanned sheep skins. The Madras skin tanners who have to sell the tanned skins at their ceiling price in U. K. or U. S. A. cannot afford to pay for the raw sheep skins in India as much as U. S. A. was paying for them till the prohibition was imposed on the export of raw and pickled sheep skins in October 1946. The result was that pickled and raw hair sheep skins were being exported in increasing quantities to the injury of the Madras skin tanners. To preserve this age-old and established industry and to save it from further deterioration, it is necessary, firstly, to abolish forthwith all restrictions on the export of its products and their ceiling prices in U. K. and U. S. A.; secondly, to continue the prohibition imposed in October, 1946, on the export of pickled and raw hair sheep skins altogether and restrict that of goat skins according to the schedule given in para. 38; and thirdly, to afford transport facilities to move raw skins to tanning centres and tanned skins to internal markets by placing the railway transport of these goods on Class I priority.

64. To stimulate the production and export to U. K. of Madras tanned kips, H. M. G.'s purchasing Agency at Madras has introduced a bonus scheme since 1st August 1945. The bonus is paid to the kip tanners of South India over the scheduled prices according to the following rates:—

If in any month the purchases are:—

- (a) 1,500 to 1,999 bales, a bonus of 2 annas per pound.
- (b) 2,000 to 2,499 bales, a bonus of 4 annas per pound.
- (c) 2,500 to 2,999 bales, a bonus of 5½ annas per pound.
- (d) 3,000 bales or above, a bonus of 7 annas per pound.

65. As an effect of this scheme, the export of tanned kips including cow and buff calf has risen from 1,432 bales in 1945 to 4,781 bales in March 1946. A bale consists of 600 lbs. and weight ranges of tanned kips exported are 4-4½, 5-5½, 7-7½, 8-8½, and 10-12 lbs. The bonus that is being paid to Madras tanners does not, it is reported, affect the price at which the British carriers buy them, which is much lower than the price (inclusive of bonus) at which H. M. G. is buying at Madras. The excess in the shape of bonus is a subsidy by H. M. G. to the British manufacturers.

66. **Prospects of Post-war Expansion.**—Judging from the steady increase in the production and export of E. I. tanned leather during the period between the two world wars, the proved elasticity of the South Indian tanning industry for increased production and the keenness which is being shown by U. K. to purchase the leather, the Panel is definitely of the opinion that the E. I. tanning industry should be expanded substantially during the post-war period, specially during the first 5 years, to take advantage of the present keen demand. The *sine qua non* for this expansion, however, is that the industry should get adequate supply of raw hides and skins and of tan bark "wattle". Export of raw hides and skins should be restricted and plantation of wattle, which has already been initiated in South India, should be proceeded with, in right earnest and rapidly expanded. Exporters of raw hides and skins are inclined to belittle the importance of the E. I. tanning industry of South India. But it is too big an industry now in which the interests of the two

most important countries of the British empire, India and U. K. are concerned.

67. During the course of the Panel's investigation, it was reported that labour was running short in the E. I. kip and skin tanning industry. Some of the work at present done by manual labour can with advantage be done by machinery. Facilities should be given to the industry for their importation.

68. **Target.**—During the first 5 years, the kip tanning industry in India should endeavour to reach the pre-war average level of production so as to be able to export 5,000 bales monthly.

69. As regards skins, before the war, India (chiefly Madras) was tanning by the E. I. tanning process, 190.8 lakh skins of which 172.8 lakh were exported and 18 lakh retained in the country. The total of skins available in India before the war, including import, was 500 lakh; her own production was 445.7 lakh and the balance was imported. So, she has still 309 lakh skins to draw upon for E. I. tanning. Of these 13.2 lakh pieces of sheep skins were exported as raw in the year 1938-39. These should be retained for E. I. tanning by prohibiting export of raw sheep skins totally. In the same year 239.4 lakh goat skins were exported as raw. Of the raw goat skins usually exported, 30 to 40 per cent. according to Mr. K. H. Chamber's evidence before the Panel, are not suitable for glazed kid production. 30 per cent. of 239.4 is 72 lakh goat skins which can be retained in India for E. I. tanning without interfering with glazed kid stock. So, the Madras skin tanners may have $72 + 13.2 = 85.2$ or say 85 lakh skins for tanning in post-war years. This will mean an increase of about 40 per cent. over pre-war production and the Panel proposes that this should be kept, in view as the target for skin tanners during the first five years. It is in India's interest that they should be tanned in India and then exported. The foreign buyers would also gain by purchasing the tanned skins because they could then see the grain defects in tanned skins much better than in raw skins and they would thus be able to know what they were buying.

70. **Retanning and Finishing of E. I. tanned leather in India.**—It has already been stated that in the U. K. and other countries, Indian E. I. tanned leather is retanned and converted into different types of leather. Some of the E. I. tanned kips after retanning are also curried. It would be of great economic advantage to India if all this work were done in India and India exported the finished leather rather than the crust tanned stock. This is an entirely new line, awaiting development in this country, and a start should be made at once for its development. The existing chrome tanners in India should take it up as a side line. Much of the technique is already known to the various experts engaged in these tanneries and the production of saleable leather such as semi-chrome kips, russet kips, lining kips, morocco and shoe lining from E. I. tanned goat skins, roller skins for textile mills, finished shoe lining and various types of fancy leather from E. I. tanned sheep skins, will not be a difficult matter. In the course of the Panel's tour in Madras, it was found that a commercial firm had already started producing several types of leather from E. I. tanned stock at the Leather Trades Institute, Madras. The machinery and a portion of the tannery had been let out to it by the Madras Government. In Calcutta, a few firms produce dyed and finished leather from Madras tanned buffalo and cow hides, calf and goat and sheep skins and find a market for them. Heavier types of Madras tanned buffalo hides were retanned in strong bark liquor and finished as light sole leather and had a good market in Calcutta. Large quantities of E. I. tanned kips were also tanned and curried to produce russet kips for making military boots and shoes and other army equipments. It will be seen that a start has already been made in the line which should not be given up but should be vigorously pursued in order that gradually an increasing proportion of E. I. tanned leather may be finished in India. Attempt should be made to market these

finished leather in these countries which are now buying E. I. tanned leather. Help of the Indian Trade Commissioners posted abroad should be taken in this connection. Most of the witnesses in Madras, Messrs. Chrome Leather Co., Mr. K. H. Chambers and Mr. Seshachalam Choudhury expressed the opinion that the line had a good scope for development. Mr. Hepburn of Cawnpore thought that the dressing of E. I. tanned kips should be taken up as a long term policy. While Messrs. Cooper, Allen & Co., was doubtful about the success of an export trade in dressed E. I. tanned kips, the Company had been making Morocco and lining leathers from tanned skins since sometime and would be prepared to expand the line if the demand increased. Mr. Randali thinks that India is not likely to have a better opportunity than now of changing over from an export trade of raw and semi-finished leather to that of finished leather and leather goods.

70. (a) **Chrome retan kips.**—It is possible to give an entirely new orientation to the E. I. tanned kip industry by introducing chrome retan process which has now been well developed in Europe and America and turns out fuller and altogether better leather than that obtained by retanning and dressing the present E. I. tanned kips by semi-chrome or vegetable tannages. This process appears to be specially suitable for Indian kips, a great bulk of which are of poor substance; this inherent deficiency can be appreciably made up by the fulness imparted to the leather by the new developed technique of the chrome retan process. According to it, the kips will have to be first chrome tanned and subsequently vegetable tanned. The crust leather so obtained may be exported in place of the present E. I. tanned kips to be dressed by overseas curriers or dressed in India either for export or internal consumption. The process can be carried out alike by the Indian E. I. tanned kip as well as organised tanneries and it will relieve the strain on wattle bark, to an appreciable extent. It is expected that overseas curriers will prefer retan kips once their superior qualities are demonstrated. Development of the chrome retan process should be pursued in right earnest.

71. **Provincial Distribution of Production.**—There is scope for the manufacture of E. I. tanned leather in Bengal, Assam, Orissa and C. P. where suitable hides and skins are available. Rajputana produces large quantities of goat and sheep skins and it has also *avaram* bark. There is thus a prospect for developing the manufacture of E. I. tanned goat and sheep skins for export as well as for finished light leather for internal trades. Tanneries for the production of this leather should be started in suitable regions in the Rajputana states, e.g., Jaipur. In Rajputana as well as in some parts of the Punjab and Baluchistan, camel hides are available. From Baluchistan camel hides are exported as raw. Attempt should be made to tan camel hides and produce suitable leathers from them. Mr. Raney reported to the Panel that very soft leather for upholstery and artistic leather goods were to a certain extent made from these hides and further development would be beneficial. In Bombay, Sind and Kathiawar also E. I. kip and skin tanning can be substantially increased. In Kathiawar specially the production of E. I. tanned goat and sheep skins can be considerably expanded because suitable skins as well as *avaram* bark are available, and being near the ports of the West coast, there is facility for exporting them. Of the increase of 40 per cent. over pre-war production of E. I. tanned goat and sheep skins, a substantial share should go to Kathiawar. Similarly, in the Punjab, goat and sheep skins are plentiful, and the goat skins of that place being of coarse grained type are not suitable for glazed kid manufacture. Large quantities of the Punjab goat and sheep skins are at present sent to Madras for E. I. tanning, which should be done in the Punjab itself. Similarly, Bengal sends large quantities of kips and rejection goat skins to Madras for tanning which might as well be done in Bengal. Most of the Bengal hides sent to Madras are from the Eastern and Northern Bengal from places like Dacca, Narayanganj

Chittagong, etc. These are suitable places for producing E. I. tanned kips, because plentiful supply of good soft water is available. Wattle bark can be imported and labour can be suitably trained in these new areas. Much of the manual work that is at present done in South India in the E. I. kip tanning industry can be replaced by labour saving machinery and the new concerns taking up this line will be well advised to introduce machine work.

71. (a). In recommending the expansion of the E. I. kip tanning industry in other parts of India besides the Madras Presidency, the Panel does not contemplate that this expansion should necessarily be at the cost of Madras. Even before the war, India was exporting considerable quantities of raw hides and skins which could be usefully converted into E. I. tanned leather and exported as such if markets were available. Just before the war, the export of E. I. tanned kips from Madras was steadily increasing and if the war had not intervened, this increase might have been continuous. In post-war period, this is likely to have given the new entrants into the line, possibilities for disposing of their products. Further as indicated in para. 70, as the consumption of finished vegetable tanned or semi-chromed kip and skin leathers develops in India, these new entrants would be in a position, if they so like, to convert crust tanned hides and skins into finished leather themselves in their tanneries and meet the created internal demand. Again, it is envisaged that it will be possible to create an overseas demand for the finished vegetable or semi-chromed kip and skin leather in overseas markets and the new entrants would be able to export these leathers to foreign countries also. Those tanneries which will like to be content with the production of E. I. tanned or crust leathers only, will be in a position to sell crust stocks to other tanneries which will convert them into finished leathers, just as the producers of crust leathers in Europe and America usually do.

Summary of Recommendations

72. (i) The targets proposed above, *viz.*, attainment of the pre-war level of production for the E. I. kip tanning industry (so as to be able to export 5,000 bales monthly) and tanning of 85 lakh skins should be aimed at during the first 5 years.

(ii) To provide sufficient hides and skins to the E. I. tanning industry, export of raw kips, buffalo hides, and sheep skins should be stopped and that of goat skins restricted according to the schedule given in para. 38.

(iii) To preserve the age-old and well-established E. I. tanned skins industry and to enable it to attain the proposed target, it is essential to abolish all restrictions on their export.

(iv) The existing ceiling prices of E. I. tanned skins in U. S. A. should either be abolished or enhanced by 150 per cent.

(v) Attempt should be made to bring wattle bark from Kenya and Australia.

(vi) Plantation of wattle in South India should be vigorously pursued.

(vii) Attempt should be made gradually to revive the use of *avaram* and *konam* in the Madras kip tanning industry and to increase the collection and supply of these barks by plantation if necessary. This is essential in view of the likelihood of the stoppage of South African wattle.

(viii) In view of the threatening shortage of manual workers in the South Indian Export Tanning Industry, hand work should be gradually replaced by machine and facilities should be given to manufacturers of E. I. tanned leather for importation of machinery.

(ix) Production of E. I. tanned leather should be increased in Bombay, Kathiawar and Orissa and started in Bengal, C. P., Rajputana and the Punjab.

(x) Retanning and finishing of E. I. tanned kips and skins should be developed in India with a view to export finished leathers.

(xi) Development of the chrome retan process should be pursued in right earnest.

(iii) Pit tanned heavy leathers.

(a) Pit tanned sole leather.

73. This is, far and away, a better sole leather than the bag tanned type and well finished and pressed according to up-to-date Western processes of vegetable tannage. The manufacture of pit tanned sole leather is at present concentrated at Cawnpore which is responsible for the bulk of its total production in India. There are eight big commercial tanneries which produce this leather at Cawnpore. A certain quantity is also produced in Calcutta by five tanneries, including notably the Bata's. Just before the recent war, the total annual production of pit tanned sole leather was about six lakh hides and the value of the production was about Rs. 72 lakh at the pre-war price of -/8/- per pound and taking a hide to yield 24 lbs. on an average. Pit tanning requires a large outlay of capital and is fundamentally, a capitalistic factory industry and not a cottage one.

74. **Effect of the War.**—The Supply Department specified the use of pit tanned sole leather for army boots and for other military stores. This stimulated pit tanned sole leather production to a very large extent. Fortythree organised tanneries which had the necessary equipment for producing pit tanned crust sole leather were brought under Government control and their entire output was purchased by the Government. A list of these tanneries showing their capacities for vegetable tanning (and also for chrome tanning by such of them as manufacture chrome leather as well), is given in Appendix IV. Their aggregate production capacity is 21 lakh buffalo hides annually which is 3 or 4 times the pre-war capacity. This capacity enables them to tan over 35 per cent. of the total buffalo hides produced in India. But they had to work only 30 to 40 per cent. of their capacity due to inadequacy of the supply of buffalo hides. The quantities of bark tanned leather supplied to the Government by the controlled tanneries are shown in Appendix IV. The bag tanners competed with them in the hide market and purchased considerable quantities, paying higher prices than what controlled tanneries could afford to pay due to fixation of prices (prices were revised quarterly) at which they had to supply to the Government. The pit tanning industry again learnt the technique of pit tanning process from the staff of the Controller of Leather and Tanning Industries who introduced the approved process in these tanneries and helped the tanners in maintaining it by periodical inspections. A higher technique was thus spread out through the industry.

75. **Post-war expansion.**—The productive capacity of the industry has increased about 3½ times. If the controlled tanneries succeed in working to their full capacity or near it, it will mean a substantial expansion of the industry over its pre-war level. This should be regarded as the target for the first five-year period. The most essential thing to permit working to full capacity, is to ensure supply of adequate quantity of buffalo hides. According to the evidence given to the Panel by experienced pit tanned sole leather tanners as well as by the Controller of Leather and Tanning Industry, for sometime to come, the demand for pit tanned sole leather in the home as well as in the export markets where Indian sole leather is consumed, will be quite up to production. Facilities for export will, however, have to be provided.

76. **Provincial distribution of sole leather production.**—The pit tanned sole leather tanneries which have already been started before and during the war are fairly distributed over the provinces best suited to its production. Among the provinces where pit tanned sole leather tanneries have not yet been started

and where there may be scope for the line, appear to be C. P., Kathiawar, Hyderabad (Sind), N.-W. F. P., Assam and Bihar in each of which a pit tanned sole leather tannery may be established. As Assam buffalo hides are fairly heavy and of good grain, the prospects for development of sole leather tanning in Assam appear to be promising. The Panel therefore recommends that one sole leather tannery should be started in Assam immediately and one more after five and ten years respectively. Initially, these tanneries should not aim to tan more than 20 hides daily or 500 hides monthly, because they will have to meet stiff competition of bag tanned sole leather. But gradually it will be possible for these tanneries to increase their output as it is envisaged that the expanding production of machine-made western type shoes in the manufacture of which pit tanned sole leather is usually preferred, will create an increasing demand for this type of leather. As the Punjab produces a large number of heavy buffalo hides and also has a fair supply of *babul* bark, it is one of the most suitable provinces for pit tanned sole leather production. The province should take up the line seriously.

Summary of Recommendations

77. (i) The export of buffalo hides should be totally stopped.
 (ii) Export facilities for Indian sole leather should be provided.
 (iii) Facilities for importing machinery by those tanneries which have not got full complement should be given.

(b) Pit tanned harness leather:

78. This is a variety of thick and heavy leather made from better grades of buffalo and heavy cow hides by the pit process of vegetable tanning which is very similar to that used for pit tanned sole leather described under (a). The bulk of its production is located at Cawnpore. The output of the Government Harness and Saddlery Factory at that place consists principally of this leather. In normal time, the output of the Harness and Saddlery Factory's harness leather appears to be sufficient to meet the military requirement and private tanneries make a small quantity only to cater for the civilian trade, the requirement of which is usually small. Due to the war-time demand, the production of crust harness leather appreciably increased in the Cawnpore commercial tanneries and it also spread out to the controlled tanneries in Calcutta, Agra, Madras, Trichinopoly, Bangalore and Bombay. Most of the controlled commercial tanneries supplied crust harness because they were not properly equipped and staffed to do currying themselves. The demand for curried harness leather by the civilian trade is not likely to increase very much during the first 5-year period.

79. In the questionnaire issued by the Panel there were the following two questions (18 and 19).

Question 18—Considering that during the war about 30 controlled tanneries supplied harness leather of approved quality in the crust form to the Government Harness and Saddlery Factory, do you think, they would be in a position to meet its requirement of crust harness leather also in normal time? Do you think that this supply to Government would be of assistance to the tanneries in their effort to work up to their extended output capacity in post-war years?

Question 19—Do you curry and market harness leather in the finished condition? How does your curried and finished harness leather compare with that produced in the Government Harness and Saddlery Factory? If the Government wanted, would you be able to supply finished harness leather of the approved standard?

80. The evidences of Messrs. Cooper, Allen and Co., Messrs. Eastern Tanneries Limited, Mr. Inskip personally and Major McBean show that the trade is confident that even if the post-war standard of harness leather is

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Question 18—Considering that during the war about 30 controlled tanneries supplied harness leather of approved quality in the crust form to the Government Harness and Saddlery Factory, do you think, they would be in a position to meet its requirement of crust harness leather also in normal time? Do you think that this supply to Government would be of assistance to the tanneries in their effort to work up to their extended output capacity in post-war years?

Question 19—Do you curry and market harness leather in the finished condition? How does your curried and finished harness leather compare with that produced in the Government Harness and Saddlery Factory? If the Government wanted, would you be able to supply finished harness leather of the approved standard?

80. The evidences of Messrs. Cooper, Allen and Co., Messrs. Eastern Tanneries Limited, Mr. Inskip personally and Major McBean show that the trade is confident that even if the post-war standard of harness leather is

hides should be chromed and inferior ones vegetable tanned for the production of E. I. tanned kips.

Summary of Recommendations

89. (i) The target for the first 5 years should be 10 per cent. minimum increase annually over the present production.

(ii) Existing chrome tanneries should be given facility and high priority for the importation of machinery.

(iii) New chrome tanneries may be started at centres mentioned in para. 88 and facilities for the importation of machinery should be given them. The new entrants should be advised to start on a moderate scale to gain experience and expand gradually.

(iv) Export of cow hides should be totally prohibited.

(v) The quality of the Indian chrome leather should be further improved by the installation of up-to-date machinery in the existing chrome tanneries. The machines of many tanneries are very old and worn out and out of date. Their replacement is essential in the interest of efficiency of production and leather quality.

(vi) Research should be carried out in the tanneries and in the proposed Central Leather Research Institute to improve the quality of this leather so that it may be more and more appreciated in foreign markets, conducing to its larger sale abroad.

(vii) To stop the over-measurement of chrome leather, a Leather Measurement Act for the whole of India should be promulgated by the Central Government.

(viii) All restrictions against the export of this leather should be abolished and export to all overseas markets permitted. There is no shortage of this leather in India.

(viii) Glazed Kid

90. This is a fine, light and soft leather prepared from goat skin by chrome tanning. It is used in making ladies' shoes as well as lighter types of gents' footwear. Its manufacture is now principally located in Madras where two European tanneries, Messrs. Chrome Leather Co., and Messrs. Gordon Woodroffe Leather Manufacturing Co., Ltd., produce it. Recently Messrs. Cooper, Allen & Co., have also started on the line at Cawnpore. In Calcutta the National Tannery Company Ltd. and the Calcutta Tanneries Ltd. are reported to be experimenting with the production of glazed kid and the experiments are not altogether unsuccessful. One or two Chinese tanneries also produce glazed kid. The Mysore Tannery at Bangalore is also carrying out experiments on glazed kid manufacture. The Western India Tanneries Ltd., at Bombay are producing small quantities of the leather.

91. The export figures for glazed kid from India for 3 years before the war are given below:—

TABLE XIII

Year	Quantity in sq. ft.	Value in Rs.
1936	200,000	1,10,700
1937	1,558,000	9,72,000
1938	1,700,000	9,32,310

92. Both Mr. Phillips and Mr. Newman representing Messrs. Gordon Woodroffe Leather Manufacturing Co. Ltd. and Chrome Leather Co. Ltd. respectively reported that they had been selling glazed kid both in India and abroad. Their standard of quality was appreciated in the foreign markets from which they concluded that the quality of their leather was nearly equal to the western standards. It appears that the pioneering stage has been passed. The glazed kid industry has established itself to a certain extent and is now fit to press its claim for further expansion.

93. **Prospects of expansion.**—Looking at the industry from the view point of the availability of suitable raw materials, there appears to be a very big scope for expansion. As shown in Table VI, para. 33 in 1938-39, 239.4 lakhs of raw goat skins were exported from India. Mr. Chambers in his evidence in Madras informed the Panel that about 30 per cent. to 40 per cent. of the exported skins were unsuitable for glazed kid. Taking even the higher figure, 143.6 lakhs or, in round figure, 150 lakhs of the skins normally exported would be suitable for glazed kid production. It may, therefore, be taken that India can annually turn out about 150 lakhs of pieces of glazed kid over and above what she produces now if she retains these 150 lakhs in the country for the purpose. So, for the expansion of glazed kid manufacture, 150 lakh pieces may be taken as the long term target. With a view to step up production, the following targets are proposed.

94. **Post-war targets:—**

First 5 years	30 lakhs
Second 5 years	60 „
Third 5 years	100 „

95. **Cost of Glazed kid tannery.**—Mr. Chambers in his evidence informed the Panel that the cost of a glazed kid tannery having an output of 150 dozen skins daily would be as follows:—

Fixed Capital	Rs. 7½ lakhs
Working Capital	Rs. 5 „

This tannery will be able to finish tanned goat and sheep skins to the extent of about 150 doz. daily to take fancy leather. If it is equipped for this purpose, the following amount of capital will be needed:

Fixed Capital	Rs. 8½ lakhs
Working Capital	Rs. 6½ „

These estimates are, of course, subject to fluctuation of prices of machinery and material.

96. **Provincial distribution of glazed kid production.**—As two big tanneries are already producing it in Madras, it is not necessary to start any new glazed kid tannery there. As Messrs. Cooper, Allen & Co., have started the line in U. P. and other tanneries in that province will most probably add glazed kid departments to their tanneries, no separate glazed kid tanneries will be needed there at this stage.

97. The most suitable provinces for new glazed kid tanneries appear to be Bengal and Bihar where the line is still undeveloped and suitable goat skins are available. There is scope for a number of glazed kid tanneries in each of these two provinces. In Bombay and U. P. there is already an expanding market for glazed kid and as such there are prospects for glazed kid tanneries in these two provinces also. As in other provinces suitable skins and market are lacking, there appears to be no scope at this stage for glazed kid tanneries in them.

98. **Technique of glazed kid manufacture.**—Messrs. Cooper, Allen & Co., in their evidence state that in their opinion glazed kid is a more highly specialised

product than chrome leather (box and willow sides, box calf, etc.) and its production should be divorced from that of ordinary chrome leather. Educated and intelligent workmen with practical training are needed to develop this industry. The development should be fostered by the Government which can assist by granting facilities for the import of the necessary plant and obtaining the services of skilled technicians. As the industry develops, the export of raw skins, particularly from these districts where the best types are available, should be restricted.

99. Messrs. Chrome Leather Co. Ltd. in their oral evidence state that technical research on glazed kid production in an experimental glazed kid tannery can considerably aid in improving the quality of the Indian glazed kid still further. They also state that in respect of technical skill, American and British glazed kid tanning experts are equal and an expert could be looked for in either of these two countries.

100. Mr. S. K. Sen of the National Tannery Co. Ltd., Calcutta in his written notes stated that for glazed kid specially, research and experiment are needed and Government assistance may help considerably. Artificial bates are essential in glazed kid manufacture, and research should be carried out in India to make bates in this country from animal pancreas, especially pig pancreas, similar to pancreol 5A. In their written evidence, the National Tannery Company Ltd., state that large scale experiments are necessary for the development of the glazed kid industry specially for silver and gold kids and for finishing glazed kid.

101. Mr. Chambers stated that glazed kid experts might be obtained from U. K. and U. S. A. and possibly from German Jews. Theoretically, it seems better to have a factory making only one article, but in the leather trade with changing demand, there are certain advantages in a tannery which turns out more than one kind of leather. The production of glazed kid can with advantage be combined with the finishing of tanned goat and sheep skins, since practically the same machinery can be used for both. The technical difficulty of manufacturing glazed kid can be overcome. He is against State-managed glazed kid tanneries since there are already a number of them managed by private companies, in existence. There is considerable room for large scale production in India.

102. **Marketing of glazed kid.**—Although the popularity of glazed kid shoes is increasing in India, the demand for glazed kid is yet very small in the Indian home market because of its expensive nature. If glazed kid manufacture is expanded according to the targets indicated in para. 94, the product will have to be marketed abroad. An organised marketing programme will be essential. In this connection, the remark of Mr. Chambers is worthy of note. He says in his evidence, that if India endeavours to flood the world market with glazed kid, she will come up against considerable opposition from the established industries in foreign countries. It is unlikely for instance that U. S. A. Government would allow very large import of glazed kid into the United States to the detriment of their own large and well established glazed kid industry. He also considers, however, that there should be good export trade for glazed kid in black and in one or two staple colours; changes of fashions militate against export trade in anything approaching fancy colours. Tariffs in foreign countries will have to be overcome.

Summary of Recommendations

103. (i) The targets proposed in para. 94 should be aimed at.

(ii) To facilitate the expansion of glazed kid manufacture in India and to preserve the other lines of the Indian tanning industry in which goat skins are used as raw material, the export of raw goat skins should be restricted in accordance with the schedule given in par. 38.

(iii) Facilities should be given to the intending producers of glazed kid for getting machinery and technical personnel from abroad.

(iv) Students and technicians already working in tanneries and with experience of manufacture should be sent abroad for acquiring the knowledge of the technique of glazed kid manufacture, in U. K. and U. S. A. and Continental Europe with Government scholarship and facilities for their work and study should be arranged in these countries by the Government.

(v) Research should be undertaken on the technique of glazed kid manufacture and the making of essential materials needed in the manufacture, at the proposed Central Leather Research Institute.

(vi) A glazed kid expert should be brought out by the Government either from U. S. A. or U. K. whose services should be made available to glazed kid manufacturers throughout India for technical guidance.

(vii) Trade Commissioners should be requested to help in the marketing of Indian glazed kid in the countries where they are posted.

(viii) Encouragement and help should be given by Government to establish one glazed kid tannery each in Bengal, Bihar, and other suitable provinces as mentioned in para. 97.

MINOR TYPES

104. All other types of leather given in the list in para. 52 fall under this head. For none of these is there any large or steady demand either in the home or export market. No large tannery can work exclusively on any of these lines. At present, they are being produced in different parts of India either by small concerns or in sections of big tanneries which are producing the major items of leather as their main lines. Some of the more important ones among them are discussed below.

Minor Vegetable Tanned Leather.

(iv) Pit tanned dressing leather.

105. This is made from cow hides and used mainly for making travel goods like suit cases etc. A number of small tanneries are producing this leather in Calcutta. Some of the bigger tanneries produce it as a side line. There is a considerable scope for its further development.

(vi) Pit tanned light leather.

106. Certain quantities of sheep and goat skins are vegetable tanned for shoe lining leather and they are also dyed and finished for use in making uppers for shoes of lighter types and also for making purses, portfolios and other leather goods. The demand for this leather is increasing and it is expected that there is a good scope for its large scale development. But a suitable tanning material for light skin tannage like Sicilian sumach, is needed for this. Mr. Hepburn, the Controller of Leather and Tanning Industries states that Dhawa leaves may be used in place of sumach. Syntans may help, either used singly or in admixture with some of the local tanstuffs. Experiments are needed in this connection.

Summary of Recommendations.

107. (i) Investigation should be undertaken at the proposed Central Leather Research Institute on light leather manufacture with (a) Dhawa leaves, (b) mixture of Dhawa leaves and syntans and (c) with other local tanning materials singly and mixed with syntans.

(ii) Research should be undertaken at the Central Research Institute on the production of Syntans in India.

(iii) Plantation of Sicilian sumach should be tried.

Minor Chrome Tanned Leather.

(ix) **Chrome suede and imitation sambar.**

108. Chrome suede is a light leather made by chrome tanning sheep and goat skins and buffing them on the flesh side to produce a velvety nap and dyeing them into black and various shades of colour. Its use and demand are increasing and the line is full of prospects. Imitation sambar leather is made from chrome or semi-chrome tanned cow hides dyed and finished on the flesh side with a velvety nap like suede. It is a very good side line for chrome tanneries, producing box sides and kips and will most probably be carried out as such in post-war years.

109. It is difficult to give an accurate estimate of production of suede leather in post-war years but considering its increasing popularity, it will be possible to double the production in the first 5 years and this should be taken as the target for this line. As regards its marketing, the home market will consume the bulk of the production but an export market is also possible if the standard of its quality is maintained at a high level. As this leather requires only a small equipment of machinery, the only absolutely essential machine being a buffing wheel, it is a line which can be pursued even by people with small means. Its manufacture can be carried out almost everywhere in India on a small or medium scale. The production of suede leather should be widely distributed regionally. The same remark applies to imitation sambar.

Summary of Recommendations.

110 (i) The existing glazed kid tanneries should take up the production of suede leather as a side line.

(ii) The existing box and willow side manufacturers should take up the production of imitation sambar as a side line.

(iii) The small tanneries in Calcutta and elsewhere which are producing suede and imitation sambar exclusively should be given facilities to import machinery they may need to increase their output and to improve the quality of their product.

(iv) Encouragement should be given to make suede and imitation sambar leather in all the provinces.

(v) The Indian Trade Commissioners in foreign countries should be requested to help the development of a market for Indian suede and imitation sambar leather in the countries in which they are posted.

(xi) **Neobuck leather.**

111. This is a white leather made from light kips and kip sides by giving them a light chrome tannage and depositing on it white pigments to make them appear white. There is some demand for this leather in India. The Chinese tanneries in Calcutta and a few other Calcutta tanneries as well as the Chrome Leather Company, Madras are producing this leather. The quality is not yet entirely satisfactory and upto the standard of the imported neobuck. Research on the production of this useful leather is called for. New methods of producing white leather have been recently reported from America and elsewhere. One of these employs a basic Zirconium salt. Zirconium tannage deserves trial in India.

Summary of Recommendations.

112. (i) Research should be carried out on the production of satisfactory neobuck and other types of white leather.

(ii) Output of this leather should be increased by at least 100 per cent. above present production during the first five-year period.

(xii) Chrome Patent Leather.

113. This is made from chrome tanned kip sides. The Chrome Leather Co. Ltd., Madras has carried out a lot of experiments on its production and has been turning it out on a large scale since the last 6 or 7 years. In his oral evidence, Mr. Newman of the Chrome Leather Co., states that the demand for his company's chrome patent leather was so heavy in the Indian market that there was no occasion for the firm to export it. He thought that the drier Northern Indian climates of U.P., and the Punjab would be more suitable for chrome patent leather than the humid climates of Bengal and Madras. This is, however, contrary to the opinion generally held in the Indian tanning industry. It is generally regarded that on account of the existence of a great deal of dust in the atmosphere, in the Punjab and U.P., these areas are not suitable for patent leather manufacture. In their evidence to the Panel, Messrs. Cooper, Allen & Co., state that they carried out experiments on chrome patent leather before the war. But the production was not entirely upto the Western standard. Furthermore, the dry dusty climate of the U.P., according to their opinions, is not suitable for the manufacture of good patent leather. Mr. Chambers in his evidence says that chrome patent leather is, far and away, the most difficult leather to make satisfactorily. High technical efficiency is needed, highly skilled workmanship is essential and a large capital outlay is necessary. His experience is that the Indian market would take fairly large quantities of patent leather even if it be slightly inferior to imported leather. He doubts very much whether India could compete in foreign markets with its patent leather.

114. As there is a considerable demand for chrome patent leather, the Panel thinks that there is a large scope for its development. The drier climate of U.P. and the Punjab may be of advantage in eliminating the defect of tackiness but it would not be possible to manufacture the leather properly unless the operations are carried out in glass houses in order to protect the leather from atmospheric dust while it is in the process of drying. The development will proceed more easily in Calcutta where a good start has already been made.

Summary of Recommendations.

115. (i) The output of chrome patent leather by producers should be increased at least by 100 per cent. during the first five years.

(ii) Research should be carried out to improve its quality and to work out the technique of production in conformity with the Indian climatic condition and seasonal variations.

(iii) When the Indian product attains a reasonable standard of quality, the foreign Trade Commissioners should be requested to develop a market for Indian patent leather in foreign countries.

Enamelled hide.

116. This is leather made from spready vegetable tanned cow hides by putting coatings of coloured nitro-cellulose lacquer on the grain surface or on the buffed surface of splits, to produce a flexible and water resisting film. The leather is used for upholstering motor car, seats of upper class railway compartments and furniture. The leather is not made in India on any large scale as yet; but there is a certain demand for it for upholstering work which is likely to increase when, as it is proposed, motor cars will be made in this country during the post-war period.

(xiii) Picking Bands.

117. These are leather straps, 1" to $\frac{1}{2}$ " wide, $\frac{1}{2}$ " to $\frac{5}{16}$ " thick, and 24" in length which are fitted to textile looms. A large quantity of picking

bands is used in the cotton and jute textile industries of India. The volume of import during the quinquennium ending 1938-39 is given below.

TABLE XIV.

**Import of Picking Bands
(In lakh of rupees)**

1934-35	7.9
1935-36	8.6
1936-37	6.4
1937-38	11.2
1938-39	8.7

118. **Production in India.**—Ever since the outbreak of the last World War in 1914, attempt has been made to manufacture picking bands in India by chrome tanning heavy buffalo hides of the best available quality and stuffing the leather suitably. During Great War I, as during Great War II, picking bands made in India enjoyed a good sale. But at the end of both the wars when the importation of foreign bands was resumed, the consumption of locally made bands fell off. The only tannery, according to evidence given to the Panel, which enjoys an uninterrupted demand for its picking bands, is the Western India Tannery Ltd., Bombay. Mr. Pandit giving evidence to the Panel reported that he was making 5 to 6 thousand pounds normally and found no difficulty in selling them in competition with English bands.

119. Mr. K. M. Chambers of Madras states in his evidence that the difficulty with regard to manufacture of picking bands in India was the non-availability of the best types of raw material. Good quality picking bands could be made in this country but they were not as good as imported bands which were made from heavy ox hides of Europe. The Indian manufacturer is handicapped by poor material. A perfect butt free from flay cuts, brands, sores and of a thick substance is necessary and heavy buffaloes in India are almost always badly flayed. According to Mr. Chambers, picking bands cannot be successfully made in any independent unit. It can only be manufactured in a tannery which produces bark tanned sole leather also, so that buffalo hides which cannot be turned into picking bands can be made into sole leather.

120. It appears that the Indian tanning industry has been endeavouring to make picking bands and introduce them to the mills but has not yet succeeded in establishing the line on a suitable basis. When the bands were found to be good enough during the war, they ought to be usable also in normal times. If the local producers get a period of steady business, they will be able to improve the quality with experience. It appears that Indian picking bands should be protected by a duty imposed on imported bands.

Summary of Recommendations.

121. (i) Export of buffalo hides should be stopped lest suitable ones for making picking bands go out of the country.

(ii) Flaying of buffalo hides should be improved so as to provide faultless hides for making picking bands.

(iii) Research should be carried out to increase the tensile strength of locally made picking bands with proper chemical control of the process of manufacture as pointed out by Mr. Pandit and by Mr. Hepburn in their evidence to the Panel.

(iv) Heavy import duty should be imposed on imported picking bands to protect the local industry.

Roller skins.

122. These are made from vegetable tanned sheep skins of tough and strong grain and are used in spinning mills of the textile industry. Before the war

the demand from the Indian textile industry was largely met by import. Skins valued at from Rs. 6 to 8 lakh were imported annually. Attempts were made to manufacture suitable roller skins in India before the war and its manufacture was greatly stimulated during the last war. A few tanneries in Madras and Bombay make roller skins at present. Mr. Malvenan in his note says that this line has been developed effectively in India since the outbreak of the war and can reasonably be expected to last for some years at least and that the manufacture of roller skins in India may be encouraged. He further informs the Panel that in England, roller skins are not made entirely from Madras tanned sheep skins and Mr. Chambers states in his evidence that roller skins of size 26" x 22" imported into India and chiefly demanded by the mills are made from Welsh sheep. He further says that the hairy sheep skins of Madras are the best raw material in India for roller skins but unfortunately only a few of them yield leather of the required size 26" x 22".

Summary of Recommendations.

123. (i) Roller skins are a necessary industrial leather and their manufacture should be developed and placed on a firm basis.

(ii) To protect the Indian Roller skin industry a heavy duty should be imposed on imported roller skins.

123(a) The disposal of available hides and skins in India in 1938-39 and when the planned targets of the various leather and leather goods, are attained, are shown below in Table XIV (a).

TABLE XIV (a)

(In lakh pieces)

	Actual disposal in 1938-39	Planned disposal after 5 years	Planned disposal after 15 years
I. Total buffalo hides available			
Exported as raw	6.2	0.0	
E. I. tanned in Madras (estimated)	4.0	4.0	
Bag and otherwise crudely tanned (estimated).	45.5	36.5	
Pit tanned	6.0	21.0	
Chrome tanned	0.3	0.5	
Total	62	62	
II. Total cow hides available			
Exported as raw	46.1	0.0	
Half tanned mostly in Madras for export	82.0	82.0	
Bag and otherwise crudely tanned (estimated).	45.5	59.0	
Chrome tanned for box sides, kips and calf.	25.0	58.0	
Pit tanned	6.4	6.0	
Total	205	205	

	Actual disposal in 1938-39	Planned disposal after 5 years	Planned disposal after 15 years
III. Total goat skins available			
Exported raw	239.4	137.4	37.4
Vegetable tanned mostly in Madras for export.	49.2	121.2	121.2
Chrome tanned into glazed kid & suedes assuming total production as double of export and 3 sq. ft. per skin.	11.4	41.4	141.4
Total	300	300	300
IV. Total sheep skins available			
Exported raw	13.2	0.0	
Vegetable tanned mostly in Madras for export and to a smaller extent chrome tanned.	186.8	200.0	
Total	200	200	

CHAPTER VI.

Technical Training and Research.

124. At present there are the following Training Institutes in India:

(1) The Madras Leather Trades Institute under the Industries Department the Government of Madras. It is running two courses for artisans: (i) a one-year course in simple leather goods manufacture for the local boys, and (ii) a two-year course for muffasil boys in leather goods manufacture. Only chamar boys are admitted. Formerly this Institute had a higher three-year course in Leather Technology.

(2) The Bengal Tanning Institute in Calcutta. This is under the Department of Industries, the Government of Bengal. It runs three courses: (i) A senior course of 3 years in leather technology for the University certificate in Tanning for which purpose the institute is affiliated to the Calcutta University. Minimum qualification for admission to this course is I.Sc. pass in Physics, Chemistry and Mathematics. (ii) A junior course of two years to which matriculates are admitted. They are awarded a Departmental certificate in Tanning on passing the final examination. (iii) The third course of one year for boots and shoes and leather goods to which students who are fairly literate and have had a school education are admitted. A scheme has also been put to the Calcutta University for a B.Sc. Degree course and a still higher course namely M.Sc. and D. Sc. in leather technology.

(3) Bombay Tanning Institute. This is under the Industries Department, the Government of Bombay. It has two courses in tanning—a two-year advanced course and a one-year artisan course. It has also a Leather Working School attached to it which has similar two courses.

(4) Jullundur Tanning Institute. Three courses are followed. First, a three-year course for educated students to train them up as leather technologists. The second is an artisan course of one year for chamar boys. Under the third are special courses for advanced work.

Tanning Demonstration Parties.

125. A number of Tanning Demonstration Parties are attached to all these provincial institutes to give training on improved methods of tanning to muffasil students. Good work appears to have been done by the parties in the Punjab and Bombay in improving bag tanned leather. In Bengal these parties have introduced in muffasil areas improved processes of vegetable and chrome tanning. Some of the trained students are running cottage tanneries.

126. Tanning Institutes were also started at Cawnpore and Nagpur after the first world war. These Institutes have, however, been closed down. At its meeting at Cawnpore, the Panel enquired of Mr. Hudlikar who had been in charge of the Cawnpore Tanning Institute about the reasons for its closing down. This Institute was attached to the Harcourt Butler Technological Institute at Cawnpore. Lack of sufficient number of applications for admission was adduced by Mr. Hudlikar in his evidence as the chief reason for the closing down of the Institute. Only B.Sc.'s were eligible for admission and as these science graduates after taking the training in leather technology could not get lucrative jobs in the industry, candidates for admission fell off. To the question if under-students could not be admitted, Mr. Hudlikar replied that in his opinion students under B.Sc. standard were unsuitable for training in leather technology.

127. There is now Training School at Fatehpur near Cawnpore, when an elementary course of training in tanning is followed. The Government Harness and Saddlery Factory at Cawnpore introduced a system of training apprentices for the trades in tanning and currying, and harness and saddlery making. It was stopped during the war.

128. Mr. Hepburn in his evidence said that the establishment of a Tanning Institute at Cawnpore would serve useful purposes. Messrs. Cooper, Allen & Co., in their evidence stated that they assisted materially in setting out the tanning section of the Harcourt Butler Technological Institute with machinery etc., but they did not know why the section was closed down. They further said in their evidence that in the event of a Tanning Institute being established at Cawnpore—provided it is run on sound lines—they would be prepared to admit selected students as apprentices in the tannery.

Importance of training in Leather Technology.

129. Modern leather manufacture is progressive. It is applying to an increasing extent the sciences of chemistry, physics, bacteriology and microscopy which are improving leather quality and providing tanners with new materials for use. Two types of technologists are required. Leather Chemists having sufficient knowledge of practical methods of leather manufacture who may be fit for the higher technical jobs in tanneries and Foremen tanners who may take charge of different departments of a tannery. Both these classes of men are to acquire adequate knowledge of the methods of manufacturing the principal varieties of commercial leather which are produced in India. To impart this knowledge, a Tanning Institute should have a small tannery equipped with a set of indispensable machinery and pits. The head of the Institute should be a Leather Chemist, preferably having experience of commercial leather manufacture, gained by actual participation in it in a commercial tannery for some time. He should have under him practical tanner capable of producing the different types of leather. Without these two key men, no Tanning Institute will be able to impart efficient tanning to the students.

130. The panel has visited most of the Tanning Institutes in India. Some of them have got the required equipment of machinery while some require additions and replacement. The Panel was informed that schemes for the

reorganisation and extension of the activities of the Tanning Institutes, had been submitted to the respective Provincial Governments and were under the latter's consideration. The courses followed at these Institutes are usually on the lines of those of the British Tanning Institute. The syllabuses are adequate but what all the Institutes lack is facility for giving the students a period of training in a commercial tannery. Everybody connected with the trade whose evidence the Panel took, emphasized the need of supplementing the Institute's training with a period of work in a commercial tannery.

131. Whether the number of the institutes should be increased requires careful consideration. Past experience has shown that the institutes at Cawnpore, Nagpur and Madras had to be closed down, mainly due to lack of students. Until there is an appreciable increase in the number of students seeking training in leather technology, it may be better to have a few Tanning Institutes where facilities should be provided for training students from other provinces. The Provincial Governments maintaining the existing institutes may formulate some rules with regard to contributions from those provincial Governments which may send their students for training. Such arrangement exists at the Bengal Tanning Institute which reserves permanently seats for students from Bihar and also provides accommodation to students coming from other provinces and States. When the proposed Leather Research Institute as recommended in para 135, is established, facilities should be arranged for the admission of and training in research for students coming from different provinces and states. Some special reservations should be kept for nominees of provinces which are comparatively undeveloped and backward in regard to the leather goods industries in India. The Central Government should also send students for training abroad in leather technology, under its scheme for industrial and technological training in foreign countries. But for training workmen and artisans for the tanning, shoe and leather industries, provincial and State Governments should establish elementary leather trades institutes for giving facilities to the local *chamar* boys and those from other communities who may be inclined to take up leather work. In these elementary training institutes, facilities should be provided for training in machine work also by equipping them with such machines as splitting, shaving, staking, glazing, etc. in the case of the tanning course and upper sewing, lasting, bottom attaching and finishing machines in the boot and shoe making course. In order to facilitate practical training of artisans and higher personnel of leather industries, any special Government assistance to commercial tanneries should be conditional on the latter arranging for adequate facilities for the training of student apprentices.

Summary of Recommendations.

132. (i) The existing Tanning Institutes should be made more efficient and useful by addition being made to their equipment and by their having better paid staff.

(ii) The students of these institutes before they get their final certificates or diplomas, should be made to work in industrial concerns. Central and provincial Governments should arrange with industrial concerns provision of facilities for such training and apprenticeship and any special assistance given to them should be conditional on rendering all such facilities.

(iii) At the present stage, i.e., until the number of candidates seeking admission increases appreciably, the number of Tanning Institutes should not be multiplied, but interprovincial arrangements should be made for the training of students of all the provinces and States in the existing Tanning Institutes.

(iv) Students should be sent abroad by the Government with scholarship for training in leather technology.

(v) Elementary institutes for training in leather trades, should be established.

Research in Leather Technology.

133. In Europe and America a great deal of research is being conducted in Leather Technology either in separate Leather Research Institutes like the British Leather Manufacturers' Research Institute in London, the Leather Industries Department of the Leeds University in U.K. and at the Universities of Cincinnati, Lehigh, etc., in U.S.A. Tanning processes are greatly affected by climatic conditions and nature of raw materials available in a particular country. Both of these are different in India from those obtaining in Europe and America. The processes used, however, in the modern Indian tanning industry are mostly those of the West. Unless those processes are substantially modified to suit Indian conditions by adaptive research, results similar to those obtained in Europe and America from Western processes cannot be obtained in India. Although some of the witnesses examined by the Panel have stated that in box sides and glazed kid they are getting as good a result as are achieved anywhere else, the success is confined only to a few tanneries which have been able to engage European experts and have facilities for carrying out research all the time in their own tanneries. The bulk of the tanneries in India are not, however, so fortunate. They have to be helped by results of research carried out in a well-equipped Leather Research Institute. Besides, there is the question of keeping the Indian Leather Industry abreast of the leather industry in Europe and America all the time to maintain its competitive strength, as a considerable proportion of Indian leather of all varieties has to be marketed at home and abroad in competition with the production of Europe and America. All the witnesses examined by the Panel have stressed the necessity of research on Leather Technology being carried out in India and they have all supported the proposed establishment of an All-India Leather Research Institute at a suitable place. A scheme for a Central Leather Research Institute has been prepared and is given in Appendix V of the report. It involves the following expenditure—

Capital cost.....Rs. 20 lakhs.

Running cost.....Rs. 4 lakhs.

The cost involved is not greater than the costs of other All-India Research Institutes already sanctioned by the Government. As regards its relationship with the provinces and the states and its financial basis, the Institute will be on the same footing as other national research institutes which have already been or are being started under the auspices of the Central Government.

134. In this connection the Panel would like to draw the attention of the authorities to the following resolution passed by it at its 4th meeting held at Bombay on the 26th September, 1945:—

“The Leather and Leather Goods Panel is emphatically of opinion that research is indispensable to the progress and efficiency of any industry. The Panel feels that there are very little facilities for carrying out research on problems connected with the leather industry in India and this has been detrimental to the progress of the industry. In view of the above facts, the Leather and Leather Goods Panel recommends to the Government that immediate steps be taken to establish an adequately equipped All-India Leather Research Institute at a suitable centre where the leather industry has developed and where there is a congenial atmosphere and facilities for scientific research. The Panel recommends for the consideration of the Government a scheme for such an Institute, prepared by Rai Bahadur B. M. Das on the lines of similar Institutes in Europe and America.”

The resolution was moved by Mr. Bool Chand and seconded by Mr. P. S. Pandit and carried unanimously.

Summary of recommendations.

135. (i) The Panel strongly recommends that a Central Leather Research Institute be established at a suitable place by the Central Government. A scheme for this is given in Appendix V for consideration of the Government.

(ii) As regards its relationship with the provinces and the States, the Institute will be on the same footing as other national research institutes which have already been or are being started under the auspices of the Central Government.

CHAPTER VII.

The Leather Footwear Industry.

136. The Industry may be divided into two broad sections. First, the making of the indigenous types of footwear and, second, the manufacture of that of the Western types. The latter may again be sub-divided into two branches, one making shoes by hand and the other by machine. The indigenous types are all, and the Western types in great bulk, hand-made. The industry, therefore is still preponderantly hand-worked, run mostly on a cottage basis. It thus differs radically from the modern shoe industries of Europe and America where mass production by machinery in big factories, is in vogue. Another characteristic feature of the Indian shoe industry is that the actual fabrication of all hand-made shoes, both of the indigenous and the Western types, is confined to the people of one caste, the *mochis*, and the bulk of the labour in the machine shoe factories has also to be recruited from that community. The industry's labour supply is thus inelastic. The marketing of the *mochis'* hand-made shoes is done through factors and shoe dealers. The wholesale dealers or shoe factors who pay advances to the *mochis* either in cash or kind often buy the latter's production and in such transactions, the *mochis* do not get proper values for their goods and cannot make much profit. There is a great deal of exploitation. On the other hand, a *mochi* taking advance from a dealer, often sells his goods to another dealer and delays or defaults on the repayment of his loan to his creditor. These *mochis* who work in shoe factories on wages often take advances from their employers; some of them turn disloyal and leave their employer without redeeming their debt and join a competing factory. Employers are also known to be prone to entice away skilled operatives of the competitors by paying higher advances. The industry is not yet well organised and the existing confusion constitutes a stumbling block in the way of its progress and development.

I. Indigenous types of foot-wears.

137. These comprise *Mundas*, *Nagras*, *Peshawari*, and *Jari* or embroidered shoes, sandlas, *chaplis* and *chattis* or half slippers. They are all of Indian origin in design and make and are fabricated from various types of leather produced in India. They are made all over India both in urban and rural areas, each province having its characteristic types. For instance, *Jari chaplis* and red sandals are mostly made and used in the Punjab while sandals and ordinary *chaplis* are made and used mostly in Western India. In N.-W.F.P. specially at Peshawar, Kohat and Bannu, large quantities of frontier *chaplis* are made. These are used locally and also exported to the Punjab.

138. The Central Agricultural Marketing Department estimated that before the last war about 70 million pairs of indigenous types of footwear were annually made in India. This is certainly not an over-estimate. Mr. Kaiser Ahmed estimates the present production at half a million pairs daily which is equivalent to an annual production of 150 million pairs or more than double the Agricultural Marketing Department's figure. But Mr. Kaiser Ahmed includes Alberts and New cuts in indigenous types of shoes which in this report have been classed as Western types of shoes. Mr. Raney, another member of the Panel, also says in

his note that in all probability the present production of civilian footwear by the cottage industry is more than 100 per cent above its pre-war level. Both Mr. Kaiser Ahmed and Mr. Raney are basing their figures on their experience in Bombay. Taking the whole of India into consideration it would, however, be safe to take the present production at 100 million pairs annually.

139. **Post-war expansion.**—As the coarser types of these footwear like *Mundas* are used by the poorer classes, expansion of their production would depend upon the post-war economic condition of these classes. Other types like *chapolis*, sandals etc., are used by the well-to-do and their popularity is increasing immensely. Only in urban areas, Western types of shoes are used. It is expected that the post-war production of indigenous types of footwear will increase. The Panel considers that by the end of the first 5 years, an increase of 100 per cent. over the present production would be feasible. But to attain this target, firstly, sufficient raw hide should be retained in the country for making cheap leather with a view to provide the poorer classes in India with cheaper shoes which are indispensable to them in many parts of India, and secondly, a large number of *mochi* shoe makers should be attracted to shoe-craft. Mr. Kaiser Ahmed advocated that the makers of the indigenous types of shoes should be taught modern foot anatomy and methods of lasting and making shoes and that cheap, hand-operated machinery should be made available to them on a co-operative basis to save labour and improve the products.

II. Western types of foot-wear.

140 These comprise Oxfords, Derbies, Albert slippers, New Cut selims and various types of ladies' shoes, principally for civilian use. Most of these are hand made by *mochis* working on their own on a small scale. A smaller proportion is hand-worked in shoe workshop which employ *mochi* craftsmen. The principal centres for hand-made shoes are Calcutta and Agra. The products of Messrs Cooper, Allen & Co., of Cawnpore bearing 'Flex Brand', Bata Shoe Co., of Calcutta and Lahore, Harijan Shoe Factory and Dayalbagh Shoe Factory and a few other factories at Agra, the Chrome Leather Co. of Madras, the Tara Shoe Factory of Bangalore and the India Leather Works of Calcutta are machine made. Of machine made shoes, those of Messrs Cooper, Allen & Co., and Bata, constitute the bulk. The military boots, other types of military footwear and Police boots also fall under this category. They are mostly machine made.

Expansion of Production.

141. From the figures of the present production of the Western types of shoes that the Panel has been able to collect and from estimates, it appears that the production has already reached the mark of about 30 million pairs annually. In the opinion of the Panel an increase of 50 per cent over this or an annual production of 45 million pairs would be a reasonable target for these types of shoes for the next 5 years. The present production of 30 million pairs of modern shoes will provide only $7\frac{1}{2}$ per cent of India's 400 million people with a pair of modern shoes annually. In Europe and America about 3 pairs of shoes are required per person per year. As the use of modern shoes, among other things, is a proper index of standard of living and is extremely desirable for health, such a low standard of living and risk to people's health cannot be allowed to continue long. Mr. Kaiser Ahmed one of the members of the Panel suggests that a Department of shoe-wearing propaganda should be set up either by the Central or Provincial Governments and that the Government should try to popularise the shoe-wearign habit by cinema films, posters, lectures and through post offices for the welfare of the people and their protection from snake bites and those diseases for which bare feet are responsible.

Need for Mechanisation.

142. Mass production of shoes by machinery in well equipped shoe factories such as exist in Europe and America and like those of Cooper, Allen & Co., and the Bata's should be encouraged. The production of shoes by hand process cannot be increased much further than what it is now because there is already an acute shortage of skilled *mochi* labour everywhere in India. *Mochi* labour is a veritable bottle-neck of the Indian modern shoe industry. The only way to widen this bottleneck is by taking help of machinery. In machine shoe factories men of other communities besides the *mochi* work readily as they are doing in Cooper, Allen & Co., and the Bata's. The witnesses examined by the Panel are unanimous in this view. Machine shoe making will not create unemployment among the *mochis*. The whole indigenous footwear industry is their monopoly. Many *mochis* will find employment in machine shoe factories and will have a better income and better conditions of living than they get from cottage work.

143. The cottage shoe industry itself may be progressively mechanised. In those centres as in Agra where large numbers of *mochis* are now making modern shoes in different Mahallas, auxiliary workshops equipped with a number of Singer sewing machines for upper closing, a few stitching and screwing machines and a set of finishing machines may be established. Cottage workers will be able to get uppers closed, the lasted shoes stitched or screwed and finished at these workshops, on payment of a suitable machining charge. This will enable them to increase their output and improve the finish. The Panel proposes that the Departments of Industries of U.P. and other provinces should investigate the matter and work out schemes for establishing such auxiliary workshops.

144. The existing hand shoe factories should also be progressively mechanised. From evidences taken at Agra by the Panel, it appears that many of these hand-made shoe factories are interested in mechanising. They should be given facilities by the Government for the importation of the requisite machinery. The Panel proposes that the Department of Industries and Supplies of the Government of India should request the provincial Industries Departments for lists of shoe making machinery required for their respective provinces. New machine shoe factories should be started at suitable centres where modern shoe production by hand or machinery has already developed to an appreciable extent.

Training in Shoe-craft.

145. The existing shoe-craft schools, as far as known to the Panel, are distributed as follows:—

In U. P.	5
In the Punjab	2
In Bombay	1
In Madras	1
In Bengal including Bata's School	2
	<hr/>
Total	11
	<hr/>

146. These are all very elementary schools. Excepting in the Dayalbagh Institute and Bata's school, the trainees do not get a chance of learning shoe manufacture by machinery. Considering that Agra, Cawnpore and Calcutta have developed into large shoe producing places, the Panel thinks that properly equipped and staffed Leather Craft Institutes should be established at these centres. They should have a set of shoe-making machinery so that the students may learn the technique of machine production. Operatives for the machines should also be trained there. Major Naville of the office of the C.I.S. and C.,

Cawnpore stated in his oral evidence to the Panel that to develop the shoe industry during post-war years, the most important requirement was to provide facilities for training technical personnel. He said that the training given in the existing institutes was inadequate. Mr. Kaiser Ahmed states that the existing shoe making schools should be improved so that small manufacturers may take an interest in them and obtain from them their technical personnel.

147. The Panel considers that research on shoes such as is being carried out at the British Boot, Shoe and Allied Trades Research Association at Kettering in U.K. is necessary and suggests that a Department for the purpose should be attached to the proposed Central Leather Research Institute.

Summary of Recommendations

148. (i) Targets for increasing the production of indigenous types of shoes by 100 per cent over the present level of production and increasing the production of Western types of shoes to at least 45 million pairs annually, should be aimed at during the first 5 years.

(ii) For this more and better leather should be produced by the tanning industry.

(iii) The shoe industry should be progressively mechanised. At first the hand shoe making factories at Agra and elsewhere should be equipped with machines. Auxiliary shoe stitching and finishing factories equipped with a set of machinery should be established at the existing cottage shoe making Mahallas at Agra and elsewhere and the Departments of Industries in U.P. and other provinces should investigate into the feasibility of establishing these auxiliary factories.

(iv) The Department of Industries and Supplies, Government of India, should request Provincial Departments of Industries for lists of machinery required for their respective provinces.

(v) New machine shoe factories should be established at suitable centres of the various provinces and facilities for the importation of machinery and capital goods from U.K., Europe and America should be given to them as well as to the existing factories.

(vi) The existing shoe institutes should be improved and a number of young men should be sent abroad with scholarships for training in modern footwear manufacture.

(vii) A Department for research in footwear should be attached to the proposed Central Leather Research Institute.

(viii) Shoe-wearing habit should be popularised by Government through cinema films, posters, lectures and post offices. This propaganda should be done by the proposed Department of Leather Industries of the Central Government (See Chapter XI).

CHAPTER VIII.

Leather Goods Industry.

149. The Leather Goods Industry may be divided into the following sections:—

- (a) Civilian leather-goods.
- (b) Industrial leather-goods.
- (c) Police and military leather-goods.

(a) Civilian Leather-goods.

The different types of articles are described below:—

150. (i) **Travel goods** consisting of leather trunks, suit cases, fitted cases, attache cases, bags and portfolios. Hold-alls made of water proof canvas and fitted with leather straps are also included in this class because they are usually

made by these firms which deal in travel leather goods. They are all hand-made from leather produced in India. Better types of locks and other metal fittings were imported before the war and the common types were of local make. Indian locks are defective and need improvement. Other metallic fittings also leave much room for improvement. At present they are all of local production. Required leathers are available but with the exception of the products of a few tanneries, they are mostly crude. Attention, of the tanning industry is required for making properly dyed and finished case leather. Craftsmen are available who usually turn out a good job, but more of them are needed. In Europe and America a few machines have been invented for carrying out some operations involved in making these goods. Some of their bigger concerns utilize such machines but most concerns are mainly hand worked. In India it is entirely hand worked as yet. Accurate statistics of the present production could not be collected but there is a clear indication that production is increasing. Mr. H. Raney in his note says that production of travel goods in most of the concerns making them in Bombay, has increased by more than 500 per cent above the pre-war level. An export trade has already developed. In the quinquennium just before the war, the volume of export was as follows:—

Table No. XV

	Rs. lakh
1934-35	1
1935-36	4.1
1936-37	2.5
1937-38	3.1
1938-39	3.1

151. Demand for these are increasing and as these are almost an essential of modern life, the prospects in this line are unlimited like those of shoes. Air travel will reduce customers of a certain class but fresh categories of customers will come from ordinary people of whom more and more will use them. Besides, according to Mr. Raney, the demand for new types of articles for air travel has considerably increased. To cope with this demand, it is essential to make adequate arrangements for the supply of the necessary raw materials, fittings, etc. For the standardisation of travel goods, Mr. Raney suggests that arrangements should be made for the regular supply of suitable grindery, cardboard, fibre board, lining materials, etc., through Government assistance.

The following targets appear to be feasible in respect of these goods.

152. 100 per cent. increase over the present production at the end of the first five years.

400 per cent. increase over the present production at the end of the subsequent 10 years.

Summary of Recommendations

153. (i) Tanning industry should make properly tanned and finished case leather. The stain and finish should stand wetting to which the leather is subjected during the fabrication of the cases.

(ii) Indigenous locks and metal fittings should be improved.

(iii) Cases should be standardised and for this purpose, arrangement for the supply of necessary raw materials should be made through Government assistance.

(iv) Export market should be developed.

(v) The above targets should be aimed at.

(ii) Ladies' Handbags.

154. They are all hand-made, the only machine used being the Singer Sewing machine. Two types are made. The first type, manufactured principally in Bombay, is made of chrome calf, suede, silver and gold kid and reptile skins, either of one kind of these leathers or in combination for effect. The other class which is manufactured notably at Santiniketan (Bengal) is made of tooled sheep skins tool marked and stained in various attractive designs. Most types of required leather are available from the Indian industry but the supply of leather of proper quality is inadequate and irregular. The ladies' handbag manufacturers like Lalvani Brothers, Raney & Co., and Gold Filled Leather Works of Bombay, drew the attention of the Panel to the problem of leather supply. Mr. Raney forcefully deprecated the export of the Madras tanned sheep and goat skins of better qualities from India, and in his note to the Panel suggested that the best selections of the Madras and Bombay tanned goat and sheep skins and light calves should be retained in India for the Indian Fancy Leather Goods industry. The feasibility of prohibiting the export of these leathers, was discussed at an earlier meeting of the Panel in Calcutta and the members present then thought that it should be possible for the Fancy Leather Goods manufacturers in India to get the leathers they want by direct negotiations with the tanners themselves, and without recourse, at this stage, to such a drastic step as the prohibition of export of these leathers altogether. At the final meeting of the Panel held in Calcutta, Mr. Raney reported that it had not been possible for him to get adequate supplies of high grade leather from the Madras tanneries. The matter may be investigated by the Government and after investigation, steps may be taken accordingly to ensure the supply of high grade leather to the ladies' handbag and other fancy leather goods manufacturers in India. The Panel realises that if a part of these leathers were retained in India, the quality of the Indian Fancy Leather Goods would be greatly improved. There is, however, a lack of designers. A few types of embossed and stamped leather are made but the requirement is for many more embossing and stamping designs.

155. Sheep skins required for the manufacture of the second type of bags are purchased from Madras. The best quality available in the Indian market is purchased, tooled and stained by the bag makers. A number of skilled craftsmen and women have been trained but more are needed. A large number of women are engaged in this trade in Bombay which has opened out an avenue of employment for widows and middle class women.

Post-war Development.

156. The war has given an impetus to the ladies' handbag industry in India. The American troops have been large customers for sending these goods home as presents. The quality of the bags made in India compares favourably with that of the bags which used to be imported into India before the war. In Bombay it was reported to the Panel that ladies' handbags valued at several lakhs of rupees were made yearly during the war period. Mr. Raney states in his note that the demand from foreign countries, is fairly large and is on the increase, but that it is mostly for handbags made of crocodile and water lizard skins. He suggests that a complete ban should be imposed on the export of crocodile and water lizard skins from India. The Government may investigate the feasibility of Mr. Raney's proposal.

157. Post-war prospects appear to be good in view of the spreading of education among Indian ladies and their increasing participation in services and business as well as of the increasing possibilities of export market.

The following post-war targets are therefore suggested—

- (i) 100 per cent. increase over the production attained in the peak year during the war by the end of the first 5 years.
- (ii) 400 per cent. increase by the end of the subsequent 10 years.

Summary of Recommendations.

158. (a) The Indian tanning industry should specialise in the manufacture of high grade chrome calf, chrome and semi-chrome suedes and fancy leathers made from Madras tanned goat and sheep skins of the higher grades. They should develop the manufacture of Morocco, skiver for lining, gold and silver kids.

(b) The ancillary industry of engraving plates and die-sinking for embossing and stamping leather to produce several varieties of attractive embossed and stamped grains on leather, should be developed. Attractiveness, variety and changing of designs of the leather grain are the very soul of the ladies' handbag and other fancy leather goods industry. Men should be sent to Europe to learn plate engraving and die making. These are not yet done in India.

(c) Another ancillary industry of the bag and fancy leather goods trade, are frames and fittings. A beginning for the manufacture in India has been made in Bombay. But the workshops are all small and belong to the bag makers. Frame and fitting manufacture should be a separate industry which can be developed to a considerable extent. Until manufacture is developed in India, these goods should be allowed to be imported duty free in the interest of the Indian Fancy Leather Goods Industry.

(d) The industry for the manufacture of Zip fastener which has already been started, should be improved and developed.

(e) A number of Art Schools should be started in the country for the training of skilled workers for the ladies' handbags and other fancy leather goods industry, in view of the great dearth of skilled operatives for this industry.

(f) The feasibility of retaining a quota of high grade chrome calf and E. I. tanned sheep and goat skins for the Indian Fancy Leather Goods industry and of prohibiting export of crocodile and water lizard skins should be investigated by the Government.

(iii) Small leather goods *e.g.*, purses, wallets, note cases, photo frames, albums, cigarette cases, card cases, tobacco pouches, manicure cases, beauty cases, bed straps, waist belts, wrist watch bands, garment cases, garters, jewellery cases, fancy leather necklaces, etc.

159. These goods are made chiefly from Madras and Bombay tanned sheep and goat skins of lower grades which the manufacturers buy undyed and then stain and grain, emboss or stamp them. Most of the smaller articles are made from leather remnants. The industry appears to be supplying India's present needs. The demand is increasing because leather purses and wallets have already penetrated into rural areas and have become popular. There is a considerable demand for these articles in foreign markets. They are now made principally in Bombay and Calcutta. Prospects for development are good as more and more people will use the articles in India and export will also increase, provided adequate facilities for it are granted by the Government. The following targets appear to be possible:—

An increase of 200 per cent. over the present level of production, at the end of the first 5 years.

An increase of 600 per cent. over the present level of production at the end of the subsequent 10 years.

Summary of Recommendations.

160. (a) The tanning industry should retain, dye, grain and emboss Madras and Bombay tanned sheep and goat skins and supply them to the purse etc., manufacturers.

(b) Manufacture of high grade purses and wallets from suitable leather should be developed.

(c) More and better curried buffalo and cow harness leather for making the thicker bed strap should be made and supplied by the tanning industry.

(d) For waist band, well tanned, dyed and finished cow hides and for wrist-watch bands dyed and finished lighter leathers from calf, goat and sheep skins should be made and supplied by the tanning industry.

(e) Tariff protection should be given to the Handbag and Fancy Leather Goods industry in India against similar imported goods.

(iv) Civilian Harness and Saddlery.

161. Better as well as commoner types are made to meet requirements. Material and labour are available. Cawnpore is the principal seat of production. But they are made almost in all the cities to meet local requirements. Introduction of motor transport has reduced demand for these goods. There are very little prospects for expansion in future in this line.

(v) Leather Sports Goods.

162. These comprise the following articles:—

Football, Rugby ball, Volley ball and Base ball covers.

Cricket balls.

Hockey balls.

Grip leather for handles of Hockey sticks.

Leather base for shuttle cocks.

Football boots.

Leg guards.

Wicket keeping gloves.

163. They are made principally at Sialkot in the Punjab. The Panel visited the Sports Goods Factory of Messrs. Uberoi Ltd. There are a few other large factories like this firm. A great deal of sports goods is made by small manufacturers who work on a cottage scale. It was reported that sports goods valued at about Rs. 90 lakhs annually were made at Sialkot and leather worth about 6 lakhs of rupees was used by the manufacturers annually.

164. The products are sold in India but large quantities are also exported overseas. With the end of the war overseas trade will increase. The industry has immense prospects.

Summary of Recommendations.

165. (i) It is recommended that production be doubled during the first 5 years.

(ii) If required the Indian Trade Commissioners should help the marketing of these goods in overseas markets if the Sialkot manufacturers want such assistance from the Government. A big export drive should be initiated.

(b) Industrial Leather Goods.

(i) Leather Machine Belting.

166. A certain amount of leather belting is made from buffalo leather. The use of crude leather and the inclusion of shoulder in the strap, are responsible for the bad reputation of indigenous belting. A somewhat better grade is made from pit tanned buffalo sole leather. Here also the shoulder is included in the strap. A properly tanned and dressed Belting Butt similar to that used for

making belting in Europe and America is not generally made by the tanneries. But they can make it if demand arises. The Government Harness and Saddlery Factory, Cawnpore, according to Mr. Hepburn's evidence to the Panel, has been making quite satisfactory machine beltings upto 12" width. Mr. P. S. Pandit states in his evidence that he is making the leather belting in the Western India Tanneries Ltd., Bombay and the belting has been approved by the Sholapur mills and the tannery's belting dealers have entered into a year's contract with the mills. One great defect is that while imported belting is of cemented joints, the Indian made belting is stitched with leather lace. But Mr. Pandit thinks that this would be remedied after the war when chemicals for making leather cement would be available. Messrs. Cooper, Allen & Co., are of the opinion that Indian Buff hides are suited only for the narrow widths (upto 3"). Mr. K. H. Chambers in his evidence at Madras states that with the raw material in hand, India cannot turn out a first class leather belting and he agrees with Mr. Malvenan's note. Mr. Malvenan in his evidence states that belting such as is produced in England from the finest Scottish ox-hide cannot be made from Indian buffalo leather.

167. If however, well-made Indian beltings upto 12" width satisfactorily serve ordnance factories, there is no reason why they should not be equally satisfactory in the textile mills and other factories. The mills mostly require belts upto 4" in width and with the introduction now-a-days of individual drives of machinery in replacement of central line shafting drive in the progressive mills and factories, the demand in future will be more for belt upto 4" width than for those of greater width than this. So it appears to the Panel that well-made Indian buffalo leather belt will meet the need of the Indian industry and importation of leather belting upto 4" width would be unnecessary in future. The import figures for the quinquennium ending 1938-39 are given below:—

Table No. XVI.

	In lakh of rupees
1934-35	24.6
1935-36	24.7
1936-37	18.8
1937-38	27.5
1938-39	22.9

168. The industry, however, has to be stimulated by protective tariff. Mr. Inskip in his oral evidence at Cawnpore stated that he was of opinion that protective tariff against import of leather belting upto 3" might be imposed to encourage and stimulate the indigenous belting industry.

169. The Panel therefore recommends that by the end of the first 5 years, the production of leather belting should be increased by a quantity equivalent to the value of Rs. 19 lakhs at pre-war prices so as to replace about 75 per cent. of the pre-war imported belting. By the end of the following 10 years, there should be a further increase to the extent required by the Indian industry, and India should by then be able to dispense with all imported leather beltings except special ones above 12" in width.

Summary of Recommendations.

170. (a) Export of buffalo hides should be stopped lest those suitable for belting be sent out of the country.

(b) Flaying of buffalo hides should be improved because flay cuts reduce the tensile strength of the belting and make the hide unsuitable for making belting leather.

(c) Tanneries should specialise in making belting butt by appropriate processes of tanning and currying.

(d) Intensive research should be carried out at the proposed Central Leather Research Institute to select the most suitable types of buffalo hides and to work out processes of tanning and dressing Belting Butt so that they may approach as nearly as possible the ex-butt of the colder countries in tensile strength and un-stretchibility.

(e) Heavy import duty should be imposed first on leather beltings upto 4" in width and subsequently on those upto 12 " in width or a low ceiling price should be fixed in India for imported beltings.

(ii) **Picking Bands.** (This has been discussed in paras. 117-121).

(iii) **Picker:—**

171. Pickers are required for textile looms. They are not made of tanned leather but of limed buffalo hide. Much is imported but a certain quantity for cotton looms is made in India, particularly in Ahmedabad. The imported goods are reported to be better and more durable and consequently preferred. The import figures for the quinquennium before the war are given in the table below:—

Table No. XVII.

	In lakhs of rupees
1934-35	6.1
1935-36	6.9
1936-37	6.1
1937-38	8.7
1938-39	6.9

172. Expansion of the cotton picker manufacture has prospects but the Indian made jute loom pickers have not yet been approved by the Calcutta Jute Mills. From the progress already made by Bombay and Ahmedabad cotton Picker makers, it appears that a target eliminating importation of these by the end of the first 5-year period is quite reasonable. With the next 10 years after that, all cotton pickers required by the expanding cotton mills industry should be supplied by the manufacturers in India. Regarding jute pickers, effort is needed to make the Indian product acceptable to the Calcutta Jute Mills industry. Besides Ahmedabad, Bombay and Calcutta, pickers should also be made in the Punjab, U. P., C. P. and Madras where the cotton textile industry had developed appreciably.

Summary of Recommendations.

173. (a) Export of buffalo hides should be stopped to retain suitable hides for making pickers in India.

(b) Production of cotton pickers should be increased to eliminate their importation by the end of the first 5-year period.

(c) Intensive research should be carried out in the proposed Central Leather Institute on Jute Pickers.

(d) A heavy duty should be imposed on imported cotton pickers or a low ceiling price should be fixed in India to protect the Indian Cotton Picker industry and to stimulate its production.

(iv) **Buffers and Tuggers for looms.**

174. These are made by those concerns, for instance the Western India Tannery Co., Ltd., of Bombay which manufacture picking bands and pickers, as cuttings from these can be used for making buffers. Production is likely to increase further with the expansion of the textile industry in India. The target

should be set that the entire requirements of India, may be met by domestic production. As those can be economically made only by those concerns which manufacture picking bands and pickers, their manufacture can only grow in those places where the latter too are made.

The Panel's Recommendation.

175. India's entire requirements should be met by local production.

(v) **Martingale straps and belt laces.**

176. Martingale straps are at present made in Calcutta, Bombay, Sholapur, Ahmedabad, Cawnpore and Madras. Demand for Martingale straps will increase with the expansion of the textile industry. But the demand for laces may decrease on account of the extended use of leather cement for belt joints.

The Panel's Recommendation.

177. The Panel recommends that the target for the first 5-year period be set, at about 100 per cent. increase over present production.

(vi) **Pump bucket, U rings etc.**

178. In peace time an appreciable quantity was imported but the locally made ones, particularly those made in Calcutta and Asansol colliery districts, are also used to a considerable extent by the railways, collieries, industrial concerns and the civilian public in domestic pumps. If the quantity of the local production is improved, it will be able to replace the imported goods entirely. This requires the supply of suitable hydraulic leather by the tanning industry to the bucket makers. The latter complain that buckets as hard as the imported ones, cannot be made from the local leather. Harder waxes than those used at present for impregnating the buckets are needed. A certain amount of research to turn out the right product is also necessary. If the present defects can be eliminated, there is a good prospect for this line. The target may be fixed at 100 per cent. increase over present production during the first 5 years.

Summary of Recommendations.

179. (a) Tanneries should pay attention to turn out hydraulic leather of desired quality for the bucket industry.

(b) Research should be carried out on leather bucket to turn out a product like the imported one.

(vii) **Railway leather stores.**

180. Among Railway leather stores axle box dust shields constitute the bulk. A certain quantity of leather cash bags is also required. The dust shields are made from pit tanned buffalo sole leather and cash bags from vegetable tanned cow hides. The bulk of the dust shields and cash bags are however made in Calcutta.

181. Post-war prospect appears to be good as the Railway rolling stocks will have to be replaced by new wagons which will require dust shields. The demand for cash bag may not however, be much greater than it was before the war. The production of dust shield may be increased by 100 per cent. over pre-war figure during the first 5 years.

The Panel's Recommendation.

182. The Government Harness & Saddlery Factory should not be allowed to make dust shields and compete with commercial firms.

(C) Military leather goods.

183. These are made and supplied by the Government Harness and Saddlery Factory. The factory produces its own leather which is 80 per cent. buffalo and 20 per cent. cow hide. Mr. Hepburn in his evidence states that the factory's output of harness leather (pre-war) was about 1 lakh pounds. This rose during the war to 6 lakh pounds per month. A smaller quantity of sole and belting leather was also produced. During the war, the requirements of military leather equipment increased enormously and the factory had to purchase leather from the trade. It purchased the entire output of 43 controlled tanneries. The quality of material as well as the workmanship of the products of the trade was about 50 per cent. below that of the Harness and Saddlery Factory's. The inferiority was due principally to bad workmanship caused by the lack of proper knowledge and supervision. No complaints, however, were received from the units during the war about the quality of the stores supplied. Major McBean said that in England whatever harness and saddlery was required by His Majesty's Government was supplied by the trade.

184. The Government Harness and Saddlery Factory was established at a time when the Indian tanning and leather goods industries were undeveloped and suitable leather and craftsmen and plants for making the leather goods to army specifications were not available in India. But during the last 80 years Indian tanning and leather goods industries have considerably developed. Large tanneries have been started by Europeans as well as Indians. If the contractors who supplied military leather goods during the war, had got regular orders for military leather goods during peace time also, they would have had a chance of improving their workmanship. In England military leather stores are supplied by the trade. The Panel thinks that making of military leather goods should henceforth be thrown open to the trade and their manufacture at the Government Harness and Saddlery Factory should be stopped. This will give a tremendous impetus to the development of the Indian leather goods industry in the post-war period.

Summary of Recommendations.

185. (i) Production of military leather goods at the Government Harness and Saddlery Factory should be progressively reduced and totally stopped at the end of the first 5 years when the factory should be closed down. All the facilities that used to be given to the Leather Goods section of the Harness and Saddlery factory by its Engineering section should be given to the Industry by the Ordnance Department.

(ii) A number of Government military leather goods Inspectors should be appointed by the Government who would give technical guidance to the contractors with whom orders for military leather goods will be placed, and who will inspect them before delivery.

CHAPTER IX.**By-products Industries.**

186. The industries which depend upon the by-products of the leather and leather goods industry are (i) glue and (ii) leather boards industries.

(i) Glue Industry.

187. A certain quantity of glue is made in India on a cottage industry scale also, in addition to the quantities made in factories. A considerable quantity of

glue was imported into and glue stock exported from India before the war. Figures for these during the quinquennium ending 1938-39 are given below.

Table XVIII.

Year	Import of Glue		Export of Hide & Skins Cuttings (Glue Stock)	
	Cwt.	Rs.	Tons	Rs.
1936-37	19,647	4,70,721	8,085	8,64,929
1937-38	17,289	5,95,336	10,370	10,38,959
1938-39	19,261	6,06,974	3,939	3,04,399
1939-40	19,418	7,24,719	3,668	2,92,225

188. Thus about 19,000 cwt. of glue valued at about 6 lakhs of rupees was imported before the war. A part of this should be made in India and export of hide and skin cuttings (glue stock) should be stopped. Colder climate like that in the Punjab and U. P. are naturally suitable for glue manufacture but now-a-days with facilities of air conditioning, it may be manufactured in Calcutta, Bombay, Madras and elsewhere also. Manufacture of glue should be increased by 10,000 cwt. yearly by the end of the first 5-year period.

(2) Leather Board Industry.

189. With the inevitable increase in the production of footwear to meet the growing internal and export demand and on account of the limited resource of buffalo hides in India, a shortage of bottom stock for footwear is apprehended within the period for which planning is being made. To meet this shortage as well as to provide Indian masses footwear at a price suiting their pockets, leather boards would be a very suitable material and stress should be laid on their manufacture in required quantities in India. Leather boards of different tensile strength, hardness, abrasion, resistance, waterproofness and thickness are being made in Europe and America and utilized for different component parts of the shoe for which their particular properties make them specially suitable. Thus there are specific boards for outer soles of house slippers, insoles, middle soles and throughs, heel lifts and stiffeners. The materials used for making them are small leather cuttings, and shavings of both vegetable and chrome tannages, wood fibres, colouring materials like aniline dyes, bonding materials like synthetic resins, such as acronal, molivith, etc. or synthetic rubber, latex and waterproofing material like bitumen.

189A. Large quantities of chrome leather shavings, are inevitable by-products of chrome tanneries in India. These are at present either sold to manure manufacturers at a very low price or thrown away. These can be most usefully and profitably utilized for making leather boards. Similarly the chrome tanneries produce fair quantities of trimmings of chromed splits and dyed chrome leather. The shoe factories get large quantities of cuttings of both vegetable tanned sole and chrome tanned upper leather. All these can be profitably used for leather board manufacture. Machinery used consists of leather grinder, hollander and hydraulic press, none of which is complicated or unusually expensive. It would be advisable to instal pilot plants for leather board manufacture in leather trade institutes in India, carry out experiments for the production of boards for different purposes of the shoe industry, work out recipes for mixing the different ingredients and perfect the technique of manufacture. At present

leather board is being manufactured by Messrs. Cooper, Allen & Co. at Cawnpore. One or two firms are reported to be making it also at Agra. The boards are used for insoles of cheap shoes at Agra.

Summary of Recommendations.

190. (i) Stress should be laid on the manufacture of leather boards and their use in a proper way in shoe making in India with a view to meeting the apprehended shortage of bottom stock and to supply Indian masses footwear at a price suiting their pockets.

(ii) A pilot plant for leather board manufacture should be installed in the Leather Trades Institutes in India, where the technique of manufacture should be perfected.

(iii) By the end of the first 5-year period, production should be increased by 100 per cent.

CHAPTER X

Ancillary Industries

The following ancillary industries of the leather trade should be developed.

(1) Leather Trades Machinery Industry.

191. Indian tanning and shoe industries now use a lot of machinery which are mostly imported, principally from England. It should be possible to manufacture many of these in India. One firm in Lahore, one at Jullundur and two in Calcutta are making a few of the commonly used machines.

192. Use of tanning and shoe making machinery will steadily increase in future. For several years to come, it will be difficult to import machines from abroad; such machines will also be comparatively expensive. Consequently, locally made machines have a good chance of selling in India, at any rate, during the next few years until imported machines are readily available.

193. Manufacture of the less complicated tanning and shoe making machinery should be continued by the firms which have already started it and they should seek such Government assistance as they may need.

Summary of Recommendations.

194. (i) To develop the manufacture of leather trades machinery in India, the Government should subsidise or participate in the share capital of deserving concerns.

(ii) Government Ordnance Factories may be utilized for the manufacture of leather trades machinery.

(2) Leather Trades Treatment Materials Industry.

195. In Europe and America this industry manufactures such materials as synthetic bates, chrome liquors and chrome extracts, ready-made fat liquors, sulphonated oils, pigment finishes, cellulose lacquers, shoe dressings etc.

196. Some experiments have been carried out at the Bengal Tanning Institute and elsewhere on pancreatic bates, solid chrome extracts, fat liquors, and sulphonated oils. But their manufacture on an industrial scale has not been started. Four firms in Calcutta made pigment finishes for leather during the war and some of them are still making a certain quantity. Shoe polish, leather stain and dressings are made by a few firms in Calcutta and Agra. All these products are inferior to the imported ones and with the resumption of import the local products may be driven out of the market.

The Panel's Recommendations

197. During the first 5-year period, intensive research and manufacture in pilot plants should be carried out in the proposed Central Leather Research Institute to bring local products upto Western standards.

(3) Last Making Industry.

198. Shoe lasts were imported before the war but here and there carpenters made a few lasts to meet such demands as arose for the locally made lasts. Bata Co., at Batanagar have set up machinery for making wooden lasts and they use the lasts they make. Lasts are made at Sialkot and Jullundur, from sesum and mango wood by employing local carpenters.

199. The present difficulty in India in making lasts is the supply of suitable wood. Bata Co., state in their evidence that from their experience of the different types of Indian wood, they found it advantageous to import lasts. The life of Indian lasts compared to imported lasts is about 1 to 3.

200. Until suitable wood is found in India the last making industry will not make appreciable progress. It is reported that maple wood in blocks is imported into U. K. from Canada for making lasts. Similar steps should be taken in India and the Government should arrange facilities for the importation of maple wood from Canada for the development of a last making industry in India.

Summary of Recommendations

201. (i) Investigation should be carried out at the Dehra Dun Forest Research Institute to find suitable wood, and until that is found, maple wood should be imported from Canada for making lasts.

(ii) The Government should make a special effort to secure last-making machinery.

(4) Shoe Grindery Industry.

202. The war stimulated the manufacture of a number of shoe grinders in India. Mr. Wallibhai, President, Agra Shoe Manufacturers' Association stated in his oral evidence that all grinders except tangles were manufactured in India and that the Indian shoe industry could do without imported grindery. Their quality was still inferior to the imported materials but it would improve if manufacturers get facilities for bulk manufacture in post-war years.

203. Consumption of grinders will increase enormously and the grindery making industry should be stabilised with such Government assistance as it may need. The Government should assist the importation of machinery needed for making shoe grindery. Such machinery is not available in U. K. Attempt should, therefore, be made to get it either from U. S. A. or the continent of Europe.

Summary of Recommendations

204. (i) A thorough investigation should be made by the Government to ascertain how far the Indian grindery industry has developed during the war and it should be given every assistance, if necessary subsidy, for its stabilisation and further development.

(ii) The Government should assist the importation of machines for the manufacture of grindery from U. S. A. and the continent of Europe.

CHAPTER XI

Proposals for a Department of Leather Industries and a Leather Industries Council

205. In consideration of the pre-eminent position of the leather industries in the economy of India and their international character arising from the large

export of Indian hides and skins, import of tanstuffs and other materials they use and the overseas markets they need for the sale of their products, the Panel strongly recommends the establishment by the Government of India of a Department or Directorate of Leather Industries and a Leather Industries Council to look after their interests.

206. The main functions of the Department will be:—

- (i) To organise the industries and to promote their development along efficient and progressive lines.
- (ii) To prepare phased plans for their development as envisaged in the Government Directive.
- (iii) To collect and maintain the statistics of the industries which is deplorably lacking at present.
- (iv) To popularise by suitable propaganda the shoe wearing habit of the people of India for their health and protection against snake bites and other diseases for which bare feet are responsible.
- (v) To do other things to keep the strength of the industries.

207. The Department should be constituted as follows:—

- (1) It should be attached to the Department of Industries and Supplies of the Government of India.
- (2) It should be under a Director whose designation would be "Director of Leather Industries." He should be an Indian with intimate knowledge and long experience of the Leather Industry.
- (3) The Director should be assisted in his main function of promoting the development of the various branches of the industry, by specialists in those branches who should be appointed by the Government of India. The appointment of the specialists will be on a contract basis for a period of 3 years which may be extended if required. In case Indian specialists are not available they should be covenanted from the U. K. or U. S. A. or the Continent of Europe and their services should be lent to the industry to initiate the manufacture of new products and to improve the quality of those which are already being produced, to increase the competitive strength of the Indian leather industries in the overseas markets.
- (4) The proposed Central Leather Research Institute should be under the development of the various branches of the industry, by specialists the headquarters of the specialists, should be at the Research Institute. The specialists, when not out on service to the trade, should work at the Institute in collaboration with its Director on the problems of the industry appertaining to their own special branches.
- (5) The Director should also be assisted by the Leather Industries Council which should be appointed by the Government of India.

Constitution of the Leather Industries Council.

208. The Council should have the following constitution:—

Chairman—The Member or Minister in charge of the Department of Industries and Supplies.

Vice-Chairman—The Director of Leather Industries.

Secretary—An efficient whole-time permanent Secretary.

Members—Provincial Directors of Industries or the Leather Experts of the Provinces nominated by the respective Governments.

A representative of the Hides and Skins Trades of Calcutta, Cawnpore and Punjab.

A representative of the finished leather industry, one each from Calcutta, Cawnpore, Madras and Bombay.

Three representatives of the E. I. tanning interests in Madras.

A representative of the Tanners' Federation of India.

A representative of the South Indian Skin and Hide Merchants' Association.

A representative of the Bengal Tanners' Association and one from each of the other provincial Tanners' Associations as and when they are formed.

Three representatives of the Footwear Industry, one each from Calcutta, Cawnpore and Agra.

Three representatives of the Leather Goods Industry, one each from Bombay, Calcutta and Madras.

The question of suitably associating representatives of the Indian States with the Leather Industries Council should be considered by the Government.

209. The function of the Council should be to discuss and decide the policies to be adopted with regard to the development of the Leather Industries in India and to act as a liaison between the Government and the trade. Non-official members should be re-elected every three years.

CHAPTER XII

Answers to the General Directive

210. In the main report (Chapters II to XI), the types of products of the Tanning, Shoe and Leather Goods Industries, the manufacture of which is to be increased under the proposed scheme of development, have been discussed with reference to their present conditions of manufacture, effect of the war on production, prospects of further increase of output in the first 5-year period and in the following 10 years, and the targets to be aimed at by the end of these two periods and the Panel's recommendations for reaching the targets. In Chapter XI, a proposal for the creation of a Department of Leather Industries and a Leather Industries Council by the Government of India has been made. It is expected that the report embodies sufficient materials to enable the Government to prepare detailed phased plans for the 5- and 15-year periods for the development of Leather and Leather Goods Industries for the whole of India. In this Chapter, the Panel's views on the points of the Directive and on such other points which could not be incorporated in the previous chapters of the report are given.

211. (1) The scope and the extent of development.

The bulk of India's raw hides and skins is already being tanned in the country and increasing quantities of footwear and other leather goods are being produced from the tanned leather to meet the growing demand. The scope of the Leather and Leather Goods Industry of India when all her hides and skins would be turned into footwear and other leather goods, which is very likely to come about in the course of the next 15 years, would be, in terms of money, an annual production valued at Rs. 130 crores, evaluating all leather goods on the common basis of footwear of the indigenous and western types.

The Industry's main products are leather, footwear and other leather goods. The various types of each of these have been exhaustively dealt with in the previous chapters.

1(A). It is estimated that just above Rs. 6 crores worth of machinery will have to be imported to equip the industries suitably and enable them to attain the targets set out.

(2) For the main branches, *viz.*, tanning, shoe making and leather goods making, Government ownership is not required. Rather in one case, *viz.*, the production of military leather goods, the Panel has recommended in the report that the present Government participation in it should be given up and the Government Harness and Saddlery Factory at Cawnpore should be closed down. The manufacture of these goods should be handed over to the industry which is competent to handle it. In the following subsidiary branches of the industry, the active participation or ownership of the Government is required:—

- (i) Plantation of wattle in South India and elsewhere.
- (ii) Plantation of *Babul* and *Avaram* trees.
- (iii) Establishment of tanning extract factories.
- (iv) Establishment of well equipped Slaughter Houses at different centres to improve flying.

The above lines of work have to be pioneered for the efficient development of the main industry and in the pioneering stage, private enterprise is bound to be shy and Government initiation, participation or part ownership, is necessary until such time as private enterprise takes them over.

(3) In the main branches of the industry, *viz.*, tanning, shoe making and leather goods manufacture, the whole of the capital required for their further expansion is likely to be available by public investment and Government assistance will not generally be required except in very undeveloped provinces in respect of the industries concerned.

(4) Technical advice from abroad will be necessary in the early stages as stated in Chapter XI. In the proposed Department of Leather Industries of the Government of India, foreign technical experts should be appointed until such time as qualified and experienced India technicians are available. Periodically, trade delegations and technicians for the industry should be sent to Europe, America and Australia to study the progressive methods of manufacturing and marketing. Students should be sent abroad with Government scholarships for technical training. The proposed Department of Leather Industries of the Government of India should keep contact with foreign Leather Industries Research Institutes and Federations to obtain technical and commercial information concerning the leather industry and pass over that information to the Indian Industry.

4 (A) There is a great dearth of the higher technical personnel in the tanning and machine shoe industries in India. Men having sufficient technical knowledge and experience to be able to take charge of large scale production of leather and shoes of adequate standards of quality are not available to the Indian section of the industries. The European tanneries, machine shoe and leather goods factories have such technicians who have been covenanted from the United Kingdom mostly. Technicians to work as assistants in tanneries and machine shoe factories, trained either at the existing tanning, shoe and leather goods making Institutes or in commercial concerns, are available. Future needs are for the higher technical personnel and Government assistance is required in the early stages so that commercial tanneries and shoe factories may get them from abroad or train suitable Indians for such work by sending them overseas with scholarships, from the existing superior grade personnel in industries. The Government should also arrange facilities for them to work in British, Continental and American tanneries and shoe factories to gain the necessary knowledge and experience.

(5) Co-operation with foreign firms is not necessary except to assist marketing. Technical assistance would be needed to find out special foreign requirements and needs, particularly in designs.

(6) The industry is old and different branches of it have already been localised at different centres. For the comparatively new industry of glazed kids manufacture, the best locations from the point of view of availability of suitable raw goat-skins, are Bengal, Bihar and Southern Madras. The industry for the manufacture of E.I. tanned kips, goat and sheep skins, which is now localised in South India should be spread out to provinces like Bengal, Assam, Orissa, C.P., U.P. and the Punjab where suitable raw hides and skins are available in sufficient quantities. In developing the tanning industry, particular attention should be given to those provinces where abundant raw materials exist but the industry is as yet inadequately developed.

(7) *Protective Duties*:—These are required mainly to develop and protect the manufacture of the following goods in India.

(i) Industrial leather goods like Picking Bands, Pickers, Roller skins and Leather Belting.

(ii) Glazed kid and suedes.

(iii) Shoes.

Bounties:—Bounties are immediately required to help the export of Indian chrome leather to U.K. where there is a ceiling price for it. Bounties in the shape of bonuses on price are being paid by H.M.G. to the Madras kip tanners to stimulate their production and export; this has raised the price of raw cow hides in India. The chrome tanneries have to purchase these hides in competition with the bounty-fed Madras kip tanners. This has raised the cost of production of Indian chrome leather to such a level that it cannot be sold at the existing ceiling prices for the leather in U.K. although there is a great demand for it in that country. Bounty should be given on exported chrome tanned kips, sides and calves to U.K. either by H.M.G. or the Government of India corresponding to the bonuses paid now by H.M.G. on E.I. tanned kips.

Research grant:—This is urgently needed. A Central Leather Research Institute on national scale should be established by the Government. Grants for research should also be made as required to commercial tanneries and provincial tanning Institutes for useful research.

Railway freight:—The Panel scrutinised the railway freight rates of leather footwear and leather goods, etc., collected by the secretary. It was found that they are mostly under the high classification varying from 4 to 6 in most railways. The Panel recommends that a reduction of the freight rates would stimulate the industry and recommends to the Government to bring that about.

7 (A). The relative incidence is about 2½%.

8. The Government should control the following:—

(a) Export of raw hides and skins. Export of buffalo and cow hides, and sheep skins should be totally prohibited and that of goat skins restricted in accordance with the schedule given in para 38.

(b) The measurement of chrome leather should be controlled by legislative measures. (See recommendation No. 89 (vii).

(c) Starting of new tanneries, shoe and leather goods factories by foreign capitalists in India should be discouraged and controlled.

(d) The percentage of non-Indians and Indians in the higher technical personnel in non-Indian firms in this country should be controlled and the Indian personnel increased as more Indians become technically qualified. This will

act as a stimulus for promising Indians to join the leather and leather goods industry as they will find promising careers in it.

(e) The Chinese chrome tanneries in Calcutta should be controlled.

(f) The exploitation of cottage workers should be controlled. Absenteeism of the workers and non-payment of advances taken by them from employers should be controlled.

(9) There should be industrial associations for the different sections of the industry—Tanning, Shoe making and Leather Goods making sections. Each of these should have a provincial association which should be affiliated to an all-India Federation. There should be an all-India Federation for each section. The All-India Federations should be fully representative of all provinces and interests and be conducted on a democratic basis with conventions to secure proper representations to all interests. Cartel is considered to be unnecessary at this stage.

A census of tanneries, boot and shoe factories and leather goods manufacturing concerns all over India should be taken by the Government as early as possible with a view to give the industry an idea of their present stature and also to help formulation of a scheme for their co-ordination into associations and federations for the organised progress and development of the leather industry in India. The *chamars* and *mochis* working on a small scale should be organised by the provincial and state Departments of Industries, with proper facilities for supply of raw material and marketing of finished products.

10. Each sub-section of the tanning, shoe making and leather goods industries should be developed by planned programmes as to increased outputs, in which the interests of the entire industry should be considered. Too much development and production by firms which are better off, technically and financially, will militate against the spreading out of the industry and the interest of smaller concerns which are struggling to get on and establish themselves. Quotas of increased productions in programmes should be evenly distributed. This should be done by the proposed Department of Leather Industries of the Government of India in collaboration with the leather industries concerned. Assessment of possible demands for the various products concerned in the home and export markets should, of course, be the determining factor in making the programmes.

11. Yes. Until shoe wearing habit increases considerably in India, appreciable percentages of India's production of leather, shoes and leather goods will have to be exported to foreign markets. India now exports her raw hides and skins but her tanning industry has developed to such an extent that it can tan practically all her hides and sheep skins and a fair percentage of her goat skins producing leather of sufficiently high standards to be saleable in foreign markets. The same applies to her footwear and leather goods industries. Export market for these goods should be developed and free exports of E.I. tanned hides and skins, finished leathers, footwears and leather goods to all markets without any restrictions should be fostered and encouraged. An export organisation to popularise Indian footwear, leather and leather goods in foreign countries and exploit market possibilities there should be set up. In this connection, the organisation of the BETRO (British Export Trade Research Organisation) which has been recently established to encourage and foster British export trade, should be studied by the Government.

12. The industry should be developed both on cottage and factory scales but the latter will be more efficient in tanning and shoe manufacture. Machinery and technical assistance should be made available to cottage workers to speed up production and improve quality. Assistance should also be rendered to them for marketing their goods at economic prices and their exploitation should be controlled by Government as already suggested in 8 (f) above.

CHAPTER XIII

Materials and Personnel Budgets

212. Seven budgetary Statements given in this Chapter show approximately the total productions of the different items of leather, footwear and leather goods when the targets planned for the first five-year period are reached. They also show approximately the quantum of materials, machinery and technical personnel that will be required to attain those production targets. These figures are based on some production formulae. It must, however, be made clear that these formulae may vary and consequently the figures in the Statements must not be considered too rigidly and should be taken as rough approximations only.

213. Particular attention is drawn to Statement 2—Hides and Skins Budget—which shows clearly that when the first five-year targets are reached, there will be an absolute shortage of buffalo hides in relation to internal demand alone. There will also be no surplus of cow hides and sheep skins for export as raw. The Indian tanning industry will need them all. At the end of five years, there will be a surplus of 26.4 million goat skins, the disposal of which is proposed as follows:

13.8 million fine grained skins to be exported as raw.	
2.3 " " " " " as glazed kid.	
10.3 " " coarse " " as E. I. tanned.	

214. The position of buffalo hides is disconcerting. These are essential for sole leather and also for leather belting, picking bands, raw hides, pickers and tuggers, martingale straps and military equipment. It is estimated that India's available 6.2 million buffalo hides would be disposed of as follows (Statement 4).

	Million
Pit tanned & compressed sole and also bag-tanned sole for Western types of foot-wear.	3.06
Bag-tanned sole for indigenous types of foot-wear and some pit-tanned soles for sandals.	2.80
Civilian harness	0.03
Leather machinery belting	0.20
Picking bands	0.05
Raw hide pickers	0.10
Martingale straps	0.05
Military leather goods	0.10
Total	6.39

215. The above estimates are conservative rather than lavish and even at that there will be a small deficit at the end of the first five-year period. After that when footwear production will inevitably increase with increased demand from the Indian masses and when there will be equally increased demand for such industrial leather stores as leather belting, picking bands, pickers, laces and for railway leather stores such as dust shields, pump buckets, U rings, etc., and for military leather equipment for India's army, an acute shortage of buffalo hides in India is apprehended. India should prepare herself for this emergency. More buffaloes should be bred and consumption of buffalo leather economised. Some economy is possible if leather boards are utilized for insoles of utility shoes at least and leather and other types of boards for stiffeners of all footwear. Manufacture of leather boards should be developed in India (*vide* para 189).

216. A small surplus of 3.5 million cattle hides is expected after meeting India's various needs for cattle hide leather at the end of the first five-year period. This surplus will be exported partly as E.I. tanned kips and partly as box sides, box kips and box calf during and for some time after the first five-year period. But with increased demand for shoes from the Indian masses, India will need progressively more of cow hide leather for shoe uppers and at the end of fifteen years it is very doubtful if India will be able to export even cow hide leather either as E.I. tanned kips or chrome. India should prepare herself from now to increase her cattle population and use her cattle more rationally to get maximum possible yields of hide and meat. If cattle were not allowed to linger on to old age and were slaughtered earlier, much higher yields of hide and meat would be obtainable even from India's existing livestock population. Although at present compared to other countries of the world, India's livestock population is high the percentage of hide yield on livestock is low as will be clear from the following table:—

TABLE XIX.

Production of slaughtered hides in different countries in the world.*

Country	Cattle population (lakhs)	Annual production of hides (lakhs)	Percentage of hide production to cattle population	Percentage of hide production to world total
(1)	(2)	(3)	(4)	(5)
AMERICA—				
United States of America	664	243	36.6	17.8
Canada	88	19	21.6	1.4
Argentina	309	60	19.4	4.4
Brazil	405	42	10.4	3.1
Other South American countries (a)	347	39	11.2	2.9
				29.6
EUROPE—				
U. S. S. R.	565	247	43.7	18.1
Germany	201	83	41.3	6.1
France	158	77	48.7	5.7
Poland	101	35	34.7	2.6
Italy	72	30	41.7	2.2
United Kingdom	86	29	33.7	2.1
Other European Countries (b)	458	118	25.8	8.7
				45.5

* Abstracted from "Statistical Year Book of the League of Nations" 1937-38 and the "Leather Trades' Year Book", 1937.

(a) Cuba, Mexico, Chile, Columbia, Peru and Uruguay.

(b) Austria, Belgium, Bulgaria, Denmark, Spain, Estonia, Finland, Hungary, Ireland, Latvia, Lithuania, Norway, Netherlands, Portugal, Rumania, Sweden, Switzerland, Czechoslovakia, and Yugoslavia.

Country (1)	Cattle Population (lakhs) (2)	Annual production of hides (lakhs) (3)	Percentage of hide production to cattle population (4)	Percentage of hide production to world total (5)
AUSTRALIA	139	25	18.0	1.8
NEW ZEALAND	43	14	32.6	1.0
AFRICA (c)	227	21	9.2	1.5
ASIA—				
Other Asiatic countries (d)	118	17	14.4	1.2
India	2,235 (e)	257 (f)	11.5	18.8
Burma	61	8	13.1	0.6
				2.49
Total	6,277	1,364	21.7	(100)

(c) Algeria, Egypt, Madagascar, Morocco (Fr.), S. Rhodesia, Tunis and Union of South Africa.

(d) Korea, Formosa, Indo-China, Japan, Palestine and Philippines.

(e) 1,760 lakh cattle and 475 lakh buffaloes.

(f) 200 lakh kips and 57 lakh buff hides. The number includes fallen hides also. In most other countries, production of slaughtered hides constitute by far the bulk of the total.

217. It will be seen from the Statement above that in Germany the yield is as high. 48.7% and in most countries in Europe and America where cattle are rationally utilized, the yield is between 20 and 40%. Only in India, Africa, Brazil and all other South American Countries excepting Argentins, the yield is about 10%. In India this is principally due to the strong prejudice against cow killing. If this prejudice could be broken down and India's cattle population rationally utilized by establishing a meat industry catering to domestic and foreign markets, such as exists in other countries, India's hide supply would be substantially increased, probably doubted.

218. In statement 3 (Materials Budget for tanning—other materials) attention must be drawn to India's shortage of vegetable tanstuffs. India's total requirement when the planned targets of leather production are reached at the end of the first five-year period would be 63,147 tons of wattle bark (or 85,782 tons *babul* bark plus 69,106 tons of *avaram* bark) and 36,322 tons of *avaram* bark, 187,600 tons of *babul* bark, 15,134 tons of myrobalans and 1,170 tons of tanning extracts together representing about 56,418 tons of tanning on pure tannin basis. India imports practically all wattle bark and all tanning extracts except myrobalan extract which she uses at present. India will have to import more when leather production will be increased according to plan. India's tanning shortage could be partially made up, period of tanning shortened and leather quality improved if synthetic tannins were manufactured and used in India.

219. In statement 5 (Machinery budget) it will be observed that machinery of the value of Rs. 6 crores will have to be imported, principally from U.K. Manufacturers of tanning and boot and shoe machines both in U.K. and U.S.

however cannot promise any deliveries in less than two or three years. A lot of leather trades machinery may however be available as reparations quota for India from Germany. The Panel suggests that a list of such machinery as the Indian Leather Industry may be interested in getting from Germany be prepared and be sent up to the India Supply Commission in London who would try to get them for India.

220. In statement 6, it will be observed that the aggregate personnel required to reach the targets of the first five-year period will be 2,300 for administration, 10,000 for higher and 33,000 for lower technical work excluding unskilled labour. During the first five years, administrative and higher and lower technical personnels to be annually trained to attain the recommended targets of production, and including normal annual replacements, are estimated to be 190, 900 and 3,800 respectively.

APPENDIX TO CHAPTER XIII

STATEMENT I.—Production Targets

*Leather Targets**Leather from Hides.*

1. Bag tanned sole leather from buffalo hides	36.5 lakh hides.
2. Pit-tanned ditto	21 " "
3. Chrome tanned picking band and lace leather from buffalo hides .	0.5 " "
4. Bag and other crudely tanned cow hides	59 " "
5. Half tanned E. L. kips from cow hides and buffs	86 " "
6. Chrome tanned Box sides and calf from cowhides and calfskins .	58 " "
7. Vegetable tanned in pits (pit tanned cow hides for case leathers)	6 " "

Leather from goat and sheep skins

8. Vegetable tanned leather from sheepskins	200 lakh skins.
9. Ditto from goat skins	121.2 lakh skins.
10. Chrome tanned glazed kid and suedes from goat skins	41.4 lakh skins.

*Footwear Targets**

11. Indigenous types e. g., Nagras, Mundas made principally from bag and crudely tanned cow hide uppers and bag tanned buffalo and heavy cowhide sole and sandals chaplis and half slippers made partly from chrome tanned cow hide and partly from bark tanned cow and buff calf (Katai) uppers and mostly from bag tanned and to a smaller extent from pit tanned pressed buffalo sole	200 million pairs.
12. Western types e. g. Oxfords, Derbies, Civilian and army boots, Alberts, Newout selims, etc. and ladies' shoes made mostly from chrome tanned cowhide (boxsides) and to a smaller extent from glazed kid and chrome sheep skin uppers and pit tanned pressed as well as bag tanned buffalo sole.	45 million pairs.

Leather Goods Targets

13. Travel goods e. g. leather trunks, suit and attache cases, portfolios, etc. made mainly from vegetable tanned cow hides and to a small extent from vegetable tanned goat and sheep skins.	20 lakh pieces in terms of 22" suit case.
14. Ladies' hand bags made from chrome tanned calf and kip, vegetable tanned fancy leathers from goat and sheep skins and leathers from such reptiles as crocodile, snakes and lizards.	4 lakh pieces.
15. Small leather goods e. g. purses, wallets, wrist watch bands, etc. made mostly from vegetable tanned goat and sheep skins and leather cuttings.	40 million pieces.
16. Civilian saddles made from vegetable tanned (either by bag or pit process) buffalo hide curried into harness leather.	4,000 pieces.
17. Leather sports goods, e. g. football, cricket and hockey ball etc. covers and sundry goods made mostly from bag tanned cow hides and in case of hockey ball from alum tanned cow hides	6,000 cow hides required (estimated)
18. Machine belting from leather made from vegetable tanned buffalo hides	2 lakh hides required (estimated)
19. Roller skins made chiefly from vegetable tanned sheepskins	5 lakh pieces
20. Raw hide Pickers made from buffalo hides	1 lakh hides required (estimated)
21. Martingale straps, laces for belting, pump buckets, U rings and miscellaneous Railway leather stores e. g. axle box dust shields etc. made from buffalo and cow hide leathers	Half-a-lakh cow and buffalo hides required (estimated)]
22. Military leather equipment made mostly from pit tanned buffalo hide curried into harness leather	1 lakh hides required (estimated)

STATEMENT 2

Material Budget—Hides and Skins

(in million pieces)

Description	Available stock including normal import	Expected internal consumption according to recommended targets for footwear and other leather goods	Anticipated deficit (-) or surplus (plus)	Remarks
Buffalo hides . . .	6.2	6.39	-0.19	Small deficit. Export should be totally prohibited.
Cow hides . . .	20.5	17.0	+3.5	This surplus will be exported partly as E. I. tanned kips and the remainder as box sides.
Goat Skins . . .	30.0	3.6	+26.4	Of the surplus 26.4 mn 13.8 mn of the fine grained goat skins will be exported as raw. Of the balance, about 2.3 mn (of 3 mn production) of glazed kid will be exported. The remainder 10.3 mn will be exported as half tanned.
Sheep Skins . . .	20.0	11.5	+8.5	The entire Surplus of 8.5 mn will be exported as half tanned.

STATEMENT 3

Consolidated quantities of principal tanning materials, etc. required to achieve the leather targets.

(in tons)

Wattle bark	63,147 (or Babul bark 85,782 plus Avaram bark 69,106).
Myrobalan	16,184
Avaram	36,322
Babul	187,600
Sodium Sulphide	1,280
Lime	47,544
Soda Ash	300

	(in tons)
Caustic Soda	10
Titanium Oxide	4
Titanium Potassium Oxalate or Titox (if used by all chrome tanners in chrome upper leather manufacture)	120
Boric Acid	1,131
Oxalic acid or syntan (for bleaching)	286
Sulphuric Acid	4,013
Acetic Acid	60
Hydrochloric Acid	234
Salt	8,431
Hypo	624
Bichromate of Soda	3,133
Bicarbonate of Soda	8
Pancreol 2A	139
Pancreol 5A	35
Borax	804
Ammonia	36
Ammonia chloride	12
Hematin	94
Negrosin	13
Formalin	86
Paraffin and other waxes	1,000
Glycerine	156
Sulphonated castor oil	651
Fish oil, sesame, groundnut, linseed oil etc.	6,000
Spindle oil	156
Neatsfoot oil	31
Castor oil	16
Ready made fat liquor	373
Tanning extracts solid	1,172
Fustic extract	78
Black dye	160
Brown dye	165
Yellow dye	1
Gambier	155
Black pigment	136
Brown pigment	210
White pigment	4
Tallow	1,500
Molasses	876
Binder	144
Glazol	144
Reh or Sajji	3,009
Soap	50
Blood	39
Milk	83
Egg albumen	equivalent of 4.5 million eggs.
Para nitrophenol and other disinfectants and antimoulds	1
Whiting	25
Epsom salt	500
Glucose	725

	(in tons)	
Sodium bisulphite	16	} (for sul- phiting ordinary quebra- cho ex- tract).
Sodium sulphite	12	
Nitrocellulose lacquers	1,000	Gallons
Thinners	1,500	Gallons

STATEMENT 4.

Quantity of Principal Materials required to attain the recommended foot-wear targets.

I. *Western types of shoes.*

Chrome upper leather	} 0.8 mn. goat skins 3.6 mn. cow hides.
Lining, sheep skins	9.6 mn. pieces.
Canvas for lining	4.5 mn. yds × 27".
Sole leather for bottom stock	3.06 mn. buffalo hides.

Grindery :—

Thread for upper	9 mn. reels.
Eyelets	720 mn.
Rubber solution	301 tons.
Tacks ($\frac{1}{2}$ " × 5/16")	500 tons.
Blue tacks	300 tons.
Brass rivets	340 tons.
Sprigs	100 tons.
Sewing thread 5-6 chord	200 tons.
Stitching ,, 10-12 ,,	280 tons.
Brass wire	200 tons.
Staple taking wire	200 tons.
Sand paper (carborandum)	22.5 mn. yards.
Heel balls	15.7 mn. pieces.
Polishes	200 tons.
Sole polish	675,000 gallons.
Cleaning acid	100 tons.
Heel attaching nails	1,000 tons.

Total cost of grindery for 45 mn. pairs—Rs. 4.5 crores.

II. *Indigenous types of shoes.*

Chrome upper leather	1.6 mn. hides.
Bark tanned uppers	6 mn. hides.
Sole leather for bottom stock	} 2.8 mn cow hides. 2.8 mn. buff hides.
Leather lace for stitching <i>munda</i> , <i>nagra</i> and <i>chati</i>	0.8 mn. cow hides.

Grindery :—

Thread for sandal upper	4 mn. reels.
Tacks for sandals	450 tons.
Bifurcated rivets	200 mn. pices.
Rubber solution	450 tons.
Cotton thread	450 tons.

Quantity of leather required to attain the Other Leather Goods targets.

2. Travel goods	. . . . .	2 mn. cow hides.
3. Ladies, hand bags	. . . . .	{ 1 lakh goat skins. 1 lakh sheep skins. 50,000 calf skins.
4. Small leather goods	
5. Civilian harness leather	
6. Leather sports goods	. . . . .	{ 27 lakh goat skins. 18 lakh sheep skins. 1½ lakh cow hides. 3000 buff-hides.
7. Leather machine belting	
8. Cotton pickers	. . . . .	60,000 cow hides.
9. Martingale straps etc.	. . . . .	2 lakh buffalo hides.
10. Military leather goods	. . . . .	1 lakh buffalo hides.
11. Picking bands.	. . . . .	50,000 buffalo hides.

STATEMENT 5.**Machinery Budget.***Cost of Machinery to be imported.*

I. Footwear.—Of the present output of 30 mn. pairs of western types of shoes, it may be taken that the existing stock of machinery is adequate for only about half of them. Additional machines will be required therefore for renewal and modernisation in respect of 15 mn. pairs of the present production in addition to another 15 mn. pairs which are the proposed targets for expansion of production. Shoe machinery will therefore be required for an annual output of 30 mn. pairs. This will have to be imported over five years at a capital cost of Rs. 8,25,68,000 at current quotations (including cost of prime movers).

II. Glazed Kid.

Cost of machinery to be imported will be Rs. 8.2 lakhs.

Cost of prime movers will be an additional Rs. 90,000.

III. Box sides and calves.

Cost of machinery to be imported will be Rs. 1,66,16,000.

Cost of prime movers will be an additional Rs. 17,01,000.

IV. Pit tanned Sole Leather.

For the equipment of those tanneries making pit tanned sole leather which have not yet got machines and for supplementing the machinery of those which are still inadequately equipped and for renewal and replacement of worn-out machinery of the other tanneries, the machinery to be imported for pit tanned sole leather production is estimated to cost Rs. 20,83,200.

Cost of prime movers will be an additional Rs. 4,41,000.

V. Machinery to be imported by half tanned kip tanneries for modernisation will cost Rs. 10,13,760.

Cost of prime movers will be another Rs. 2,64,000.

Ditto by half tanned skin tanneries will cost Rs. 1,76,000.

Cost of prime movers will be another Rs. 54,000.

estimating that in either case, only 25 per cent. of the tanneries will go for machinery within the first five-year period.

VI. Machinery to be imported by Other Leather Goods industries will cost about Rs. 60 lakhs.

Total cost of machinery to be imported over the first five-year period will, therefore, be just over Rs. 6 crores including cost of prime movers.

STATEMENT 6

Personnel Budget (Aggregate)

Total personnel required at the end of five years to attain the targets.

Description	Administrative personnel	Higher Technical Personnel	Lower technical personnel excluding unskilled manual workers
1. Pit tanned buffalo leather	140	700	1,470
2. E. I. tanned kips	286	1,287	2,288
3. E. I. tanned goat and sheep skins	218	981	1,744
4. Chrome tanned cow hides and calf skins	200	1,200	3,500
5. Glazed kid and chrome suede	22	132	389
<i>A. Total Leather</i>	<i>868</i>	<i>4,300</i>	<i>9,391</i>
<i>B. Footwear</i>	<i>300</i>	<i>2,100</i>	<i>13,500</i>
<i>Other Leather Goods</i>	<i>1,100</i>	<i>3,100</i>	<i>19,300</i>
Grand total (in round figures)	2,300	10 0	33,000

STATEMENT 7

Personnel Budget (annual)

(Personnel to be trained per annum during the first five year period for expansion and replacement).

	Administrative personnel	Higher technical personnel	Lower technical personnel excluding manual workers
A. Leather	37	238	674
B. Footwear	28	304	1,950
C. Other Leather Goods	128	361	1,150
Total (in round number)	190	900	3,800

CHAPTER XIV

Delegations of Technicians and Businessmen to Germany and Japan
Germany :

221. The German leather industry was reputed before the war for the quality of its box calf, box sides, patent and upholstery leather and fancy leather goods. The German chemical industry is reported to have produced a number of materials such as disinfectants, soaking agents, synthetic bates, synthetic tanning agents, synthetic fats, oils and fat liquors, pigment finishes, cellulose lacquers, shoe and leather dressings, leather boards and artificial leathers for sole and other purposes, which are all useful for the leather and leather goods industries of India. It is reported that since the conclusion of the war, facilities have been offered to the Allied countries to send technical investigators to Germany for studying industrial processes. It appears that several investigators have already been there, as reports have been published and made available to the public. A few reports on the German leather industry are also among them.

222. The Panel considers that it is a unique opportunity for the Indian leather and allied industries to get a knowledge of the techniques of production of German leather, leather goods and leather treatment materials and suggests to the Government of India that qualified Indian leather technicians and chemists should be sent to Germany in adequate numbers as technical investigators for the leather industry. It is known that a few investigators were sent already but in the opinion of the Panel a lot more should be deputed to exploit the available opportunities in the interest of the Indian leather industry. The persons to be sent should be all Indians. The Panels recommendations on this subject are as follows:

(1) At least four leather technicians should be sent to study the techniques of German leather production.

(2) At least three highly qualified Organic Chemists should be sent to study the production of synthetic tanning agents.

(3) At least two qualified Cellulose Chemists should be sent to study the technique of the production of sulphite cellulose extracts and leather boards.

(4) At least two Leather Chemists should be sent to study the techniques of the production of pigment finishes, cellulose lacquers, leather and shoe dressings.

(5) Two Leather Chemists having previous knowledge of the subject should be sent to study the technique of the production of synthetic bates.

(6) Two Organic Chemists should be sent to study the technique of the production of synthetic fats, oils and fat liquors.

(7) Two Organic Chemists should be sent to study the technique of the production of disinfectants, soaking agents and other chemical leather auxiliaries.

(8) Two Organic Chemists should be sent to study the technique of production of leather substitutes.

(9) Two Leather Chemists should be sent to study the technique of the production of tanning extracts.

(10) Two boot and shoe technicians should be sent to study the technique of the German shoe industry.

(11) Two fancy leather goods technicians should be sent to study the technique of the German leather goods industry.

(12) Two mechanical engineers should be sent to study the technique of the production of engraved plates, frames and fittings for the fancy leather goods industry.

(13) Two mechanical engineers should be sent to study the manufacture of tanning machinery and spare parts of machines.

(14) Two mechanical engineers should be sent to study the manufacture of shoe machinery and spare parts.

(15) Two mechanical engineers should be sent to study the manufacture of shoe grindery and machinery for them.

(16) Two mechanical engineers should be sent to study the manufacture of shoe lasts.

(17) Two leather chemists having previous knowledge should be sent to study the technique of glue and gelatine manufacture.

(18) Two Leather Chemists should be sent to study the technique of the utilization of hair obtained as a by-product from tanneries.

(19) Two Leather Chemists should be sent to study the technique of recovering chrome from waste tannery chrome liquors and for the manufacture of chrome salts like bichromate, chrome alum, chrome tanning extracts, etc.

The Panel's recommendation.

223. A total of 41 technical investigators (enumerated in para 222) who should be selected by an expert Committee consisting of representatives of the Government and the trade, should be sent to Germany immediately to study German techniques and processes for the benefit of the Indian industry.

Training Indian Technical Scholars in Germany.

224. The 41 technical investigators suggested above will go to Germany for periods varying from 6 to 12 weeks. Apart from them a few, say 6 students, who have already been awarded or who may be awarded technical scholarships for studying leather industry under the technical scholarship scheme of the Government of India may be sent to Germany and apprenticed in German commercial tanneries or admitted to the Leather Trades Institute in Germany. They may remain and study there for 1 or 2 years. This will partially solve the difficulty which is being experienced now in finding accommodation for the selected scholars in tanneries and trade institutes in U.K. and U.S.A. which are now overcrowded with demobilized military personnel of those countries. Some of these scholars have been waiting for accommodation for over a year or so.

Japan:

225. Facilities for technical investigation may similarly be available in Japan. It is true that Japan was never known to have a leather industry of repute. Nevertheless, before the war, Japan used to import Madras tanned sheep and goat skins and made fancy leather goods from them. Japan used to manufacture also vegetable tanning extracts and such tanning chemicals as bichromate of soda and sodium sulphide. India used to import fair quantities of Japanese bichromate and sodium sulphide in the pre-war days. Before the war, the production of canvas and rubber shoes was a well-known industry in Japan. There must also be a tanning industry of some sort in Japan which may be worth investigating. The Panel, therefore, is of the opinion that a few technical investigators should be sent to Japan as well.

Summary of Recommendations.

226. (i) At first two Indian leather technicians should be sent as pioneer investigators to Japan to survey its leather and allied industries. On their return and report, if it be worthwhile, the following investigators should be sent:

- (1) Two investigators for the Fancy Leather Goods industry.

- (2) A Leather Chemist to study manufacture of tanning extracts.
- (3) Two investigators who should be qualified in organic chemistry to study the manufacture of bichromate and sodium sulphide.
- (4) Two investigators having previous knowledge of the subject for canvas and rubber shoes.
- (5) Two investigators who should be leather technicians to study the tanning industry.
- (ii) The investigators should be selected by the same Expert Committee proposed for those to be sent to Germany.

Delegation of businessmen to Germany and Japan.

227. Apart from technical processes for which technical investigators and students have been recommended to be sent, there may be much on the administrative and business sides of the industry in Germany and Japan which may also be worth investigation and study. For this the Panel recommends the following:

Summary of Recommendations.

228. (i) A delegation consisting of 3 groups of businessmen representing respectively the Tanning, Footwear and Leather goods industries should be sent to Germany. Each group should consist of 5 businessmen nominated by the provincial associations of the principal centres of these industries in India.
- (ii) On return and report of the pioneer investigators mentioned in para 226 (i), a similar delegation should visit Japan.
- (iii) The delegation of the businessmen to Germany should be sent forthwith but that to Japan should be sent only on return of the pioneer investigators mentioned in para 226 (i).

APPENDIX I

Department of Planning and Development

General Directive to Industrial Panels.

It is the function of panels to make recommendations to Government regarding the development of industries, both existing and new. These recommendations should be so framed as to enable Government to prepare a detailed phased plan for the five years following the cessation of hostilities, as the first stage of a 15-year plan of industrial development for the whole country.

2. In order to assist them to formulate recommendations, panels will be supplied, as far as possible, with factual information prepared by the panel secretaries. In the case of new industries, the information will consist of a general survey of the industry and the importance of starting it in India, the availability of raw material, the power requirements, the demands of the Indian markets and the probabilities of exports. In the case of existing industries, the information will naturally be more comprehensive; it will indicate in addition, the location of existing units, the types of goods produced, the total production under each category and the assistance, if any, given by Government. These items are to be regarded as illustrative and not exhaustive.

Government will give each panel, as a basis, for discussion, the provisional target to be aimed at in the first five-year period and, wherever possible, of the target to be reached in 15 years.

3. The recommendations of the panels should cover the following points:—

- (1) The scope and extent of development, including the type of products recommended.
 - (1-A) The estimated requirements of capital goods together with such details of these requirements as may be available in India and how much should be imported from abroad.
- (2) Whether the industry should be under Government ownership either on grounds of national interest or because private capital is unlikely to take it up, and if so, whether it should be wholly or partly managed by Government.
- (3) In the case of industries to be developed other than under State ownership, the capital required for such development, whether the whole of it is likely to be available by public investment and, if not, the extent to which Government assistance may be required.
- (4) The extent to which technical advice from abroad may be necessary.
 - (4-A) The availability and the future requirements of technical personnel so as to obtain a clearer indication of the present short-comings and future needs.
- (5) The manner and the degree of co-operation with foreign firms considered necessary and desirable, both as regards capital and management.
- (6) The location of the industry.
- (7) The nature of the assistance required from Government in the form of protective duties, bounties, research grant, export advice, etc.
 - (7-A) The relative incidence of the import duty on the finished goods in comparison with the duty on the raw materials from which they can be manufactured.
- (8) If the industry is to be under private ownership and management, what controls, if any, should be exercised by Government.
- (9) What should be the organisation of the different units of the industry, e.g., should there be an industrial association? Would a cartel be desirable?
- (10) The stages by which the industry should be developed,
- (11) Should the industry cater for the export market?
- (12) Should the industry be developed, as in Japan, on the cottage industry basis and, if so, to what extent?

4. Although, as stated above, the panels may recommend the grant of protection, it will not be their function to consider broad questions of international trade and commercial policy.

5. Joint meetings of the panels should be held, wherever necessary, to secure co-ordination particularly where the processes and the products of one industry are connected with those of another.

6. Some of the panels have been drawn broadly and it may be necessary to co-opt members for dealing with specific branches of the industry. Members may be co-opted by the Chairman in consultation with the Industrial Adviser.

7. Before submitting recommendations, panels should consult Provincial Industrial Committees, particularly in the matter of location of industry. They should also, where the circumstances of the case require it, consult Industrial Committees in States or State Governments/Durbars. The recommendations should be submitted to Government through the Industrial Adviser.

APPENDIX II

List of Tanneries and Shoe Factories Visited:

Bengal.

1. Bata Shoe Co., Batanagar, 24 Parganas.
2. Bengal Tanning Institute.
3. The National Tannery Co., Ltd.
4. Jubilee Tannery.
5. The Poiner Tannery.
6. The Hindustan Tannery.
7. The National Chammois Works.

Besides :—A Chinese chromo tannery, a bag-tanning establishment and the slaughter house at Tangra, were visited.

Madras.

1. Messrs. Gordon Woodroffe Leather Manufacturing Co.'s Tannery and Chrome Leather Co.'s Tannery at Chromepet.
2. Leather Trades Institute.

Besides :—A few E. I. Kip tanneries in the suburbs of Madras were also visited.

Punjab.

1. Sports Goods Factory of Messrs. Uberoi Ltd., Sialkot.
2. Bata Shoe Co., Ltd., Batapur.
3. The Jullundur Tanning Institute.
4. The Jullundur Mechanical Works.
5. The Jullundur Tannery.
6. The Rahim Tannery.

Besides :—A tanning machinery factory was also visited.

U. P.

1. Government Harness and Saddlery Factory, Cawnpore.
2. Cooper, Allen & Co. Cawnpore.
3. U. P. Tannery, Cawnpore.
4. Eastern Tanneries Ltd. Cawnpore.
5. Cawnpore Tanning Co., Ltd. and its Shoe Factory, Cawnpore.
6. Tanneries and Shoe Factories of the Dayalbagh Industries, Agra.
7. Harijan Shoe Factory, Agra.
8. Cottage Shoe Workers' Busti, Agra.
9. A number of hand-made shoe factories.

Bangalore.

1. Mysore Tanning Co., Ltd.
2. A few other kip and skin tanneries.

Bombay.

1. Modern India Arts Crafts.
2. Leather Goods factory of Messrs. Lalvani Brothers.
3. The Gold Filled Leather Works and the tanneries.
4. The Western India Tanneries Ltd.
5. Bombay Tanning Institutes.
3. One raw hide Picker Works.

APPENDIX III

Distribution of Chamar and Moohi population in different British Indian Provinces and Indian States

Ajmer-Merwara	17,343
Assam	7,312
Andamans and Nicobars	204
Baluchistan	410
Bengal	5,66,107
Bihar and Orissa	12,18,864
Baroda	54,480
Bomby	7,27,152
C. P. and Berar	10,92,271
Central India	5,26,800
Coorg	242
Cochin	239
Dolhi	45,806
Gwalior	4,19,467
Hyderabad	12,21,092
Jammu and Kashmir	1,22,465
Madras	12,25,207
N.-W. F.P.	29,677
Punjab	15,98,288
Rajputana	9,67,519
Sikkim	268
Travancore	6,222
U. P.	62,22,050
Western India States	1,18,187
Total	<u>164,55,487</u>

(Extracted from the Report of the Census of India, 1921)

APPENDIX IV

Capacity of the Controlled Tanneries as known to the Directorate of Leather and Footwear Government of India.

Serial No.	Name of Tannery	Vegetable Tanning Capacity per day in terms of cow hides. (2 Cow Hides= 1 Buff Hide)	Chrome Tanning per day in terms of Cow Hides
1	Messrs. Cooper, Allen & Co., Cawnpore	2,600	2,500
2	„ Cawnpore Tannery Co., Ltd., Cawnpore	1,100	400
3	„ U. P. Tannery Co., Ltd., Cawnpore	950	300
4	„ Indian National Tannery, Cawnpore	300	...
5	„ Eastern Tanneries Ltd., Cawnpore	600	...
	Carried over	6,650	3,700

Serial No.	Name of Tannery	Vegetable Tanning Capacity per day in terms of cow hides. (2 Cow Hides = 1 Buff Hido.)	Chrome Tanning per day in terms of Cow Hides
	Brought forward . . .	6,050	3,700
6	Messrs. Hindustan Tanneries, Ltd., Cawnpore . . .	350	...
7	" Noronha Model Tannery, Cawnpore . . .	100	...
8	" W. B. Shewan & Co., Cawnpore . . .	200	...
9	" Saghir Tannery Ltd., Cawnpore . . .	200	...
10	" Dayalbagh Tanneries, Agra . . .	550	300
11	" Western India Tanneries Ltd., Bombay . . .	400	50
12	" Gordon Woodroffe Leather Mfg., Co. Ltd., Madras.	430	1,200
13	" Chrome Leather Co. Ltd., Madras . . .	500	1,100
14	" National Tannery Co., Ltd., Calcutta . . .	350	150
15	" N. Mohd. Mian Rowther, Trichinopoly . . .	350	120
16	" Mysore Tanning Co. Ltd., Bangalore . . .	160	250
17	" Calcutta Tanneries Ltd., Calcutta . . .	100	200
18	" M. Nazir Hussain & Co., Madras . . .	100	Not known.
19	" Ashfaq Tannery, Cawnpore . . .	100	...
20	" Cawnpore International Tannery Cawnpore.	180	...
21	" Indian Trading Tannery, Cawnpore . . .	100	...
22	" Unao Tannery, Unao . . .	160	...
23	" Imperial Tannery, Unao . . .	40	...
24	" Pioneer Tannery, Cawnpore . . .	40	...
25	" Bata Shoe Co. Ltd., Batanagar . . .	930	550
26	" Bata Shoe Co. Ltd., Batapur . . .	400	120
27	" Punjab National Tannery, Jullundur . . .	100	...
28	" Jullundur Tannery, Jullundur . . .	250	120
29	" Central Tannery, Cawnpore . . .	20	...
30	" Universal Training Co. Ltd., Cawnpore . . .	180	...
31	" Madras Industrial Leather Works . . .	180	40
	Carried over . . .	12,520	

Serial No.	Name of Tannery	Vegetable Tanning Capacity per day in terms of cow hides. (2 Cow Hides-1 Buff Hides.)	Chrome Tanning per day in terms of Cow Hides
	Brought forward	12,520	7,900
32	Messrs. Wazirabad Tannery, Wazirabad	150	...
33	„ Punjab Tannery, Wazirabad	100	...
34	„ Bata Shoe Co. Ltd. Mokamehghat	400	...
35	„ Cottage Tanning Institute, Calcutta	100	250
36	„ Grant Trunk Tanneries, Cawnpore	120	...
37	„ Qureshi Tannery, Unao	28	...
38	„ Asia Tannery, Cawnpore	60	...
39	„ Benares Tannery, Unao	20	...
40	„ Prem Tannery, Cawnpore	74	...
41	„ Asiatic Tannery, Cawnpore	16	...
42	„ Oudh Tannery, Unao	40	...
43	„ Deshi Tannery, Cawnpore	60	...
	Total	13,490	8,150

	Bark Tanned Leather	Chrome Upper Leather
	Lbs.	Sq. ft.
October 40/March 41	1,803,490	...
April 41/December 41	5,024,601	...
January 42/December 42	13,781,010	1,628,630
January 43/December 43	16,547,074	1,836,778
January 44/December 44	13,563,376	28,377
January 45/December 45	6,985,143	2,78,207½

59,988 Chrome Butts were also supplied during 1945 for laces leather.

APPENDIX V

Scheme for a Leather Research Institute.

Research on the Technology of Leather Manufacture involves chemical (both organic and inorganic), physico-chemical, bacteriological, microscopical work, actual making of different varieties of leather, their physical testing, preparation of a number of products used in leather industries and utilization of by-products.

A Leather Research Institute to help the development of the Tanning Industry in India and to give it a proper lead should have facilities for all the above mentioned work, it should, therefore, consist of the following :-

1. A Chemical Laboratory.
2. A Bacteriological Laboratory.

3. A Microscopical Laboratory.
4. A Physical Leather Testing Laboratory.
5. A Research Tannery.
6. A Pilot Tanning Extract and Syntan manufacturing Plant.
7. A Pilot Glue Making Plant.
8. A workshop for making a number of preparations like pigment finishes, cellulose lacquers, synthetic bates and many other dressings required in the leather industry. Besides it should train up a few students annually in leather technology to carry out research work.

Estimate of Expenditure involved.

A. Non-recurring.

(1) Land—20 bighas to accommodate the buildings necessary immediately and for future expansion—cost including improvement Rs. 100,000.

(2) Buildings—

Laboratory buildings to accommodate chemical, Bacteriological, Microscopical & Physical Leather Testing Laboratories.

	*300' × 30' = 9000 Sq. ft.
Organic laboratory	50' × 30'
Inorganic laboratory	50' × 30'
Physico-Chemical laboratory	50' × 30'
Bacteriological laboratory	50' × 30'
Microscopical laboratory	50' × 30'
Physical Leather Testing	50' × 30'
	*300' × 30'
6 Sitting rooms for Research Officers	20' × 15' × 6 = 1,800 Sq. ft.
6 Sitting rooms for Assistants	20' × 15' × 6 = 1,800 "
Tannery buildings	600' × 40' = 24,000 "
3 Sitting rooms for Leather Technologists	20' × 15' × 3 = 900 "
3 Sitting rooms for Assistants	20' × 15' × 3 = 900 "
Tanning Extract Factory	100' × 40' = 4,000 "
1 Sitting room for Tanning Extract Expert Glue Factory	20' × 15' = 300 "
1 Sitting room for the Glue Expert	100' × 40' = 4,000 "
Workshop for the making of sundry preparations for the Leather Industry	20' × 15' = 300 "
Director's room with attached lavatory	100' × 40' = 4,000 "
General Office	30' × 20' = 600 "
Stores	50' × 20' = 1,000 "
Library	100' × 20' = 2,000 "
Museum	50' × 20' = 1,000 "
Meeting room	50' × 20' = 1,000 "
Visitors' room	50' × 20' = 1,000 "
Officers' Refreshment room	20' × 20' = 400 "
Assistants' Refreshment room	20' × 20' = 400 "
Workmen's Refreshment room	30' × 20' = 600 "
	50' × 20' = 1,000 "
Total	60,000 Sq. ft.

	Rs.	A.	P.
Total 69,000 sq. ft. of covered area of pucca buildings with cemented floor etc. @Rs. 15/- per sq. ft. of covered area	9,00,000	0	0
Masonry pits for the Tannery	24,000	0	0
Officer's and Assistant's lavatories	12,000	0	0
Servants' Quarters' compound walls, surface drains, inside roads, latrines and urinals	50,000	0	0
Tube wells and pumps for water supply	50,000	0	0
Total	10,36,000	0	0
(3) Equipment—			
1. Chemical laboratory—Working benches racks, stools, fuming cup-boards, chemical balances and other apparatus (required for work in organic, inorganic and physical chemistry—specially Colloids).	60,000	0	0
2. Bacteriological and Microscopical Laboratories—Working benches, racks, balances, autoclaves, incubators, microscopes, pH meters microtomes etc.	40,000	0	0
3. Physical Leather Testing Laboratory—Benches, apparatus, for measuring tensile strength, abrasion, water and air permeability, density etc.	40,000	0	0
4. Research Tannery—Tanning Machinery	2,00,000	0	0
5. Pilot Tanning Extraction plant of half a ton capacity consisting of extracting vats, triple effect Kostner's evaporator and a vacuum pan or finisher	60,000	0	0
6. Pilot Glue Extraction plant	50,000	0	0
7. Workshop for making various products for the leather industry—Equipment for making Pigment finishes, e.g. Grinding machines, Ball mills and equipment for making many other leather dressings	50,000	0	0
8. Furniture and other Office equipments	75,000	0	0
9. Gas, Electric and water fittings	1,00,000	0	0
Total	6,75,000	0	0
Total Non-recurring :—			
(1) Land	1,00,000	0	0
(2) Buildings	10,36,000	0	0
(3) Equipment	6,75,000	0	0
Total Non-recurring	18,11,000	0	0
Student's Hotel	1,00,000	0	0
Total	19,11,000	0	0
			(Say 20 lakhs.)

B Recurring :—	Cost initial year per ensem Rs.
Staff	
One Director—Rs. 2,000—50—2,500	2,000
*One Chrome tanner specialist in glace kid—Rs. 1,500 (fixed)	1,500
One Chrome tanner specialist in box sides, semichrome and Chrome retanned leather—Rs. 1500 fixed	500
*One Bark tanner specialist in light fancy leather with knowledge of heavy leather—Rs. 1,500 (fixed)	1,500
One Research Chemist (Organic)—Rs. 750—50—1,500	750
One Chemist (Inorganic)—Rs. 750—50—1,500	750
One Chemist (Physical Chemistry)—Rs.—750—50—1,500	750
One Bacteriologist—Rs.750—50—1,500	750
Twelve Research assistants—Rs. 250—25—750	3,000

*Appointments to be made on 3-year renewable contract basis.

Clerical Staff

	Rs.
One Office Superintendent—Rs. 15—475—25—500	250
One Accountant—Rs. 150—5/2—200	150
One Cashier—Rs. 100—5/2—150	100
One Steno-Typist—Rs. 100—5/2—150	100
Two Store Keepers—Rs. 60—4/2—100 each	120
Two Correspondence clerks—Rs. 40—45—5/2—75—3/2—90 each	80
One Typist—Rs. 50—5/2—80	50
One Librarian—Rs. 40—45—5/2—75—3/2—90	40
One Duftry—Rs. 25—2/2—30	25
Ten Orderlies and peons—Rs. 20—1—25 each	200
Sixteen Laboratory boys—Rs. 25—1—40, each	400

Workshop staff—Research Tannery

One Fitter—Rs. 75—5/2—100	75
One Electrician—Rs. 75—5/2—100	75
One Flesher—Rs. 75—5/2—100	75
Two Unskilled Workmen—Rs. 25—1—40 each	50
Two Drummen—Rs. 25—1—40 each	50
One Machine shaver—Rs. 50—5/2—75	50
One Staker—Rs. 30—2—50	30
One Glazer—Rs. 30—2—50	30
Two Leather Pressman—Rs. 25—1—40 each	50
One Oil man—Rs. 25—1—40	25
One Hand shaver—Rs. 40—1—50	40
Two Pit workers—Rs. 25—1—40 each	50

 14,615

Tanning Extract Plant—

	Rs.	A.	P.
One Tanning Extract Expert—Rs. 250—25—750	250	0	0
One Chargeman—Rs. 75—5/2—100	75	0	0
One Finisher—Rs. 75—5/2—100	75	0	0
Four Unskilled workmen—Rs. 25—1—40 each	100	0	0
One Glue Expert—Rs. 250—25—750	250	0	0
One Mistry—Rs. 75—5/2—100	75	0	0
Four Unskilled workmen—Rs. 25—1—40 each	100	0	0

 Total 15,540 0 0

Total Annual initial year (Rs. 15,540 × 12). 1,86,480 0 0

Travelling Allowance 10,000 0 0

Purchase and repair of appliances 10,000 0 0

Contingencies—

	Rs.	A.	P.
Laboratory Chemicals and apparatus	10,000	0	0
Hides and Skins	10,000	0	0
Treatment materials	5,000	0	0
Workshop contingencies	10,000	0	0
Glue Factory contingencies	5,000	0	0
Tanning Extract Factory contingencies	7,000	0	0
Gas, electric and water charges	5,000	0	0
Cart and coolie hire	1,500	0	0
Watch and Ward and Sanitation	3,000	0	0
Telephones	1,000	0	0
Postage stamps	1,500	0	0
Miscellaneous	3,000	0	0
Total	62,000	0	0

Distribution of all allotments over 3 years:—

In the first year of the operation of the scheme land has to be acquired and construction of the buildings commenced. To see that the work as contemplated in the scheme is carried out according to plan, I suggest that the Director and a few office assistants be appointed in the first year of the operation of the scheme. The buildings, it is presumed will not be completed for occupation for 2 years. To accommodate the office of the Director I suggest a suitable building be hired and a few items of furniture be purchased. Services of some of the Research Officers will also be necessary for the preparation of the detailed indents for the laboratory and other equipments and to supervise their fitting in the second year of the operation of the scheme. It is, therefore suggested that some of them be appointed in the 2nd year.

The rest of the staff may be appointed from the 3rd year and the full recurring expenditure for the Institute budgeted during this year.

The distribution of the necessary non-recurring and recurring expenditure provided for in this scheme have accordingly been distributed over 3 years as given below:—

1st Year : Non-recurring.

	Rs.	A.	P.
(1) Land	1,00,000	0	0
(2) Buildings	10,36,000	0	0
Total	11,36,000	0	0

Recurring.

Director—Rs. 2,000 × 12	24,000	0	0
Office Superintendent—Rs. 250 × 12	3,000	0	0
Accountant—Rs. 150 × 12	1,800	0	0
Cashier—Rs. 100 × 12	1,200	0	0
Steno-Typist—Rs. 100 × 12	1,200	0	0
Two orderlies—Rs. 20 × 2 × 12	480	0	0
Total	31,680	0	0

Travelling allowances 5,000 0

Contingencies—

	Rs.	A.	P.
House rent—500 × 12	6,000	0	0
Electric charges —50 × 12	600	0	0
Furniture and office equipment	5,000	0	0
Telephones	400	0	0
Watch and Ward and Sanitation	800	0	0
Stationery and Forms	100	0	0
Postage stamps	120	0	0
Miscellaneous	350	0	0
Total	50,050	0	0
Grand Total	12,17,730	0	0

2nd year—Non-recurring.

Equipment	6,75,000	0	0
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Recurring.

Director—Rs. 2,050 × 12	24,600	0	0
Leather Technologists (3)—Rs. 1,500 × 12 × 3	54,000	0	0
Research Chemist (Organic)—Rs. 750 × 12	9,000	0	0
Research Chemist (inorganic)—Rs. 750 × 12	9,000	0	0
Research Chemist (Physical Chemistry)—Rs. 750 × 12	9,000	0	0
Bacteriologist—Rs. 750 × 12	9,000	0	0
Accountant —Rs. 150 × 12	1,800	0	0
Office Superintendent—Rs. 265 × 12	3,880	0	0
Cashier—Rs. 100 × 12	1,800	0	0
Steno-Typist—Rs. 100 × 12	1,200	0	0
Two orderlies—Rs. 21 × 2 × 12	504	0	0
Six orderlies—Rs. 20 × 6 × 12	1,440	0	0
Travelling allowances	8,000	0	0

Contingencies—

House rent—Rs. 1000 × 12	12,000	0	0
Electric Charge—Rs. 75 × 12	900	0	0
Furniture	2,500	0	0
Telephone charges	400	0	0
Watch and Ward and Sanitation	800	0	0
Stationery and forms	200	0	0
Postage stamps	200	0	0
Miscellaneous	500	0	0
Total	8,24,424	0	0

Third Year.

1. Establishment	1,90,740	0	0
2. Travelling allowances	10,000	0	0
3. Purchase and repair of appliances	10,000	0	0
4. Contingencies	62,000	0	0
Total	2,72,740	0	0
12 Research scholarships @ Rs. 200 per student	28,800	0	0
Total	3,01,540	0	0

Say 3 lakhs.

Non-recurring expenditure	20 lakhs.
Annual recurring from 3rd year	3 lakhs.

APPENDIX VI

List of principal machinery to be imported for a Chrome Leather Tannery with a daily output of 20 hides.

		Present quotation (Approximate)		
		£	s.	d.
Floshing Machine 6' size—	1	640	0	0
Splitting Machine 6' size—	1	1,180	0	0
Sammying Machine 6' size—	2	2,000	0	0
Shaving Machine Single width—	6	2,340	0	0
Shank setting machine, size 14"—	1	240	0	0
Setting out machine, size 7'—	2	2,260	0	0
Staking machine—	4	1,000	0	0
Buffing machine—	4	1,040	0	0
Glazing machine—	8	1,920	0	0
Boarding machine—	1	640	0	0
Spraying machine—	1	150	0	0
Measuring machine—	1	470	0	0
Power Hydraulic Embossing or Ironing Press—	1	2,310	0	0
	Total	16,190	0	0
	@Rs. 13-1/3 per £	Rs. 2,15,866	10	8
	For packing, freight and insurance, etc.	Rs. 42,733	5	4
	Total Rs.	2,58,640	0	0

List of Principal Machinery to be imported for a Solo Leather Tannery with a daily output of 100 hides.

		£ s. d.		
		£	s.	d.
Floshing Machine, size 9'—	1	1,000	0	0
Drum setting and Scouring Machine, size 7'—	1	820	0	0
Setting out Machine, size 7'—	1	1,130	0	0
Rolling Machine—	1	570	0	0
Brushing Machine—	2	200	0	0
	Total	3,720	0	0
	@Rs. 13-1/3 per £	Rs. 49,600	0	0
	For packing, freight and insurance, duty, etc.	Rs. 9,920	0	0
	Total Rs.	59,520	0	0

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Principal Machinery required for a Glazed Kid Tannery (Capacity—200 dozens per day)

		£	s.	d.
Unhairing Machine 4'—6'—	1	487	10	0
Fleshing Machine 4'—6'—	1	487	10	0
Turner E Serial table setting Machine—	2	1,375	0	0
Single Brush Travelling Band seasoning machine—	1	1,212	10	0
Shaving Machine 12'—	6	1,192	10	0
Bower Glazing Machine—	8	1,000	0	0
Single overshot Buffing Machine—	2	200	0	0
Model B staking Machine—	10	2,400	0	0
Brushing Machine 6'—	1	168	15	0
Top Pan oiling Off Machine 5—	1	375	0	0
Spraying Machine—	1	150	0	0
Single Hydraulic Press—	1	975	0	0
Measuring Machine 6'—	1	381	0	0
Total		10,400	0	0
Plus charges for packing, freight insurance, etc.		2,080	0	0
Total		12,480	0	0
@Rs. 13-1/3 per £		Rs. 1,66,400	0	0

List of Principal Machinery required for an output of 1000 pairs a day.

	No.	Current quotation
		£ s. d.
<i>Pattern Making.</i>		
Universal Pattern Grading Machine	1	994 0 0
Improved Pattern Shears Model R	1	30 0 0
United Corner Cutting Machine	1	18 0 0
United Pattern Binding Machine	1	30 0 0
1 A Pattern Punching Machine	1	7 0 0
<i>Closing Department.</i>		
No. 5 Marvel Skiving Machine	2	260 0 0
Fortuna Skiving Machine	1	160 0 0
Boothco Beading Machine Model C	1	110 0 0
No. 3 Royal Perforating Machine	1	130 0 0
No. 2 Epoch Eyeletting Machine Motors	2	390 0 0
	Motors	70 0 0
<i>Bottom Stock Dept.</i>		
5A—5-ft. Revolution Press	3	1,275 0 0
No. 10 Sole Splitting Machine	2	286 0 0
No. 6 Planet Sole Rounding Machine	3	1,020 0 0
No. 3 Twin Sole moulding Machine	1	525 0 0
No. 4 Apex Channelling Machine	1	128 0 0
No. 3 Channel Opening Machine	1	33 0 0

Heel Building Dept.

No. 2 Acme Heel Building Machine	2	320 0 0
		70 0 0
	Motors:	675 0 0
No. 4 Auto Heel Compressing Machine]	1	35 0 0
	plus	

Lasting and Making Dept.

No. 1 Insole Tacking Machine	1	180 0 0
		35 0 0
Rex Pulling over Machine 3 Pincer	2	1,500 0 0
		70 0 0
G. H. M. McKay Lasting Machine (Knife Att)	4	1,700 0 0
		140 0 0
No. 3 Rex Rotary Pounding-Up Machine	2	540 0 0
		70 0 0
	2	...
Besto Bottom Filling Machine	2	170 0 0
Grip Tacking Machine Model A	2	70 0 0
	2	4 0 0
No. 3 Improved Blake Sewing Machine	1	450 0 0
1-A Gdyer Outsole Rapid Lockstitch Machine (Fairstitch)	1	35 0 0
	1	42 0 0
No. 2 Gdyer Channel Laying Machine	1	410 0 0
Rapid Standard Screwing Machine	1	35 0 0
Single Raceway Loose Nailing Machine	1	225 0 0
		35 0 0
Hercules Sole Levelling Machine Model B.	2	1,172 0 0

Finishing Dept.

Lightning Heel Attaching Machine	2	900 0 0
		70 0 0
No. 3 Universal Slugging Machine	2	490 0 0
		70 0 0
No. 2 Ultima Heel Trimming Machine	2	380 0 0
		70 0 0
Imperial Heel Breasting Machine Model B	2	370 0 0
		70 0 0
	2	224 0 0
3-A Double Heel Scouring Machine	2	296 0 0
No. 7 Edge Trimming Machine with Fan	2	284 0 0
1-A Regal Edge Setting Machine	2	555 0 0
No. 4 Universal Heel Finishing Machine	2	664 0 0
No. 9 Bottom Scouring Machine	2	680 0 0
No. 5 Bottom Finishing Machine	2	60 0 0
2-A Polishing and Brushing Machine	2	484 0 0
No. 5 Regent Stamping Machine	2	

Total

19,75 0 0

or @ Rs. 13-1/3 per £ Rs. 2,63,400 0 0

29 8,000 0 0

Singer Sewing Machines

Total Rs. 2,71,400 0 0