

ALL INDIA HANDICRAFTS BOARD
(PLANNING AND RESEARCH SECTION)

**REPORT ON THE SURVEY
OF THE BRASSWARE INDUSTRY**

AT

MORADABAD



सत्यमेव जयते

**MINISTRY OF COMMERCE AND INDUSTRY
GOVERNMENT OF INDIA**

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CHAPTER I

INTRODUCTORY

1.1. Moradabad known earlier as 'Chaupala', is a district town in Uttar Pradesh situated on the right bank of the river Ramganga. During the reign of Shahjehan the city was named as Moradabad after the name of the Prince Murad Baksh. On the north the district is bounded by Bijnor and Nainital, on the east by Rampur and on the south by Buduan. On the west, the Ganges separates it from the districts of Meerut and Bulandshehar. It is about a hundred miles by rail from Delhi, forty-four miles from Bareilly and sixty-four miles by road from Nainital. It is situated on the railway line connecting Delhi with Lucknow. From Moradabad the main line continues in a north westerly direction, and connects it with Saharanpur. In addition to the railway, many roads lead into the town from different directions. The main road is from Bareilly which connects the town with Meerut. It is also connected by road with Delhi, Nainital and a few other places.

1.2. At the time of 1951 census the population of town was 1,61,854, of which 87,955 were males and 73,899 females. Industry and trade are the mainstay of the population. Metalware, and mainly brassware, is by far the most important industry and accounts for a large per centage of the families engaged in the industrial field. In fact the town is also known as "white metal town" indicating the predominant position of this calling. The other industrial occupations are manufacture of textile fabrics pottery, bricks, leather and leather products, food products, wood and wood products, etc.

1.3. No precise information about the origin of the brassware industry at this centre is available, but it is generally believed to be a few centuries old. Prior to the Moghul period, the industry was in the hands of a class of persons known as 'thatheras' who belonged to the Hindu community. Their range of production was limited to 'Lotas' and 'Thalis' and so was the market for their products. However, soon afterwards the things started changing. It is learnt that during the Moghul period, the industry was truly established with the entry of a few enterprising Mohammedan families which settled in this town during the reign of Shahjehan. The market was widened with the impact of their knowledge of Muslim culture as well as the requirements of the neighbouring muslim countries. They introduced new and improved tools and diversified the production. Different varieties and shapes of household articles that were in demand in the foreign markets were produced and exported to Iran, Turkey, Iraq, Egypt, etc.

1.4. It was under the royal patronage during the rule of Bahadur Shah that Moradabad became the home of art brassware. Statistical information about the development of the industry in the subsequent years is not readily available. All the same, it is gathered that during the recent years the industry has experienced a substantial expansion of demand for its products both in the domestic as well as in the foreign markets, despite many bottlenecks.

1.5. A series of exhibitions, especially the 'British Empire Exhibition, held in the U. K. in 1924, gave impetus to exports of brassware to the U. K. Later, the popularity of Indian brass spread across the Atlantic and the American public showed increased interest in the craft. The industry flourished

unimpeded until the beginning of the World War II, during which period it was very severely affected. However the exports were revived upon the cessation of hostilities in 1945 and the post-war period has been marked with an unprecedented expansion of exports.

1.6. That there is room for substantial expansion of exports has been indicated by the studies recently made by American market research firms and the United States trade missions visiting India. "The Survey of Marketing Potential for the Indian Handicrafts in the U. S.", 1957, carried out by Amos Parish Inc., New York (a firm which specialises as marketing consultants) listed 'Brass Household Wares' and 'Non Ferrous metal alloy-bells and parts' as a category of goods deserving "prompt attention and intensified (export) effort". Again the "Report of U. S. Consumer Goods Trade Development Mission" which visited the country in 1957, listed brassware as an item having "immediate (export) potential".

1.7. Available information on the economics of the industry and about the living conditions of the workers engaged therein appeared to be fragmentary and out of date. It was, therefore, decided to collect some basic information about the structure and organisation of the industry and other relevant details which would be useful for comprehending the nature and extent of the problem as also formulating a working plan for an integrated development of the industry. Accordingly, a socio-economic survey of the industry was undertaken towards the beginning of May, 1960. Chapters three and four of this report analyse the findings of the survey with regard to the economic aspects of the industry, while the analysis of the living conditions of the workers is relegated to chapter five. The last chapter recapitulates the conclusions and recommendations emanating from the whole study.

1.8. It was intended to study only that sector of the brassware industry which was engaged in the manufacture of artistic brassware. As no authentic and up-to-date list of such establishments was readily available, a census enumeration of all the establishments engaged in the brassware industry in the township of Morabadad was undertaken to start with. A specific question was asked as to whether the establishments dealt in artwares and the enumerators satisfied themselves about this. The number of establishments that reported production of artistic goods were then sorted out for an intensive study on a random sample basis. An establishment was defined as a place of work where manufacturing activity was carried on. The simple concept is of an industrial unit with separate location under a single operating control. In the case of units engaged in a more than one process required for the manufacture of the end product, each process was counted as constituting an establishment; for instance a unit engaged both in moulding as well as scraping was considered to constitute two establishments and was accounted likewise. Listing of the establishment was completed within a period of ten days by a team consisting of fourteen enumerators and three supervisors. Of these enumerators ten were recruited locally who had some knowledge about the location of the industry while services of the remaining four were loaned from the Office of the District Industries Officer, Morabadad. The total number of establishments listed comes to 4,836, of these, 2,537 reported that they worked on artwares. These were ultimately considered for intensive study of the industry on a random sample basis. In respect of Guli making it was not possible to classify clearly the establishments into those

feeding the manufacturers of artistic goods or others; hence all establishments were considered for sampling. Distribution of the 2,537 establishments according to the different stages of production is given below:—

Stage of Production	No. of establishments
1. Guli making	109
2. Pattern making	27
3. Sheet work	52
4. Moulding	369
5. Soldering	171
6. Scraping	533
7. Electroplating	55
8. Engraving	1,022
9. Lacquering	95
10. Polishing	104
TOTAL	2,537

It will be seen that engraving and Lacquering establishments which form the core of the artistic production, together account for 1,117 (44%) establishments. Of the remaining 1,420 establishments, scraping and moulding account for 533 (21%) and 369 (15%) respectively.

SAMPLING PROCEDURE:

1.9. The procedure adopted for study of the manufacturing processes was stratified random sampling, sample units being the establishments carrying on different processes. At the first instance, population in each process was divided into three categories *i.e.*, establishments doing artistic, mixed and non-artistic work. Establishments doing artistic and mixed work were considered for the purpose of this survey (except for one process *i.e.*, Guli making). Thus each process had two strata. Each of these stratum was further divided into 3 sub-strata according to employment size *i.e.*, establishments with employment between 1 to 4, 5 to 19 and 20 and above. Samples for each sub-strata in each process were selected at random with variable sampling fractions. Ten per cent sample was selected from strata having more than 20 establishments. This fraction was raised to 25% in case of strata having establishments between 11 to 20, 33% in case of strata having between 5 to 10 establishments and 100% where the number of establishments was less than 5.

1.10. Employment figures reported by the establishments during the course of sample survey were found to be different from those reported at the time of the census. This resulted in the transfer of some establishments from one stratum to another. 'Deming' has quoted similar instances of floating populations vitiating the sampling design particularly when the census and the sample survey are distant in time. In the present case it appears that the discrepancy derives more from the untrained nature of the census enumerators

than from the fluid nature of the population. This made it difficult to present the results separately for all the employment sub-strata, although the estimation is based on the appropriate raising factors in each sub-stratum separately. Sampling fractions per process stand finally as follows:

TABLE SHOWING THE NUMBER OF ESTABLISHMENTS IN THE CENSUS SAMPLE SELECTED AND PER CENT OF SAMPLE SELECTED.

Sl. No.	Processes	No. of establishments in these Census	No. of Sample estts.	Percentage sample selected
1.	Moulding	369	41	11.1
2.	Sheet work	52	12	23.1
3.	Engraving	1,022	103	10.1
4.	Lacquering	95	12	12.6
5.	Scraping	533	54	10.9
6.	Soldering	171	20	11.7
7.	Pattern making	27	9	33.3
8.	Electroplating	55	11	20.0
9.	Polishing	104	16	15.4
10.	Guli	109	12	11.0
TOTAL		2,537	294	11.6

1.11. The data was collected in a prescribed proforma given at Appendix 'A' by a team of six investigators. The period of reference was the year 1959. Detailed instructions were prepared and given to each investigator. The data collection was completed within three weeks time. The filled in schedules were collected daily from the field staff and were scrutinised simultaneously. Omissions and inaccuracies were brought to the notice of the investigators and corrected. To ensure accuracy of the data collected a track of field investigators was kept and some of the questionnaires filled by them were checked by different staff. The processing and tabulation of the data took nearly two and a half month for two investigators to complete.

1.12. To start with, some difficulty was experienced by the field staff in collecting the necessary information from the informants. They had to be coaxed into a reasonable mood by explaining the purpose of the survey and the *bonafides* of the investigating team. Even so, some of the experienced craftsmen questioned the outcome of the enquiry on the plea that similar studies in the past by different agencies had not yielded tangible benefits to the workers. Support was also enlisted from the co-operative societies and other associations of workers and individuals who would wield influence on the artisans. Meetings of these agencies were arranged where the workers were addressed and possible beneficial results of the survey were brought home to the workers. Once the confidence was created, most of the informants yielded data without much reservations.

1.13. Recourse to sampling was taken in the main, due to the obvious difficulty of contacting each and every establishment in the population. The method of random sampling and two way stratification was adopted so as to ensure on the one hand that the sample was representative of the population as well as on the other to obtain some idea about the reliability of the estimates. Percentage variation of the estimated total employment is found to be 2.68 and is indicative of the effectiveness of the sampling design. The precision of detailed estimates by different breakdowns would naturally be less than that of the overall magnitudes; all the same, it is expected that the data presented in the subsequent chapters reproduces the characteristics of the population fairly well so as to provide a sufficiently reliable picture of the structure and organisation of the industry as it existed during 1959.

1.14. As regards the organization of trade, the study is based on the census method. The socio-economic conditions of the workers were studied separately on the basis of a purposive sample comprising 119 artisan families spread over various processes as well as localities of the town. This part of the survey proved to be rather difficult and the findings are expected to hold only broadly.

CHAPTER II

PROCESSES

2.1. Before we pass on to the analysis of data on the various economic aspects of the industry it would be pertinent to give a brief description of the different stages involved in the manufacture of brasswares. Broadly speaking, the main stages of manufacture are four *viz.* (i) shaping of wares, (ii) scraping, (iii) engraving and (iv) polishing.

(I) SHAPING OF WARES :

2.2. The basic raw material required for the wares is brass. This is an alloy of copper and zinc and is formed by fusing together the two metals in the ratio of 60 to 40 approximately. Copper requires more heat to melt and is, therefore, heated first and zinc is added to it later on. Both copper and zinc are short in supply as compared to their demand; hence, brass scrap is used to make up the gap. The scrap is melted and its composition tested; if necessary, copper or zinc whichever is found short in the composition is added to get the right metal alloy. The molten metal is then poured into moulds to produce billets of two types *viz.*, round or oblong known locally as 'chakka gulli' and 'bharat gulli' respectively. The former is used for manufacture of sheets while the latter is used in the manufacture of articles by casting.

2.3. The shaping of wares is done in two ways, either by pressing or beating brass sheets or by casting in moulds. Speaking of sheet wares, 'chakka gullies' are heated in a furnace and are pressed in a rolling mill to get brass sheets. Outline of the flat article to be produced is marked on the sheet and flat pieces are cut from outlines. For articles which are not flat, templates are made to obtain the correct size and shape of the flat pieces. In some cases the out-line is marked on paper and transferred to the metal sheet. The actual shaping of the flat pieces into desired articles is done with either handoperated or power tools. Shaping of articles by hand is a method which has been practised by a class of artisans called 'Thatheras' since long. In the manufacture of articles by this method, the flat pieces of brass sheets are beaten into shapes by suitably hammering them over a stake. Simple tools like shears, stakes, hammers, mallet etc. and a bhatti are used for this purpose.

2.4. The other method of making round sheet wares is learnt to have been introduced during the Second World War. Flat pieces of brass are spun on a spinning lathe worked by electric power to produce articles like 'thal' and 'bowls'. In the alternative the sheets are pressed in a pressing machine to turn out articles like 'katories', 'katordans' etc. The equipment consists mainly of the circle cutting machine, the spinning machine, fly presses, punches and dies etc. A wide range of household utensils, decorative-cum-utility articles like 'thal', 'parat', 'katordan', 'katori', tiffin carrier, tea pot, ash-tray, cigarette case are produced this way either by hand or by machine.

Casting :

2.5. Wares cast by the 'darja' process usually go as artwares. Another way of shaping brasswares is by casting in moulds. Casting involves four different operations *viz.*, (i) making a pattern or model, (ii) preparing a mould, (iii) heating the metal and (iv) handling of the molten metal. Casting of

brasswares is done in two ways either by 'para' casting or by 'darja' casting. The wares manufactured by the former method are composite whole while in latter case, these are sometimes produced in parts and then soldered together to get composite articles.

2.6. The articles commonly manufactured by 'para' moulding are lotas and glasses. First a pattern of the articles to be manufactured is made in wood; from this a few model pieces are cast which are later on used to make moulds on a larger scale. The mould known as 'para' is made from clay which is available locally on the Sambhal Road and on the river bed in plenty. Reasons for the localisation of the industry at this Centre is the availability of this type of clay which is said to have special refractory properties. The clay is mixed with some other ingredients to make the moulds strong enough. The mould is then joined with a crucible called 'Kuthali' which is filled with brass scrap and/or billets produced by gulli makers. The combined structure of the mould and crucible is then placed in the furnace fired with wood. The furnace is big enough and can accommodate a number of such structures at a time. The 'paras' are heated for about an hour and a half till the metal melts fully and flows into the hollow space between the inner and outer structure of the mould. The 'paras' are then taken out and allowed to cool. When cooled the clay moulds are broken to obtain the articles. The articles manufactured are composite whole.

2.7. The other way of casting wares which is widely practised at this centre is known as 'darja dhalai'. The method is named after the moulding boxes known locally as 'darjas'. It was reported to have been introduced sometime in the early twentieth century. To start with, patterns of the wares to be manufactured are prepared in wood and are used to make models in metal. The moulding box is made of iron sheets. The box is filled up with a mixture prepared from clay, sand, molassis and castor oil. The mixture is rammed and levelled. Thereafter the model is placed on the mixture. Then another box is filled similarly with the mixture and is placed over the first. The box is filled sufficiently well so that no vacant space is left. Both the boxes are pinned tightly so that the model is embedded in the mixture and leaves a clear imprint. At this stage the box is opened and the model is withdrawn and a channel is cut to the pour and the mould closed. Brass is melted in a crucible placed in a furnace fired with coal. The molten metal is then poured through the pouring gate and allowed to solidify in the crevices. When cold, the top box is lifted and the casting is removed. A large variety of articles are produced by this method such as items of cutlery, ash trays, flower vases, candle sticks, animals and toys. The tools and equipment required for this process consist of a furnace, crucible, crucible tongs, moulding boxes etc.

2.8. Once the casting of wares is over, each ware is minutely examined for the moulding defects, if any. The moulding defects may be caused either by the failure of the molten metal to flow fully through the mould thus leaving gaps, or the gases generated during pouring of brass may fail to escape and cause pin holes. All the castings which reveal such minor defects are set aside for necessary repairs by soldering.

Soldering :

2.9. Some of the articles made in parts by 'darja' casting method have to be soldered to get a composite article. Soldering is the process of joining parts of metal with another metal or metal alloy called solder. The solder is generally of a low melting point than the metals being joined.

There are two distinct processes of soldering, hard and soft soldering. It is the latter process which is more in use at this centre. This involves the use of easily melted solder. The equipment used for soldering consists of a hearth and soldering bit, file, etc. The materials used comprise a fluxsal ammoniac a solder (usually an alloy of tin and lead), emery cloth.

2.10. Soft soldering is done either with direct heat or with a soldering bit. The surface to be joined is cleaned thoroughly with emery cloth. The different pieces of the ware to be soldered are put in a proper form. Thin iron wire is used quite often to keep the parts in position. Next a flux—San ammonia or resin—is applied at the place to be joined. The flux helps in cleaning, reduces the oxide, helps the solder to flow and assist the solder to combine with the metals. The small pellets of the solder are placed along the join and the surface is heated. The solder melts and runs into the joint. The ware is allowed to cool and then washed thoroughly to remove the excess of flux. The procedure is not much different for soldering by a soldering bit. Cleaning of surface, placing the parts in order and application of flux is the same in this method too. The hot soldering bit is then drawn slowly along the joint allowing the solder to flow into the space between the parts.

Filing :

2.11. The moulded ware is rather in a crude form at this stage ; it is passed on to a filer to do away with its crudeness. The filer files off the rough surface with a file. The tools of a filer consist of a variety of files each of which is used for a special purpose. After this operation is over the ware is passed on to a scraper for further processing.

(II) SCRAPING :

2.12. This process follows filing and consists of scraping the filed surface to make it smooth. This process is known locally as 'chillai'. Scraping is done in four ways namely (i) by hand, (ii) charakh, (iii) kanta or (iv) machine. Scraping by hand is one of the oldest methods and simple too. This does not require elaborate equipment, chisel is one of the important tools. The scraper with chisel in one hand and the ware in the other hand or between two feet, scraps the ware. The second method of scraping by charakh is an improvement over the first in the sense that the output is more. The vessel is mounted on a rod on one side and to charakh on the other side. The charakh is worked with a strap as a result of which the vessel revolves. The tool scrapes the revolving vessel to make its surface smooth. In the case of hand driven or power driven lathe the vessel is fixed with lac to the end of the roller. The hand drawn lathe requires two persons to do the job. One of them pulls the strap while the other scraps the revolving vessel with a scraping tool. The power driven lathe on the other hand involves the services of a single person who does the scraping. In this case, however, a number of lathes can be worked simultaneously where each lathe is attended by a different person. What is interesting to note in the scraping by use of electric current is that a fan is fixed at the scraping points for the benefit of the workers.

Tinning :

2.13. Once the wares are scraped they are passed on for polishing and tinning or electroplating or engraving. Tinning by hand is one of the processes which has earned a name in the history of this industry at Moradabad. Brasswares manufactured at various other centres in the country were many

times sent to Moradabad for tinning; and these wares were sold in the market as Moradabad wares. The high reputation for tinning done at this centre was due to its steadfastness. The tinning was of such a high order that it would last till the end. The position of 'Kalai' obtaining at this centre is no longer the same now. The deterioration is reported to have started some time during the IIInd World War when shortages in the supply of tin were keenly felt as a result of which the prices shot up. Both out of necessity as well as to compete with the cheaper wares in the market, tin was progressively substituted with lead. This in turn slackened the demand for the Moradabad wares and to a certain extent induced preference for steel wares. Efforts have to be made to impress upon the traders and producers both to reduce the proportion of lead and to increase the proportion of tin. Promotional measures will have to be taken such as making available of tin in sufficient quantities and at reasonable prices or even at subsidised prices to induce the shift over.

2.14. The process of tinning consists in heating the vessel to be tinned in a furnace. As soon as it is sufficiently hot ammonium chloride is applied to the vessel to clean it. Thereafter tin and lead pellets are smeared on the hot ware. The pellets melt and give the ware a white coating. The vessel is washed with water and reheated to ensure that the tin and lead enters the Pores of the vessel and is fixed. A little ammonium chloride is again put on the ware as a result of which the vessel gets a grey tinge. It may be mentioned in passing that 'pacca kalai' can be done only on the wares which are manufactured as a composite whole and not in parts, as a vessel prepared by joining parts gets disjoined when heated for tinning. The tools and equipment of a tinman are simple enough which consist of a furnace, fire tongs, etc.

Electroplating :

2.15. Electroplating is a process of giving a coating of a metal on the given articles by the process of electrolysis. Plating at this centre is done with silver or nickel or copper. The process is as follows :—

2.16. The object to be plated forms the cathode. This is cleaned and polished and then immersed in a vat containing the solution of chemicals called electrolyte. These chemicals of course differ for different situations. Next, a plate of metal to be deposited is also suspended in the solution and forms the anode. This must be of pure metal and the wire with which it is suspended must also be pure. Electric current is then passed through the circuit formed by the anode, the cathode and the electrolyte and a layer of the metal (anode) is deposited on the object at the cathode. After this the ware is washed and passed on to the polisher for final polishing. The main equipment required for electroplating consists of the vat, anode, cathode, electrolyte, a switch board with suitable switches, resistance and meters etc.

(III) ENGRAVING :

2.17. Engraving is the cutting of a design into the surface of the metal. Like the tinning process, engraving of Moradabad has made a name both in the country as well as abroad. Engraving can be classified into two broad groups *viz.*, ordinary work, called locally as 'japani' and 'siahkalam'. Again 'siahkalam' can be divided into two sub-groups namely 'chiken' work' and the fine work called 'barik kam'.

2.18. After the ware has been shaped and scrapped, it is passed on to the engraver for engraving. The engraver imparts the required design on the ware with the help of engraving tools and a mallat or a light weight hammer. In case of ordinary work the design to be carved may be transferred by the engraver from his memory. In the case of shahkalam work where intricate designs are involved, the designs are prepared on paper and outlined on the ware before engraving. This type of work requires high order of skill and workmanship which is attained by patient apprenticeship for a few years. The equipment required is very simple and consists of an 'adda' engraving tools, mallat and light hammer.

Lacquering :

2.19. Lacquering is done on the engraved brassware by filling up with the shellac the depressions created by engraving. The ware is heated on burning charcoal in a hearth and the engraved designs are filled with pointed shellac sticks. The excess of shellac is then removed and the wares are glazed by rubbing with wood ash.

(IV) POLISHING :

2.20. It is the final finishing of the ware which attracts an eye of the customer. There is an appearance of mystery about the article which is polished neatly. High quality finish gives the requisite gloss to the ware and thus enhances its saleability. This process is known locally as 'kathai'. 'Kathai' or finishing of the ware may be done by hand, feet method or polishing lathe. The article is first cleaned. Then the polishing compound is applied on the ware both for the hand and feet methods. In the case of the former method the wares are rubbed with wood straws or balls—wrapped in a pad of cloth and wool. For the latter method, a person stands on the ware and swings right and left. It was learnt that of all the methods 'kathai' by feet gives best results even though it is relatively labourious as well as time consuming. But all types of wares cannot be rubbed by feet because of the varying designs and shapes of the wares. The other method of polishing consists in treating the ware by foot Treadle or power driven lathe. The ware is mounted on the spindle of the lathe. Polishing compound is applied on the linen mop. The mop is held against the surface of the revolving vessel as a result of which the ware gets the requisite finish. Principal tools and appliances comprise wood straws, polishing lathe, mops, etc.

Although the artware industry has been in existence for long, not all of our wares compare favourably in cost as well as quality with similar products of other countries like Japan, Korea and Pakistan. A common complaint about our brasswares is loss of lustre and gloss. The protective lacquering done at the centre is not of a high order, as a result the goods get tarnished. This limits the market for the brassware goods when on the contrary we are anxious not only in retaining the present markets but capturing new ones. We have, therefore, to see that the products retain the brilliance. It is a matter of research both as regards a suitable method of lacquering and the type of lacquer to be used.

CHAPTER III

STRUCTURE OF THE INDUSTRY

ORGANISATION OF PRODUCTION :

3.1. As stated in Chapter one statistical information about the development of the industry in the recent past was not readily available. An attempt was therefore, made during this survey to get some idea about the year of foundation of the establishments existing on the date of survey. Barring the establishments that might have closed before the survey and hence could not be contacted, data as incorporated in table below give a rough idea about the development in the last few decades.

TABLE (3.1) : YEAR OF FOUNDATION

Distribution of establishments according to the year of foundation

Sector	Before 1920	1920- 1929	1930- 1939	1940- 1949	1950- 1959	Total
1. Moulding	2	10	30	133	194	369
2. Sheet work . . . . .	..	..	..	31	21	52
3. Engraving	10	80	110	341	481	1022
4. Lacquering	9	10	..	9	67	95
5. Scraping	11	29	97	172	224	533
6. Soldering	1	..	11	99	60	171
7. Pattern making	5	..	8	1	13	27
8. Electroplating	8	..	1	2	44	55
9. Polishing	4	..	4	25	71	104
10. Guli	37	36	..	9	27	109
TOTAL	87	165	261	822	1202	2537

3.2. Development of the industry is indicated by the increasing number of establishments newly started in every decade since 1920. The growth seems to be more pronounced particularly in engraving/lacquering and scraping sectors. Near about half of the establishments contacted during the census have been established during the last decade. This growth is likely to be due to the expansion of the foreign market for Indian artware.

3.3. An enquiry was made specifically about the place of manufacturing work in various establishments. As can be seen from the data incorporated in the table below, it is estimated that in a little less than 1/3rd of the cases the work was carried out at the residences of the artisans ; this was particularly so in the scraping and to a certain extent in engraving work. But, in the engraving sector it was more usual to have common sheds shared by more than one establishment. It was reported that a common shed was utilised on a rent sharing basis ; but it was only a joint place of work. The establishments maintained their separate identity in that they did not undertake the engraving work jointly. Nearly half the establishments engaged in electroplating and about a quarter of those engaged in guli making worked in common sheds. Such a sharing of common shed for manufacturing purposes

was not so common in the other sectors of the industry. More than one third of the establishments had their individual place of work separately demarcated from their residences. It may be generally inferred that these establishments were on a slightly better footing so as to offer each a separate room or compound for the manufacturing purposes. In some cases this was a matter of sheer necessity as in the case of the ovens.

TABLE (3.2): PLACE OF WORK

Distribution of establishments by sectors and by place of work

Sector	Separate Premises	Cottage	Common Shed	Total
1. Moulding	340	29	..	369
2. Sheet Work	52	..	..	52
3. Engraving	20	300	702	1022
4. Lacquering	29	66	..	95
5. Scraping	227	256	50	533
6. Soldering	121	40	10	171
7. Pattern making	26	..	1	27
8. Electroplating	28	1	26	55
9. Polishing	89	8	7	104
10. Guli	64	18	27	109
TOTAL	996	718	823	2537

3.4. An overwhelming majority of the establishments reported to be organised on the proprietary basis. This is the dominant form of organization as far as the processes of polishing, engraving, pattern making, scraping and moulding are concerned. Only about fourteen per cent of the establishments were run on the partnership basis. It was interesting to note that lacquering work was organised more on partnership basis. Other forms of organisations were conspicuous by absence. It is reported that during the recent years some six co-operative unions have been established with over 1,000 members. They function as service co-operatives providing the raw material rather than undertaking production by themselves. Paucity of finance and lack of adequate marketing facilities are reported to have made these bodies to assume only less important roles such as distribution of coal and other raw materials to its members or distribution of work on contract from the dealers etc. Even the U.P. Industrial Co-operative Association which recently carried out a survey of the co-operative movement in that state has reported that the work of co-operative societies at Moradabad is yet to be organised on satisfactory lines.

TABLE (3.3) : NATURE OF ORGANISATION

Distribution of establishments by sectors and nature of organisation

Sector	Proprietary	Partnership	Total
1. Moulding	347	22	369
2. Sheet work	28	24	52
3. Engraving	923	99	1022
4. Lacquering	39	56	95
5. Scraping	494	39	533
6. Soldering	120	51	171
7. Pattern making	26	1	27
8. Electroplating	29	26	55
9. Polishing	95	9	104
10. Guli	91	18	109
TOTAL	2192	345	2537

Figures quoted above regarding the organisation of establishments on proprietary basis do not convey the correct picture regarding their mode of operation ; for although a good many of the establishments work on their own in the sense that they are not permanently bound to work for somebody, above sixteen hundred establishments engaged themselves in executing specific orders of servicing nature. They are technically free to bargain for the prices of their services in the market and accept only the highest bid to undertake the work, except when in debt.

TABLE (3.4) : MODE OF WORK

Distribution of establishments by sectors and mode of work

Sector/Mode of work	Own account	On contract	On wages	Own a/c & on contract	Own a/c & on wages	Total
1. Moulding	233	10	97	29	..	369
2. Sheet work	33	10	..	9	..	52
3. Engraving . . . . .	..	..	1012	..	10	1022
4. Lacquering . . . . .	..	95	..	..	..	95
5. Scraping	59	..	474	..	..	533
6. Soldering	23	89	49	10	..	171
7. Pattern making	16	5	6	..	..	27
8. Electroplating	18	35	2	..	..	55
9. Polishing	8	95	..	1	..	104
10. Guli	82	..	9	..	18	109
TOTAL	472	339	1649	49	28	2537

3.6. This mode of work *viz.*, on wages is predominant in the engraving and scraping sectors and to a lesser extent in the moulding and the soldering sectors. On the other hand, it is common amongst the lacquering, polishing and soldering sectors to undertake work on contract. This mode of work differs from the former in that the raw materials as well as the implements in this case belong to the establishment doing the work, but it does not take over the entrepreneurial functions of gauging the market trends as also the risks of production. Amongst those who work on their own account the majority are engaged in moulding process ; guli making and sheet work follow next in importance. More than half of the establishments engaged in Pattern making are working on their own account. On the whole, however, it is only a fraction *viz.*, 18.6 per cent of the establishments that work on their own account while the rest depend on the orders of either dealers, exporters or the Karkhanadars. There are also a few establishments that combine different modes of work as can be seen from the table above.

3.7. It is reported that there is little of vertical integration in the brassware industry and most of the establishments undertake only one process or the other in the chain at the end of which we get the finished art brassware. In a majority of the cases the raw material of the semi-finished product which the establishment processes is not owned by it. The ownership rests in an outside dealer or trader who feeds the chain of establishments all along the line with materials that belong to him. Thus the manufacturing establishments are reduced to the status of workshops working for one dealer or the other only. They were reported to be not permanently bound to any particular dealer, except when in debts etc. There is a special class of persons known as contractors at Moradabad. They do not have workshops of their own nor do they undertake the risks of production. Mainly they are reported to act as middle men taking order from the dealers or exporters and farming out the work to small manufacturing establishments on contract or wage basis.

TABLE (3.5) : MOTIVE POWER

Distribution of establishments by sectors and motive power used

Sector/motive power used	Completely Manual	Electricity	Oil	Manual & Electric	Manual & Oil	Total
1. Moulding . . .	369	..	..	..	..	369
2. Sheet work . . .	51	..	..	1	..	52
3. Engraving . . .	1022	..	..	..	..	1022
4. Lacquering . . .	95	..	..	..	..	95
5. Scraping . . .	421	111	..	1	..	533
6. Soldering . . .	170	..	..	..	1	171
7. Pattern making . . .	27	..	..	..	..	27
8. Electroplating . . .	..	55	..	..	..	55
9. Polishing . . .	..	104	..	..	..	104
10. Guli . . .	109	..	..	..	..	109
TOTAL . . .	2264	270	..	2	1	2537

3.8. As can be seen from the data given above nearly 90% of the establishments are worked by hand. It is only in polishing, electroplating and scraping that we find the use of electricity. An overwhelming majority of the establishments are not registered under any Act. Very few come under the purview of the Factories Act while about 10 per cent reported to be registered under the shops and Establishments Act.

EMPLOYMENT.

3.9. It is estimated that in all about 9,000 persons were employed in the manufacture of artistic brassware at Moradabad during the period under review. The detailed break-up is given below :—

TABLE (3.6) : EMPLOYMENT

Distribution of employment by sectors and nature of employment

Sector	Males	Females	Children	Total	Family	Hired
1. Moulding . . .	1604	..	674	2278	690	1588
2. Sheet work . . .	320	..	..	320	95	225
3. Engraving . . .	1728	..	249	1977	1252	725
4. Lacquering . . .	221	29	11	261	194	67
5. Scraping . . .	1524	248	175	1947	806	1141
6. Soldering . . .	312	10	78	400	258	142
7. Pattern making . . .	29	..	1	30	30	..
8. Electroplating . . .	117	..	68	185	50	135
9. Polishing . . .	578	..	105	683	48	635
10. Guli . . .	299	172	345	816	780	36
TOTAL . . .	6732	459	1706	8897	4203	4694

3. 10. It would thus be seen that nearly 8,900 persons were engaged on full time basis (besides a few ladies who might have escaped enumeration). Of this about 75 per cent were male workers while about 20 percent were children below the age of fifteen. A little more than 5% of the workers were women who attended mainly to scraping and Guli work. On the whole the moulding process employed by far the largest number of persons relatively with other processes. Engraving and scraping employed each about 2,000 persons. Only about 30 persons are estimated to be engaged in pattern making. It may be noted that children predominate amongst the guli makers, though their role is, presumably, as helpers only. Moulding as well as engraving work also gave employment to a large number of children. Besides all these full time workers, about 75 to 100 persons were also reported to be employed on a part time basis. Nearly a half of the part time workers were children while the rest were found to be male workers employed in moulding, sheet work and polishing. Looking from another angle it may be noted that a little more than half the persons were hired for work on some wage rate basis whereas the rest constituted members from the families which own the establishments. These family workers, many of whom were children, were found to dominate the engraving and lacquering and to a certain extent moulding trades. Pattern making was almost exclusively confined to the family workers on the other hand, electroplating polishing as well as sheet work depended mainly on the hired labour. It may be incidentally noted here that the use of electricity and other motive power is predominant in these vary sectors.

TABLE (3.7) : DAYS WORKED AND HOURS
Average number of days and hours worked by sectors

Sector	No. of establishment in the population	Average number of days for establishment	Average number of hours worked per establishment
1. Moulding	369	274	7.59
2. Sheet work	52	254	8.17
3. Engraving	1022	265	10.03
4. Lacquering	95	215	8.08
5. Scraping	533	241	7.98
6. Soldering	171	247	8.50
7. Pattern making	27	257	6.67
8. Electroplating	55	221	6.91
9. Polishing	104	268	8.94
10. Guli	109	200	4.17
TOTAL	2537	254	8.51

3.11. The owner of every establishment was specifically asked as to how many days in the year 1959 his establishment was working and for how many hours a day, on an average. It is gathered that for the industry as a whole the number of days worked during the year averaged to 255 i.e., a work week of nearly 5 days. People working in the moulding, polishing and engraving sectors are reported to have worked for nearly nine months in the year while workers in gulli making as well as lacquering sectors worked for about seven months only. In the rest of the sectors the average number of days worked were found to be somewhere in between as can be seen from the above table. On the average, the establishments in this industry as a whole worked for about eight and a half hours every day. The engravers, however, worked far more than their counter parts in the other sectors; in the engraving sector the hours of work per day averaged to more than ten. This is likely to be due to the prevalence of the piece rate system of wage. Hours of work are about the lowest in gulli making. On an average, a worker gets Rs. 2 to 4 per day in most of the processes. In Polishing, lacquering and electroplating this was at times quoted low at Rs. 1.50 also; while in scraping work a person sometimes earned upto Rs. 5 per day. Usually, children were paid at half the rates but in engraving they were occasionally reported to earn upto Rs. 2.50 a day.

PRODUCTION AND RAW MATERIALS :

3.12. In estimating the value of production in various sectors of this industry the investigators had to face innumerable difficulties. Only the establishments working on their own account could give value of production whereas other could furnish nothing more than the servicing charges they received. On the top of this there was the intricate problem of double counting, inasmuch as, almost every artware has to pass through various processes before it reaches the final stage acceptable to the consumer. Thus if we take the value of an article at the moulding stage, as also its value at

the scraping and engraving stages separately the total of all these will obviously contain a superfluous element. Likewise assessment of the total raw material required is likely to get vitiated. Therefore, it was decided to collect the gross value of the articles turned out only at three stages viz. moulding, sheet work and pattern making. These three are mutually exclusive and together give us the total quantum of material that ultimately appears in the form of artware. In respect of soldering, scraping, engraving, lacquering, electroplating as well as polishing only the charges for the services rendered at these respective stages have been recorded. This procedure is expected to furnish the total value of the brass artwares produced during the year 1959 as recorded by the total given in the table below :—

TABLE (3.8) : PRODUCTION
Process-wise value of production (Rs.)

Process	Value	Servicing charges	Total	Total Prod. Net of raw materials
1. Moulding	1,11,32,942	4,37,871	1,15,70,813	9,32,419
2. Sheet work	27,96,960	1,55,420	29,52,380	10,22,399
3. Engraving . . . . .	..	11,04,454	11,04,454	11,04,454
4. Lacquering . . . . .	..	2,37,770	2,37,770	1,57,769
5. Scraping . . . . .	..	14,06,782	14,06,782	14,06,782
6. Soldering . . . . .	..	4,48,293	4,48,293	3,59,512
7. Pattern making	33,307	14,300	47,607	32,762
8. Electroplating . . . . .	..	2,77,562	2,77,562	1,46,033
9. Polishing . . . . .	..	11,54,748	11,54,748	9,82,394
TOTAL	1,39,63,209	52,37,200	1,92,00,409	61,44,524

3.13. It is estimated that nearly 2 crores worth of artwares were produced by Moradabad industry during 1959. It appears that the contribution made by scraping, engraving as well as polishing is quite sizeable being each more than eleven lakh rupees. In comparison pattern making is quite insignificant in terms of the value added. Engraving and lacquering together account for over thirteen lakhs of rupees and can be considered as the core of artware production. The contribution made by moulding and sheetwork is not clear unless we consider the value given against each of these processes net of raw material. This is given in Col. 4 above for comparative purposes. It may be noted that gulli making process does not find a place in the above table. This was deliberately omitted because the billets turned out by gulli makers are consumed in the moulding as well as sheet work processes, in addition to these billets, sizeable scrap is also utilised by the moulders. This would entangle us again in double counting which was sought to be avoided. It may, however, be mentioned that the value of billets produced at Moradabad during the year 1959 amounted to about fifty-three lakhs of rupees.

3.14. It is estimated that about 12,000 mds. brass sheets were utilised for the manufacture of artwares. Over 34,000 mds. of copper, 27,000 mds. zinc and 15,000 mds. of brass scrap was consumed in the moulding process. Over 1,000 mds. nickle and about 400 mds. of German silver were also utilised. These form the main raw materials actually consumed in the industry during the year. In addition, the electroplating process required

about 15,000 tolas of silver, 7,000 lbs. chromium and over 10,000 lbs. of nickle or nickle sheets. Thirteen mds. of lacquer, over 500 tolas colours and a little less than 2,000 gins. of thinner were utilised in the lacquering process. Polishing materials like peerless, lustre bars and rose bars worth nearly Rs. 1.7 lacs were consumed during the year. Nearly 14% of the Peerless, 24% of the lustre bar and 33% of the rose bar were imported from foreign countries. Data on consumption of packing materials like tissue paper could not be furnished by the manufacturing establishments as packing is usually done by the dealers separately. The gulli makers purchased 80% of their requirements of raw materials from the retail merchants. This incidentally meant high prices of copper and zinc to the tune of about Rs. 186 and Rs. 104 per md. respectively and a large margin to the middlemen. Brass sheets were quoted at about Rs. 200 per md. while German silver averaged at nearly Rs. 246 per md. and nickle at Rs. 487 per md. Like the gulli makers, establishments in the lacquering, polishing, electroplating and pattern making sectors purchase most of their raw materials from the retailers while the moulders and sheet workers had it largely from whole salers of gullis. It is only in the polishing sector that raw materials were reported to be supplied in sizeable proportion by the co-operatives. A specific question was also put to the owner of every establishment to elicit his requirements of raw materials apart from what he actually consumed during 1959. The investigators were instructed to collect data on the quantity of raw materials required keeping in view the capacity of the establishment in question. However, it is doubtful if the respondents understood the question clearly. From the data recorded on various schedules, it appears that requirements as reported by the owner of various establishments amounted to only about 3,000 mds. copper and zinc each, about 4,000 mds. of brass scrap and about 3,000 mds. brass sheet, in addition to their consumption in 1959. In respect of nickle, however, their requirement was reported to be 150% of their actual consumption whereas in the case of German silver the requirement appears to be nearly six times of what they actually consumed in the last year. In respect of other minor materials the establishments seem to be more or less satisfied with their current availability.

3. 15. Although the raw material requirements of the artware industry as reported by the artizans do not seem to be much above what they actually consumed in 1959, but the prices quoted by them betray significant fluctuations as well as divergence from the official rates. The spot average annual price of copper and zinc for the last decade were as below as per the Indian Bureau of Mines.

Spot Average Annual Price of Copper and Zinc (Calcutta market)

Year	Copper	Rs. per Ton. Zinc
1949	1875	1212
1950	2532	1951
1951	3960	3400
1952	3779	1854
1953	3491	1120
1954	3509	1139
1955	4864	1277
1956	4751	1376
1957	3468	1418
1958	3460	1343
1959	3286	2122

3.16. These may be compared with the prices quoted by the sample establishments as nearly Rs. 5,000 and Rs. 2,700 per ton for copper and zinc on the average in 1959. This may in turn be due to the overall shortage of copper and zinc in the country the indigenous production of copper being only 13% of the requirements and that of zinc concentrates nearly 6% of the demand. The result is heavy dependence in imports and an upward pressure on the price structure from different consuming industries. Therefore adequate supplies of copper, zinc as well as polishing materials like rose bar, Lustre bar and Peerless to the artware industry need to be ensured at reasonable prices. Besides both copper and zinc need to be made available simultaneously, as non-availability of one or the other metal hampers the cycle of production. Distribution of these raw materials must be fool proof so that the benefit of supply goes to the actual users and not to those who engage in speculative gains. The agency most suited for this operation is the association of manufacturers on Co-operative lines.

CAPITAL :

3.17. Factual information on the Capital structure of cottage industries is always beset with difficulties like non-existence of records which make any exactitude rather difficult. Similarly it was not possible for practical reasons to measure quantum of working capital over a period of time. An attempt has been made to estimate the capital fixed in tools and equipments, machinery, buildings etc., as on the date of enquiry at the replacement cost of the same; incidentally the replacement cost is more relevant to considerations of current economic malaise rather than the historic or the book value. In respect of working capital, the liquid assets in the form of goods in process, stock of raw materials and finished goods lying at the establishment as on the day of enquiry were valued at market prices in consultation with the respondents.

TABLE (3.9) : TOTAL PRODUCTIVE CAPITAL

Distribution of Productive Capital by Sectors and by Nature of Capital (Rs.)

Sector	Fixed Capital	Working Capital	Total Productive capital
1. Moulding	7,09,790	2,39,482	9,49,272
2. Sheet work	1,42,980	38,875	1,81,355
3. Engraving	3,17,887	5,792	3,23,679
4. Lacquering	2,09,429	12,791	2,22,220
5. Scraping	8,73,168	98,266	9,71,434
6. Soldering	2,86,121	18,908	3,05,029
7. Pattern making	2,720	3,190	5,910
8. Electroplating	91,372	36,021	1,27,393
9. Polishing	1,71,623	82,671	2,54,294
10. Guli	2,64,400	52,908	3,17,308
TOTAL	30,69,490	5,88,404	36,57,894

3.18. It is estimated that the total productive capital employed by the art brassware industry at Moradabad was over Rs. 36 lakhs. A substantial portion of this, *viz.*, 84 per cent, was in the form of fixed assets. Only in the pattern making sector it was noticed that the working capital was more than the fixed assets; in the rest of the sectors the position was completely different. It may, however, be noted here that the figures of working capital incorporated in the table above do not, perhaps, correctly reflect the technological requirements of the same, because majority of the establishments work on the order of the dealer karkhandars who supply the raw materials and take back the goods from time to time. The working capital invested by the dealer-karkandars in this way could not be reported by the establishments who were contacted during the survey. Between the different processes, moulding under scraping seem to block-up amongst themselves about the half of the total productive capital in the industry. However, it is only when considered in its break up that the capital employed in sectors like the engraving can be appreciated in the correct perspective.

TABLE (3.10) : COMPOSITION OF FIXED CAPITAL

Distribution of fixed capital (Rs.) by sectors and the categories

Sector	Sheds & Bldgs.	Machinery	Tools & equipment	Total
1. Moulding	5,35,674	83,464	90,652	7,09,790
2. Sheet work. . . .	67,250	43,325	32,405	1,42,980
3. Engraving	3,05,548	..	12,339	3,17,887
4. Lacquering	2,07,530	..	1,899	2,09,429
5. Scraping	7,42,648	67,740	62,780	8,73,168
6. Soldering	2,70,909	..	15,212	2,86,121
7. Pattern making	500	..	2,220	2,720
8. Electroplating	56,815	33,505	1,052	91,372
9. Polishing	20,805	1,16,208	34,610	1,71,623
10. Guli	2,59,090	..	5,310	2,64,400
TOTAL	24,66,769	3,44,242	2,58,479	30,69,490

3.19. Out of over Rs. 30 lakhs invested in the fixed assets of the industry, nearly Rs. 25 lakhs are reported to be in sheds and buildings. These sheds are usually nothing but the adjuncts of residential premises of artisans. Even so, this is indicative of the order of capital required to house the industry as such. In comparison near about Rs. 3 lakhs are invested each in machinery as well as other tools and equipments. Machinery appears to be quite important in polishing, electroplating, scraping, moulding and sheet work trades. The engraving and lacquering sectors seem to require much less of capital apart from the shed and buildings.

3.20. Despite the reluctance of the respondents to reveal the correct position about loans incurred by various establishments and the sources of this finance, some information has been collected on this point as incorporated in the table below :—

TABLE (3.11) : LOANS
Amount of loan (Rs.) source of loans and sectors

	Friends & Relatives	Money lenders	Dealer & Karkhandars	Govt.	Total
1. Moulding . . . . .	..	..	14,475	30,750	45,225
2. Sheet work . . . . .	..	..	..	..	..
3. Engraving . . . . .	..	..	8,517	..	8,517
4. Lacquering . . . . .	..	6,510	..	..	6,510
5. Scraping	7,864	..	..	3,000	10,864
6. Soldering . . . . .	..	..	3,030	3,000	6,030
7. Pattern making . . . . .	..	..	..	..	..
8. Electroplating	4,165	9,996	..	..	14,161
9. Polishing . . . . .	..	14,573	..	..	14,573
10. Guli	1,828	63,000	..	..	64,828
TOTAL	13,857	94,079	26,022	36,750	1,70,708

3.21. For obvious reasons it is difficult to construe that the blanks in the table really mean absence of any loan transaction. All the same the rough dimensions of the problem are indicated by the fact that little less than Rs. 2 lakhs were taken on loan by the industry as a whole from money-lenders, dealers and other sources. Relatively speaking, the loan from Govt. agencies seems to satisfy only about 1/5th of the requirements. Loans reported to be taken from friends and relatives to the tune of about Rs. 14,000 are likely to have flowed from money-lenders in one form or the other. Amongst the processes the gulli makers and the moulders seem to be hard pressed for finance. In a way this is but natural as the establishments in these sectors do not work as merely servicing agencies but have to provide for their own raw materials, stocks of finished goods etc. Data on the rate of interest charged on the loans thus drawn is perhaps still less satisfactory. In the case of nine establishments it is reported that money-lenders charged over 25% as interest. Eighteen other establishments had to pay between 5 to 10 per cent interest, again to the money-lenders. In nearly 50 cases it was reported that the dealers and karkhandars supply the finance without charging any interest. It appears that the loan is usually advanced with a view to bind the artisan for work or for sale of his goods to the creditor. Similarly, in the case of about 50 other establishments the friends and relatives as well as money-lenders were reported to have advanced money without any interest.

CHAPTER IV

ORGANISATION OF TRADE

4.1. The art brassware trade is almost entirely in the hands of private firms: of the 67 companies covered by the survey, 21 were proprietary and the balance partnership concerns. There is only one private limited company, which handles brassware exports as one of its lines of business.

4.2. The leading exporters and dealers are represented by the Brass Artware Manufacturers' Association, established in 1950-51, "to preserve and promote the art of 'sia-kalam', to protect and promote the interests of the members and to evolve rules and regulations for the implementation of the above objectives". It was gathered, however, that the Association has not been able to enforce a uniform code of business practices, price, etc., or undertake a collective campaign of foreign publicity and sales promotion. Its major activity appears to be to settle wage rates and other points of dispute between the exporters and the unions of art brassware engravers, enamellers, moulders, 'gulli' makers etc.

4.3. Only one of the six co-operative societies engaged in the manufacture of brassware at Moradabad handles the sale of finished goods. All these societies are enthusiastic about opening their own show-rooms and entering the foreign trade. However, the paucity of finances and experience in marketing are major limiting factors. It is, therefore, considered desirable that these societies may be federated into a co-operative marketing organisation adequately financed, to make a beginning in this direction. This organisation could be equipped with experienced sales staff to conduct sales to the U.P. Industrial Co-operative Association which runs a number of retail show-rooms in U.P., as well as Government emporia. At a later stage, its scope could be enlarged to include exports.

TYPES AND RANGE OF MERCHANDISE:

4.4. The brass artware industry gained international recognition by virtue of the excellent workmanship that went into making the 'sia-kalam' work (engraving in relief on enamelled surface), and for years the exports were confined mainly to this type of work. However, recently the large inflow of orders and the short time available for deliveries, have necessitated mass production, which is not possible in the case of the 'sia-kalam' work. Also, there has been continued insistence by the importers on the 'Japani' work (floral engraving on plain brass surface). As a result, 95% of the goods for export are executed in the 'Japani' style of engraving and only 5% in the 'sia-kalam' work.

4.5. The range of goods offered for sale is very wide. It is comprised of about 200 categories of goods. Each category, in turn, is made in widely different sizes usually numbering between 20 and 50.

4.6. The more popular categories of goods are: 'Aftabas' or traditional wine jugs, flower vases, planters; table ware, such as table tops, trays, candle stands, dinner gongs and bells, carving sets, steak knives, print dishes, plate stands, etc.; smokers' requisites, viz., cigarette cases and boxes, ash trays, etc., pin trays, rose bowls, lamp bases, hanging perforated lamps, decorative boxes, beer mugs, calendars, prayer bowls, paper weights, and household decorative items.

4.7. According to the interviews held with the members of the trading community, 'Aftabas', 'flower vases', ash trays, bells, candle, stands, and table tops, are the main items of export.

4.8. In the domestic market demand tends to be concentrated on inexpensive gift and decorative wares, *viz.*, flower vases, ash trays, cigarette boxes, etc.

CHANNELS OF DISTRIBUTION :

4.9. With a few exceptions, the exporters and the exporters-cum-dealers do not follow the practice of appointing selling agents or brokers. This is true of the domestic as well as the foreign markets. Sales in India are confined mainly to retail gift shops in large cities, places of tourist interest, exporters located in port town, mainly, Delhi, Bombay and Calcutta. The share of Government emporia appears to be negligible.

The following table illustrates the distribution of establishment by percentage of sales and agency.

Percentage of Sales

Agency	Percentage of sales			
	Below 25%	25-49%	50-74%	75% & over
1. Retailer	5	2	4	8
2. Wholesaler	5	1	6	43
3. Emporia	1	..	..	..
4. Cooperatives . . . . .	..	1	..	..
5. Government . . . . .	..	..	..	..
6. Consumers	3	..	..	..
7. Others	3	1	..	3

SALES :

4.10. The sales of the firms covered by the survey totalled Rs. 1.10 crores in 1957, Rs. 1.21 crores in 1958 and Rs. 1.67 crores in 1959. The turnover in 1959 represents an increase of 38 per cent over 1958 and 52 percent over the 1957 figures. According to the local trading circles a further increase of about 10% is expected during 1960. The increase in the turnover is attributed mainly to the notable expansion of exports.

DOMESTIC CONSUMPTION :

4.11. Exact data on domestic consumption of brass is not available since a major portion of the sales made by Moradabad dealers to firms in Bombay, Delhi and Calcutta is exported by those firms. According to the data developed as a result of the survey, in the year 1959 art brassware valued at Rs. 2.2 lakhs representing 1.2% of total sales was sold in Moradabad proper and Rs. 57.8 lakhs representing 34.1% of total sales was consigned to firms in India outside Moradabad. It is estimated, however, that atleast 50% of the Merchandise sold to firms outside Moradabad entered export trade. Thus the total domestic consumption in terms of value is estimated at about Rs. 31.1 lakhs, representing approximately 18-20% of the total sales.

4.12. The following table illustrates the distribution of establishments by location of markets:

Markets	No. of Establishments
1. In town	10
2. Out of town in the country	52
3. Exports	41
4. In town and out of town	10
5. In town and exports	3
6. Out of town and export	27

EXPORTS:

4.13. Direct exports of art brassware amounted to Rs. 88 lakhs. Adding to this figure, the estimated amount of Rs. 28.9 lakhs (representing 50% of sales made by Moradabad firms to exporters located outside the city), the total exports during the last year works out at Rs. 108 lakhs.

4.14. The following table illustrates the trend in direct exports from Moradabad:

Country	Volume of exports in Rs.		
	1957	1958	1959
1 U.S.A.	28,41,000	39,00,000	57,81,000
2. U.K.	2,72,000	2,83,100	3,43,000
3. W. Germany	3,90,700	5,08,000	5,22,000
4. Canada	54,000	50,000	64,000
5. Ceylon	25,000	18,000	24,000
6. Other continental countries	11,00,000	5,45,000	5,16,000
7. Middle-East	3,23,000	3,50,500	4,65,000
8. Newzeland	25,000	20,000	22,000
9. Australia	10,000	11,000	15,000
10. Others	10,98,000	12,27,400	9,90,000
TOTAL	61,38,700	69,13,000	87,42,600

4.15. The United States is by far the largest buyer and accounts for over 52% of total exports in 1959. Other import and buyers are West Germany, Saudi Arabia and the U.K., which collectively absorb about 13% of exports.

4.16. It would be observed that the export figure for 1959 represents and increase of about 75.25% over the 1957 and 62.4% over the 1958 level. *The increase is attributed to a notable expansion of exports to the United States, which registered a rise of over 100% during these three years. The emergence of West Germany as a large buyer is also reckoned as an important factor. Another significant contributing factor is the considerable rise in tourism during these years. The export promotional activity of the All India Handicrafts Board, especially, participation in foreign trade-fairs and exhibition and the services aimed at multiplicity of trade contacts, have contributed substantially towards expansion of the export market.

*The figures are based on the data supplied by individual firms as given above. However, since a number of them could not give exact data about export to different countries we do not claim the percentage as 100% correct. However they are fairly reliable indicators of the general trend.

4.17. Available data indicates that the upward trend in exports of art-brass continued during the first five months of the 1960. The exports for this period are placed at Rs. 55.32 lacs as compared with Rs. 44.74 lacs during the corresponding period of 1959.

EXPORT CAPACITY:

4.18. Inquiries were made among selected firms to ascertain their export capacity in relation to current exports. Most firms expressed the view that further expansion was extremely difficult in view of the difficulties occasioned by the current scarcity of raw material supplies. Also, the non-availability of additional skilled craftsmen is another factor. However, given these facilities, the exporters were hopeful of stepping up their exports by about 50%, raising it to about 2.25 crores. Most of the firms stated that they were experiencing difficulties in filling the orders in hand, owing especially to the non-availability of sufficient raw materials.

PEAK OFFTAKE SEASONS :

4.19. Of the 67 firms surveyed, 26 reported July and August as their peak sales months. The shipments are made in these months to reach the United States distributors or retailers in time for Christmas sales. 8 firms gave December as their peak month of offtake. The shipments made in this month cater to the demand for gift ware for Easter.

The distribution of establishments by number of peak months is given in the table below:

Month	No. of establishments
January	..
February	..
March	5
April	5
May	8
June	8
July	13
August	13
September	1
October	4
November	..
December	8

TERMS OF BUSINESS:

4.20. With a few exceptions, all the firms engaged in exports operate on Documents Against Payment (D/P) or Sight Draft basis. The practice of opening Letters of Credit (L/Cs) by the importers has almost disappeared. Only two of the 67 firms surveyed stated that they operated against L/Cs only. On the other hand, there was evidence of insistence on credit by the foreign buyers, which is generally beyond the capacity of an average exporter in Moradabad since adequate credit facilities are not yet available from local sources.

4.21. Further, most of the exporters are wary of selling their goods on credit since a number of trade disputes were reported to have arisen after the goods had been supplied on credit basis, resulting in serious losses to the exporters. Inquiries made among the firms indicated that the exporters seldom checked the credit worthiness of foreign buyers before entering into firm business commitments.

PRICE AND MARGINS:

4.22. The trade does not follow a uniform pricing policy and the margin of profit varies from one establishment to another. The survey reveals that the mark-up varies from 6 to 20% of production costs. However, a majority of the exporters and dealers take a profit between 10 and 15 per cent. It was also noted that the margin charged are not determined by the nature of the buying organisation. In other words, the profit taken is the same irrespective of the buying organisation being an importing wholesaler or a department store or even a mere gift shop. Generally, the exporters should deal with importers and wholesalers and large departmental stores who import directly and undertake distribution on a rational basis. However, the margin charged should vary according to the quantities of goods sold as well as the nature of distribution.

4.23. Another salient feature of the price structure seems to be that despite considerable rise in the prices of raw materials (estimated at about 30%) during the last 3 years, and the rise in the wages of craftsmen (which the traders emphatically assert), the price level has remained the same. This, it is understood, has been made possible by the trade through (a) cutting down their margins of profit. It was gathered that atleast one of the most important exporters was running in a loss as a result of wreckless race in price-reduction; (b) by altering the normal proportions of the brass alloy from 60% copper and 40% zinc to 40% copper and 60% zinc and (c) alleged cuts in the wage rates of craftsmen, especially engravers. This view is affirmed by the observation made at the time of the survey that the Engravers Mazdoor Union was fighting for the restoration of wage rates fixed by that Union in 1947 in consultation with the traders organisations.

In order that the trade may flourish on healthy lines, it is essential that the above three factors be remedied through strengthening the hands of the Exporters Association, supply of adequate raw materials, and ensuring reasonable wages to the craftsmen.

DESIGNS DEVELOPMENT:

4.24. One of the main sales points of the trade is its faithfulness to the unique and highly distinguished line of traditional designs and shapes of Moradabad brass. The 'Aftabas' still continue to be at the top of item in demand. However, little effort appears to have been made in adapting the traditional designs and forms to modern usage. Although certain articles like cigarette container-cum-lighter have been made, the designs are not highly evolved and the finish is crude. So far as the introduction of new design is concerned, the exporters mostly depend on their customers and copy the designs sent by them for commercial production against specific orders. Usually, the importer stipulates that the particular design, which he places an order will not be produced for sale to any other party.

4.25. For the production of designs, given and ordered by an importer, the exporter depends on pattern makers (there are about 20 pattern makers in Moradabad), who make wooden models and these are in turn passed on to the moulders.

4.26. In relation to the size of the industry, the designing activity is negligible. The U.P. Government has a Non-Ferrous Metal Development Centre, which organisation is headed by a Designer. However, during the survey, it was gathered that the industry and trade have not been materially benefitted by the Centre since a close liaison does not exist between the Government Centre and the industry and trade.

4.27. In view of the current level of exports and the ability of the industry to stand competition in foreign markets, it is considered highly desirable to intensify design development aiming at the adaptation of the line of goods now being produced to articles of modern usage. A well-equipped design extension centre should be established at Moradabad.

QUALITY CONTROL :

4.28. Although a Quality Marking Scheme for art brassware has been sanctioned by the U. P. Government this year, the industry is not yet covered by the scheme, since the Inspection Depot has not yet been opened. It is hoped that the Depot will go into operation by the end of this financial year.

4.29. In view of the large export sales and the promising export potential of art brass ware the importance of operating such a scheme without any further loss of time can hardly be emphasised. Previous experience indicates that the Quality Marking Scheme meets considerable resistance in the initial years since the advantages of Quality Control are not fully realised by the trading units. Also certain elements in the trade do not wish to place themselves under business discipline, which export trade demands. Therefore, it would be necessary to introduce such regulations as would prohibit recommendations of the Export Section for issuance of import licenses to these exporters, who do not accept membership of the Scheme. Also, the State Government may refuse quotas to such units, who do not subscribe to the Scheme.

PACKING :

4.30. Despite long experience, the trade has not realised the importance of appropriate and attractive packaging. The articles for shipments are usually wrapped in thin green tissue paper. In view of the fact that most of the artbrass produced by Moradabad is sold as giftware, it is essential that the wares be sold in suitably designed boxes of card board, wood or plastic boxes, and wherever appropriate, lined with cloth and stuffed with cotton, jute or flax. The cost of packaging in India being far below that of the importing countries, packaging for export promises substantial possibilities for expanded trade.

4.31. Packing is a profession by itself in Moradabad. The packers usually perform the functions of forwarding agents also. The materials, viz., wood, jute bags, and twines, wooden dust, and paper cuttings, are generally provided by the dealers themselves, to packers.

4.32. It was observed that good wood was not being used with the result that the boxes sometimes broke in transshipment, resulting in shortage and complaints. It was also gathered that the prices of paper cuttings had risen from Rs. 12 to Rs. 24 per maund and were causing concern to the trade since the increase in packing costs raised export prices.

TRANSPORTATION :

4.33. Generally, means of transportation, adopted for the brassware shipments, are the railways and road transport. Post parcels are resorted to only in the case of light, artistic and very expensive wares. During war time, brassware products were consigned from Moradabad and nearby railway stations, *i.e.*, Kathghar, Dalpatpur, Harthala and Kunderkhee. However, Moradabad city station is now the main consigning centre. But, whenever, there is congestion in this station, goods are exported from other neighbouring stations also. Many dealers have complained about the very slow transportation facilities provided between Delhi and Moradabad. They have urged that the daily Q.T.S. service be operated between Delhi and Calcutta *via* Moradabad. The table showing the monthly consignment of brassware by weights and earnings of the railways from the Moradabad city station for the year 1957, 1958 and 1959, given below, are also indicative of the export trend, discussed earlier:

Months	Years					
	1957		1958		1959	
	Weights	Earnings	Weights	Earnings	Weights	Earnings
	Mds.	Rs.	Mds.	Rs.	Mds.	Rs.
1. January . . .	4,754	14,703	4,498	18,423	4,260	15,369
2. February . . .	3,869	11,806	5,073	16,124	3,275	11,633
3. March . . .	4,151	14,597	4,495	14,825	6,478	10,537
4. April . . .	4,646	12,954	3,895	11,974	4,699	7,202
5. May . . .	5,377	18,321	3,940	13,590	6,833	9,220
6. June . . .	3,453	11,149	3,950	14,446	4,172	4,846
7. July . . .	4,420	18,978	3,027	10,260	2,445	3,678
8. August . . .	3,267	11,458	2,639	9,400	9,113	13,452
9. September . . .	5,542	16,079	3,755	11,270	7,425	15,148
10. October . . .	3,771	11,853	6,416	18,825	5,792	22,070
11. November . . .	3,614	13,416	1,844	6,764	7,117	20,782
12. December . . .	5,498	19,270	4,121	15,185	5,991	22,111
TOTAL . . .	52,362	1,75,585	42,453	1,81,086	67,492	1,36,078

CHAPTER V

SOCIO-ECONOMIC CONDITIONS

As stated in the first chapter, the socio-economic conditions were studied from a sample of 119 families of brassware workers. Average size of the family works to 6.37 for the industry as a whole. As compared to this, the size is relatively higher in Engraving, Lacquering, Soldering and Guli making families. It may be noted that largest size of a family does not exceed ten members. Single member families, on the other hand, are negligible. The distribution of families by size as given in Table No. 1 shows that there is more or less an even spread between the size class 4 and 10, of which 8 member families represented the mode.

TABLE (5.1) : DISTRIBUTION OF FAMILIES BY SECTORS AND BY SIZE

Family size/ Sector	FAMILY										SIZE	
	One	Two	Thr- ee	Four	Five	Six	Seven	Eight	Nine	Ten	Total	% to total
1. Moulding	..	..	1	3	3	2	3	1	3	2	18	15.1
2. Engraving	..	2	1	3	3	2	3	3	2	8	27	22.7
3. Lacquering	..	..	1	..	..	..	..	2	1	..	4	3.4
4. Polishing	..	2	1	1	2	..	1	1	3	1	12	10.1
5. Guli making	..	..	..	1	1	1	1	2	1	..	7	5.9
6. Scraping	1	4	1	1	4	3	2	5	1	3	25	21.6
7. Sheet work.	1	1	1	2	2	4	2	1	1	..	15	12.6
8. Soldering	..	..	1	..	1	1	2	3	1	1	10	8.4
9. Kalai	..	..	1	..	..	..	..	..	..	..	1	0.8
ALL SECTORS	2	9	8	11	16	13	14	18	13	15	119	..
% TO TOTAL	1.7	7.6	6.7	9.2	13.4	10.9	11.8	15.1	10.9	12.7	100.00	100

5.2. It appears that the institution of joint family still holds a dominant influence. This is evident from the fact that a little less than one fourth of the total members do not form part of what can be called the natural family comprising, husband, wife, son and daughter. Children figured comparatively less in the polishing and lacquerware families in the sample. The distribution of members by relationship is given in Table No. 2.

TABLE (5.2) : DISTRIBUTION OF MEMBERS BY RELATIONSHIP

Relationship/Sector	Relationship with the craftsman					Total	%
	Self	Wife	Son	Daughter	Others		
Moulding	18	17	36	30	17	118	15.6
Engraving	27	22	52	49	39	189	25.1
Lacquering	4	4	5	2	13	28	3.7
Polishing	12	9	10	16	26	73	9.7
Guli making	7	7	11	14	8	47	6.2
Scraping	25	16	34	33	39	147	19.5
Sheet work	15	13	18	19	14	79	10.5
Soldering	10	9	20	17	15	71	9.4
Kalai	1	1	..	..	1	3	0.4
TOTAL	119	98	186	180	172	755	100.00
PERCENTAGE	15.7	13.0	24.6	24.0	22.7	100	..

5.3. On the whole, about 16% of the family members are infants and about 32% are children between the age 5-14 years; besides, about 43% are adults while old people above the age of 55 figure round about 8%. In other words half the total number of persons constitute children while the grown up people account for the other half. Of the latter again, six out of every seven constitute the potential labour force. The ratio of males to females is slightly higher than one. This pattern of sex composition is more or less maintained in all the age groups except of course in the group 5-14 where the percentage of girls is slightly higher. Among the adults, there are 81 women for every one hundred males. Table No. 3 gives the distribution of members by age and sex.

TABLE (5.3) : DISTRIBUTION OF MEMBERS BY AGE AND SEX

Age-group	Males	Females	Total	% to total
0-4	62	61	123	16.3
5-14	110	133	243	32.2
15-34	115	107	222	29.4
35-54	59	44	103	13.7
55-64	20	12	32	4.2
65 & above	21	11	32	4.2
TOTAL	387	368	755	100
PERCENTAGE	51.3	48.7	100	..

5.4. Surprisingly enough no individual from the sample families reported to be divorced, even though divorce is legalised among the Muslim Community for quite some time. Even separation was reported only in one case. It is quite likely that cases of separation might not have been truly reported because of the social stigma attached. However, speaking generally married life appears to be fairly stable in the workers families. Singles account for about 60% of the total; three fourth of these are infants and children. Of the remaining one-fourth, most fall in the marriageable age-group *i.e.* 15-34. Among the married, the percentage of those below the age of 15 years is negligible which means that child marriage is but an exception and poses no social problem. The distribution of members by age & marital status is given in the Table No. 4 below :-

TABLE (5.4) : DISTRIBUTION OF MEMBERS BY AGE AND MARITAL STATUS

Age-group	Single	Married	Widow	Separate	Total
0-4	123	..	..	..	123
5-14	241	2	..	..	243
15-34	84	133	4	1	222
35-54	2	88	13	..	103
55-64	2	21	9	..	32
65 & above	..	17	15	..	32
TOTAL	452	261	41	1	755
PERCENTAGE	59.9	34.6	5.4	0.1	100

5.6. Literates account for nearly 21% of the family members. The percentage of literates in males and females separately works out to 29% and 13% respectively. This shows that among females literacy is low as compared to males. In order to have a better idea of the extent of literacy and consequently the magnitude of the educational facilities required to be provided it would be pertinent to exclude the infants. This refinement no doubt improves the percentage of literacy a bit by raising it to 25% but does not basically alter the situation. This educational backwardness can be attributed to the weak financial position of the Craftsman which forces him to put children to work at an age when their rightful place is behind the desk in school. The institution of child labour works two ways ; it not only keeps the child illiterate but also exposes him for exploitation by the employers. Among illiterates 35% comprise children ; in their case the problem is not of making them literates but giving them proper education up to a certain standard. However, the more difficult problem is one of extending educational facilities to adults which constitute 65% of the total illiterates. Adult literacy programmes would be necessary to make the artisans socially conscious and better citizens knowing their rights and duties. Table No. 5. below shows the distribution of members by literacy, age-group and sex.

TABLE (5.5) : DISTRIBUTION OF MEMBERS BY AGE, SEX AND LITERACY

Literacy/age-group	Literate		Illiterate		Total literates	Total illiterates	All.
	Male	Female	Male	Female			
0-4 . . . . .	..	..	62	61	..	123	123
5-14	36	23	74	110	59	184	243
15-34	39	17	76	90	56	166	222
35-54	29	6	30	38	35	68	103
55-64	2	..	18	12	2	30	32
65 & above	6	2	15	9	8	24	32
TOTAL	112	48	275	320	160	592	755
PERCENTAGE	14.8	6.4	36.4	42.4	21.2	78.8	100.00
	70.00	30.00	46.2	53.8	100.00	100.00	..

5.6. Educated persons among the families surveyed are negligible. Of the 5% which are reported to have had some education, females account for one-fifth. Among the educated, level of education hardly exceeded middle standard for most of them. Similarly technical education by way of having any degree or diploma is not to be found among the craftsmen. A fairly significant number, however, are skilled in their field.

TABLE (5.6) : DISTRIBUTION OF EDUCATED MEMBERS BY AGE AND SEX

Educational status & Sex/ Age-group	Primary		Middle		Matric		College		Total Educated Male	Total Educated Female	All
	Ma.	Fe.	Ma.	Fe.	Ma.	Fe.	Ma.	Fe.			
1	2	3	4	5	6	7	8	9	10	11	12
0-4	..	..	..	..	..	..	..	..	..	..	..
5-14	11	2	1	1	..	..	..	..	12	3	15
15-34	5	3	3	2	1	..	1	..	10	5	15
35-54	5	..	1	..	1	..	..	..	7	..	7
55-64	..	..	..	..	..	..	..	..	..	..	..
65 & above	..	..	..	..	..	..	..	..	..	..	..
TOTAL	21	5	5	3	2	..	1	..	29	21.62	37
% TO GRAND TOTAL (Col/12)	56.76	13.51	13.51	8.11	5.41	..	2.70	..	78.38	100.00	100.00
PERCENTAGE TO SEX TOTAL (10 & 11)	72.41	62.50	17.24	37.50	6.90	..	3.45	..	100.00	100.00	..

5.7 The data reveal that self supporting members constitute only about 19% of the total, while another 11% are earning dependents whose earnings are not sufficient enough to support themselves. It will thus be seen that for every one self supporting person there are four to five other members whose burden the former has to shoulder. Distribution of members according to age and economic status is given in Table no. 7 below :—

TABLE (5.7) : DISTRIBUTION OF MEMBERS BY AGE AND ECONOMIC STATUS

Economic Status	Age	Self Supporting	Earning Dependent	Non-Earning	Total
0-4	1	122	123
5-14	..	1	21	221	243
15-34	..	76	40	106	222
35-54	..	53	11	39	103
55-64	..	10	5	17	32
65 & above	..	3	2	27	32
TOTAL	..	143	80	532	755
PERCENTAGE	..	18.9	10.6	70.5	100

5.8. The question on diseases from which the craftsmen and their family members suffered did not yield encouraging data perhaps due to ignorance as well as reluctance of the crafts to disclose this information. Qualitative appraisal, however, revealed that incidence of T.B., Anemia, Round worm, Infestations, Goitre, Malaria, Shooting muscular pains was fairly high. It is strongly believed that diseases like T.B. and Asthma are predominant among the brassware workers primarily due to the metal dust that they inhale in the course of their work e.g. scraping, polishing. The heat of the crude furnaces used in the Gulli making and Moulding processes has an equally bad effect

on the health of artisans in these two sectors. Likewise engravers strain their eyes in the course of their work. In any programme of integrated development suitable measures must need be taken against such diseases which are related to the particular conditions of work. Besides, the artisans also suffer like other people from general debility, mal-nutrition and unhygienic living and thus get vulnerable to diseases like anemia, malaria, etc.

MEDICAL FACILITIES :

5.9. There is a Labour Dispensary at Moradabad which does not have many facilities for the cure of these serious diseases. While it may be alright for minor diseases, there is neither the medical know-how nor the necessary equipment nor sufficient space for the patients to be admitted to the hospital. It is understood that the anti-malaria operations of the State Government are being expanded and it is hoped that it would be able to reduce the high rate of malaria. But the real solution lies in improving the living conditions of the workers at their present habitates and also by shifting them to a neat and open colony outside the city to the extent possible.

EMPLOYMENT STATUS :

5.10. The information on employment status was collected for all those persons, who are engaged in any gainful economic activity under the following classifications :

- (1) Employer,
- (2) Employee,
- (3) Self-employed,
- (4) Unpaid family worker.

This is given in Table No. 8 below :—

TABLE (5.8) : DISTRIBUTION OF EMPLOYED PERSONS BY OCCUPATION AND EMPLOYMENT STATUS

Occupation	EMPLOYMENT STATUS				Total
	Self Employed	Employer	Employee	Unpaid Family Worker	
Moulding	20	1	2	6	29
Engraving	39	..	14	1	54
Lacquering	2	..	3	2	7
Polishing	10	4	3	..	17
Guli making	12	5	6	1	24
Scraping	28	..	4	..	32
Sheet work	15	..	1	..	16
Soldering	8	2	6	4	20
Kalai	2	..	..	..	2
TOTAL	136	12	39	14	201
PERCENTAGE	67.6	6.0	19.4	7.0	100.0
OTHERS	11	1	8	2	22
ALL	147	13	47	16	223
PERCENTAGE	65.9	5.8	21.1	7.2	100.0

5.11. The data indicates that 90% of the employed members are engaged in the manufacture of brass artware. The remaining about 10% constitute labourers, teachers, brokers, carpenters, painters, shopkeepers, etc. Percentage distribution of the employed persons by employment status shows 65.9% persons as self-employed, 5.8% as employers, 21.1% as employees and 7.2% as unpaid family workers. For workers engaged in the brass artware industry, this distribution works out to 67.6% self-employed, 6.0% employers, 19.4% employees and 7.0% unpaid family workers.

EXPERIENCE :

5.12. The industry being very old the workers are well experienced in their profession. Here again, the respondents were not sure of the exact number of years they are in the trade. However, broadly speaking it was reported that 81.6% of the workers engaged in art brassware have an experience of more than 5 years and 25.3% have between 15-25 years, and 20.5% have more than 25 years of experience. On the other hand those having an experience of less than one year are insignificant. Table No. 9 below gives the distribution of employed persons by occupation and experience :—

TABLE (5.9) : DISTRIBUTION OF EMPLOYED PERSONS BY PERIOD OF EXPERIENCE AND OCCUPATION

Occupation	EXPERIENCE (YEARS)					Total
	0-5	6-10	11-15	16-25	26 & above	
Moulding	7	6	2	7	3	25
Engraving	12	12	9	9	11	53
Lacquering	1	..	1	2	1	5
Polishing	2	8	..	6	1	17
Gulli making	2	3	3	6	9	23
Scraping	3	10	4	9	6	32
Sheet work . . . . .	..	3	2	6	5	16
Soldering	7	3	1	3	3	17
Kalai	1	1	..	..	..	2
TOTAL	35	46	22	48	39	190
PERCENTAGE	18.4	24.2	11.6	25.3	20.5	100.0
OTHER OCCUPATIONS	10	3	2	2	5	22
ALL	45	49	24	50	44	212
PERCENTAGE	21.3	23.1	11.3	23.6	20.7	100.0

4 NOTE.—Information about experience of 11 employed persons is not available.

NATURE OF JOB :

5.13. Details about the nature of job, whether regular or casual, were also obtained in respect of each working member. Employment was defined as regular if a person expected to remain employed in the job for all the working days of the year. Employment was treated as casual where it was discontinuous and intermittent and the persons moved from job to job. Most of the workers in the industry reported to have jobs which are regular in nature. Those engaged on a casual basis form an insignificant proportion of the total *viz.* 2%, which are shared equally by Engraving and Scraping sectors.

INCOME :

5.14. Information about monthly earnings both from principal as well as other sources was collected. The data reveal that there was no accrual of income from secondary sources. It thus appears that the workers have to rely entirely upon the principal source of earnings. Average monthly earnings of the employed persons excluding the unpaid family workers, are given in the form of a frequency Table No. 11. It appears that most of the persons are drawing less than Rs. 200 per month. In fact 85% of them draw less than Rs. 100 per month and 32% draw even below Rs. 50 per month. On the other hand income over Rs. 200 seems rather a rare phenomenon accounting for a little over one per cent of the persons. Among the different occupations, Gulli making is the only one which has about 40% of the earners in the income bracket 150-199.

TABLE (5.10) : PERCENTAGE DISTRIBUTION OF EARNING MEMBERS BY OCCUPATION AND INCOME

Income group/ Sector occupation	Below 50	50-99	100-149	150-199	200 & above	All groups
Moulding . . .	26.1	60.8	..	8.7	4.4	100.00
Engraving . . .	33.9	62.3	3.8	..	..	100.00
Lacquering . . .	40.0	60.0	..	..	..	100.00
Polishing . . .	23.5	58.8	11.8	..	5.9	100.00
Gulli making . . .	43.4	4.4	8.7	39.1	4.4	100.00
Scraping . . .	18.8	71.9	9.3	..	..	100.00
Sheet work . . .	..	81.2	12.5	6.3	..	100.00
Soldering . . .	25.0	62.6	..	12.4	..	100.00
Other occupation . . .	80.0	20.0	..	..	..	100.00
ALL OCCUPATION	32.19	54.15	5.37	6.83	1.46	100.00

5.15. Before we take up analysis of the average monthly earnings of the households it would be of interest to have an idea of the number of employed persons in an average family. It will be seen from Table No. 12 that a little over half of the households have only one such member. Another one-fourth have two members. The households having more than three employed persons, on the other hand, appear to be insignificant. The fact that a majority of the households have more than one such number, again indicates the importance of joint family system. On an average a family has 1.9 employed persons as will be seen from Table No. 12. Average number of employed members is relatively higher in Gulli making Moulding and Engraving processes which works out to 3.3, 2.1 and 2.1 respectively. This average is lowest in sheet work with 1.3 members.

TABLE (5.11) : DISTRIBUTION OF HOUSEHOLDS BY SECTORS AND NUMBER OF EMPLOYED PERSONS

Sector/Persons	1	2	3	4	5	6	7	Total
Moulding	11	5	..	2	..	..	..	18
Engraving	11	7	5	2	2	..	..	27
Lacquering	2	1	1	..	..	..	..	4
Polishing	3	7	2	..	..	..	..	12
Guli making	2	1	1	..	2	..	1	7
Scraping	17	3	4	1	..	..	..	25
Sheet work	10	5	..	..	..	..	..	15
Soldering	5	2	1	1	1	..	..	10
Kalai . . . . .	..	1	..	..	..	..	..	1
TOTAL	61	32	14	6	5	..	1	119
PERCENTAGE	51	27	12	5	4	..	1	100

TABLE (5.12)

	No. of families	Total employment	Average Emp. persons per family
Moulding	18	25	1.4
Engraving	27	58	2.1
Lacquering	4	7	1.8
Polishing	12	23	1.9
Guli making	7	23	3.3
Scraping	25	44	1.8
Sheet work	15	20	1.3
Soldering	10	21	2.1
Kalai	1	2	2.0
TOTAL	119	223	1.9

5.16. Average family income for the industry works out to nearly Rs. 113 per month. Considering different sectors, Gulli making households appear to be better placed earning on an average Rs. 310 per month as will be seen from Table No. 13 below. As compared to this scraping families are the poorest, earning Rs. 84 on an average. Barring these two processes which are at the two ends, earnings of the families in other processes range round Rs. 100. Comparison of data on per capita income, shows that in Gulli making it is exceptionally high while among rest of the processes it ranges between Rs. 14 and Rs. 22. This apparently is very low. Measures to ameliorate the conditions of the craftsmen would necessitate raising their level of income.

TABLE (5.13)

Sector	Total Income Rs.	Income per household	Income per Capita
Moulding	1635	90.83	15.94
Engraving	2818	104.37	14.91
Lacquering	385	96.25	13.75
Polishing	1582	131.83	21.67
Gulli making	2172	310.29	46.21
Scraping	2109	84.36	14.35
Sheet work	1475	98.33	18.67
Soldering	1132	113.20	13.86
Kalai	45	45.00	15.00
TOTAL	13353	112.78	17.70

HOUSING CONDITIONS :

5.17. **Structure.** The study included an enquiry into the structure of the houses and other facilities available in it. The information collected shows that 60.6% of the families have pucca houses, 14.2% kucha, and 25.2% have houses of the mixed type. It may be pointed out that the majority of the families having pucca houses is no indication of the living conditions, wherein the artisans work and live. It was observed that the condition of the houses is very poor having no proper ventilation and the streets wherein they are located are dingy and narrow. Table No. 14 below gives the distribution of households by structure of dwellings and sectors.

TABLE (5.14) : DISTRIBUTION OF FAMILIES BY STRUCTURE OF DWELLING AND SECTORS

Sector	Pucca		Kucha		Mixed		Total No.
	No.	%	No.	%	No.	%	
Moulding	10	55.5	2	11.2	6	33.3	18
Engraving	16	59.2	6	22.2	5	18.6	27
Lacquering	2	50.0	..	..	2	50.0	4
Polishing	8	66.6	2	16.7	2	16.7	12
Gulli making	7	100.0	..	..	..	..	7
Scraping	12	48.0	5	20.0	8	32.0	25
Sheet work	11	73.5	..	..	4	26.5	15
Soldering	6	60.0	1	10.0	3	30.0	10
Kalai . . . . .	..	..	1	100.0	..	..	1
TOTAL	72	60.6	17	14.2	30	25.2	119

5.18. Ownership of the dwellings of the household surveyed was collected under three classes *viz.*, (i) owned by the craftsmen, (ii) rented and (iii) rent-free but unowned. It appears that the families availing the benefit of rent-free quarter are negligible. The families owning the premises they reside in account for about 49% and the tenant families for nearly 44%. It is thus clear that nearly half of the workers families own the houses. This fact will need a careful consideration if and when an industrial estate is established. Table No. 15 shows the distribution of families by tenure of dwellings.

TABLE (5.15) : DISTRIBUTION OF FAMILIES BY SECTOR AND TENURE OF THE DWELLINGS

Sector	Own		Rented		Rent-free (Unowned)		Total	
	No.	%	No.	%	No.	%	No.	%
Moulding	8	44.4	9	50.0	1	5.6	18	100
Engraving	18	66.6	7	27.0	2	7.4	27	100
Lacquering	2	50	2	50	..	..	4	100
Polishing	5	41.6	6	50.0	1	8.4	12	100
Gulji making	5	71.5	2	28.5	..	..	7	100
Scraping	12	48	12	48	1	4	25	100
Sheet work	3	20	12	80	..	..	15	100
Soldering	5	50	2	20	3	30	10	100
Kalai . . . . .	..	..	1	100	..	..	1	100
TOTAL	58	48.8	53	44.5	8	6.7	119	100

5.19. A sizeable proportion of the households have only one living room. The households having two living rooms are not un-common; such households account for a little less than 18% of the total. Those having over two rooms account for a small percentage; 5% have three rooms, 2.6% four rooms and the rest 1.7% have five rooms. No household appears to have more than five rooms. In terms of averages the number of living rooms per family works out to 1.4.

5.20. The above analysis gives only a rough picture of the accommodation available. A better understanding of the situation can be had by relating the number of living rooms with the size of a family. One member families, constituting 1.7% of the total, apparently pose no accommodation problem as such. The real difficulty rests with the remaining households constituting about 98% of the total having two or more members. Thirty-nine per cent of the families with membership ranging between 2 to 5 have one living room. The inadequacy of accommodation is still acute with the families having six or more members but only one living room; such cases amount to 56% of the total. Another 29% of such families have only two living rooms, among which three-fourth have 9 to 10 members. Table No. 16 gives distribution of households by size and number of living rooms.

TABLE (5.16) : DISTRIBUTION OF FAMILIES BY SIZE OF THE FAMILY AND THE NUMBER OF ROOMS POSSESSED

No. of rooms/ Size of family	One room	Two rooms	Three rooms	Four rooms	Five rooms	Total	%
1.	2 2.3	..	..	..	..	2	1.7
2.	9 10.0	..	..	..	..	9	9.7
3.	8 9.2	..	..	..	..	8	6.7
4.	11 12.7	..	..	..	..	11	9.2
5.	16 18.4	..	..	..	..	16	13.4
6.	12 13.8	1 4.8	..	..	..	13	10.9
7.	12 13.8	2 9.5	..	..	..	14	11.8
8.	15 17.2	2 9.5	1 16.7	..	..	18	15.1
9.	2 2.3	8 38.1	1 16.7	1 33.3	1 50.0	13	10.9
10.	.. ..	8 38.1	4 66.6	2 66.7	1 50.0	15	12.7
	87 (73.1) (100)	21 (17.6) (100)	6 (5.0) (100)	3 (2.6) (100)	2 (1.7) (100)	119 (100)	..

5.21. The data collected in regard to the living space shows that 56.9% of the families possess more than 200 sq. ft. living space. The average living space per family comes to 254.7 sq. ft. and the average space per member is about 40 sq. ft. It may be pointed out that in certain sectors of the industry no distinction is made between living space and space for working. It is mostly the case in processes like engraving, polishing, scraping, lacquering and kalai. One can visualise the condition of a house where more than one 'bhatti' is installed for moulding purposes. The smoke as well as the heat emitted from the bhatti's make it unsuitable for normal living particularly as the houses are not spacious. In many cases, the bed rooms, kitchen and the workshops are all in one which makes the situation still worse. Table 17 shows the distribution of families by sectors and living space.

TABLE (5.17) : DISTRIBUTION OF FAMILIES BY SECTOR AND LIVING SPACE (ROOMS 4 AND COVERED)

Sectors	Mol.	Eng.	Lacq.	Pol.	G.M.	Scp.	S.work	Sol.	Kalai	Total	%
Area in sq. ft.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	%
Below 50	..	..	2	..	3	1	..	..	..	6	5.0
50—99	1	1	2	..	..	4	3	..	..	11	9.1
100—149	8	2	..	1	1	3	4	2	1	22	18.2
150—199	1	1	..	2	..	4	1	3	..	12	10.8
200—249	1	4	..	4	..	5	2	1	..	17	14.6
250—499	6	9	..	4	..	6	4	4	..	33	27.3
500 & Over	1	10	..	1	3	2	1	..	..	18	15.0
TOTAL	18	27	4	12	7	25	15	10	..	119	100

5.22. The position in regard to the available sanitary facilities is something which needs immediate attention. Only 27.7% of the families have satisfactory water supplies, while 72.3% have no such facilities, in their premises. They have to depend upon the public wells and taps for their needs. Some of them, also purchase water from watermen who get it from outside. In regard to the electric facilities, only 10% have electricity, while the remaining 90% depend on oil lamps for lighting. Only 27.7% families have bath facilities. The flush system is not in existence and even the facility of drop system, which is obviously very unhygienic is possessed by 96.7% of the families. Table No. 18 shows the distribution of families by sector and facilities of water, electricity, bath and latrine.

TABLE (5.18) : DISTRIBUTION OF FAMILIES BY SECTOR AND FACILITIES OF WATER, ELECTRICITY, BATH AND LATRINE

Sector Facilities		Mol.	Eng.	Lacq.	Pol.	G.M.	Scp.	S.W.	Sol.	Kalai	Total	
		No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	%
Water	Yes	6	7	1	4	1	4	6	4	..	33	27.7
	No.	12	20	3	8	6	21	9	6	1	86	72.3
Electricity	Yes	3	2	..	4	..	..	3	..	..	12	10
	No.	15	25	4	8	7	25	12	10	1	107	90
Bath	Yes	4	5	..	3	1	7	4	3	..	27	22.7
	No.	14	22	4	9	6	18	11	7	1	92	77.3
Latrine	Yes	18	26	4	12	7	25	14	8	1	115	96.7
	No.	..	1	..	..	..	..	1	2	..	4	3.3

5.23. Of the total households surveyed, nearly 50% had some outstanding loans. A little less than 80% of the households under debt had loans below Rs. 500 and nearly 50% had between Rs. 150 and Rs. 500. Households with outstanding loans to the tune of Rs. 1,000 and over, accounted for a small percentage. The magnitude of loans though not very high constitutes a heavy burden on the craftsmen in view of their poor capacity. Considering different processes, Gulli making and Kalai appear to be the only processes which had no loans to report while Engraving and Scraping on the other hand together account for 59% of the households which had some debts to clear. The same two processes again account for 74% and 60% of the total households in their respective sectors. The important sources of credit available to the craftsmen are indigenous banks and friends and relatives. Both these sources together account for nearly two-third of the loans obtained from different sources. Table No. 19 below gives the distribution of families by sectors and amount of loan.

TABLE (5.19) : DISTRIBUTION OF FAMILIES BY SECTORS AND AMOUNT OF LOAN

Sectors/Loan	Below	100	150	250	500	1000 &	TOTAL
	100	149	249	499	999	over	
Moulding	2	1	2	4	1	1	11
Engraving	3	3	7	5	1	1	20
Lacquering	..	..	..	..	1	1	2
Polishing	..	1	1	..	..	..	2
Gulli making	..	..	..	..	..	..	..
Scraping	2	1	3	4	4	1	15
Sheet work	..	1	..	..	1	..	2
Soldering	3	1	2	1	..	..	7
Kalai	..	..	..	..	..	..	..
TOTAL	10	8	15	14	8	4	59
PERCENTAGE	16.9	13.6	25.4	23.7	13.6	6.8	100

5.24. The rate of interest charged on the loans by the various agencies varies from 5% to 25%. Seriousness of the situation can be understood better, when we note that in 65.1% cases, the rate of interest is 25% p.a. The highest rate of interest is charged by the indigenous bankers. The need to replace this institution becomes obvious. The rate of interest charged by the co-operative banks is 5% to 10%, but the conditions laid down by these bodies makes it difficult for the workers to make use of them. In the case of the friends and relatives, no interest is reported to be charged. Sometimes, employers charge no rate of interest, but the workers who are indebted to them are bound to work, for them, till the loan is paid back.

5.25. In most of the cases marriage and illness have been the driving forces behind the loans. Nearly 21% of the loans raised appear to be due to illness in the artisans family. Next important cause for obtaining loans is Marriage, accounting for about 19%. Loans due to social ceremonies are not sufficiently reflected in the data but qualitative assessment reveals that major part of the loans under "other purposes" are in fact for such ceremonies. This is obviously due to the harmful social customs and the unnecessary importance craftsmen attach to social prestige.

5.26. Only 26 families gave replies as to increase or decrease of loan compared to last year. The movement of loans from last year to current year, shows that in 30% cases, there has been an increase in the amount of loans and in 70% cases, the loans have registered a fall. Cases of decrease are predominant in the lower ranges of loan *i.e.*, below the amount of Rs. 100. The decrease in majority of the cases can be attributed to the boom in the artware industry during the last year due to the expanded market for these products in U.S.A.

5.27. There is a peculiar institution of indebtedness, especially among engravers and polishers called 'Baki' system. This system renders the craftsman virtually a slave of the money-lender, till he is able to clear off the debt. The word baki implies that if the debtor is not able to pay off the loan fully, he has to work for the money-lender for the outstanding balance. The worker can free himself only in case somebody else pays off his debts. If the institutional sources of finance are better organised, the artisan may be lifted out of this harmful system of advancing loans.

CHAPTER VI

CONCLUSIONS AND RECOMMENDATIONS

Data presented in the foregoing chapters reflect the size and structure of the artware industry as it existed in the period of reference *i.e.*, 1959. All the same, the future potential is perhaps much bigger than these figures indicate as the frontier of the artware sector can be widened so as to include many of the utility wares that remain inartistic today. This movement entails mainly an aesthetic transformation of the existing products in their shape and form, rather than creation of an entirely new market for new and ornate articles. In fact, the borderline is at times too thin to warrant the assumption of watertight compartments, artistic and inartistic. Except for engraving and lacquering, the processes of manufacture are similar for artistic as well as other goods. In considering the requirements of raw materials and other problems of the industry, therefore, one needs to keep a wider horizon before oneself. Broadly speaking, the brassware industry as a whole is reported to be nearly four times the artistic sector ; this makes the dimensions of the problems of raw materials, designing and the like as much bigger.

6.2. The possibility of developing the industry in a short while is further reinforced by the traditional skill of the artisans as well as by the volume and variety of export trade built through years. It is because of this that the brassware industry of Moradabad is often cited as an instance of how handicrafts could be further developed with the minimum of effort through concentrated and co-ordinated efforts. It appears from the present study that the attempt at an integrated development of the industry has to proceed, in the main, through provision of raw materials, improvements in the technical efficiency of various processes and expert guidance in design development ; emphasis on maintenance of quality standards of workmanship as well as packing, and amelioration of the conditions of the artisans follow suit. With a view to ensure a co-ordinated approach, the agencies recommended below for action in different directions may best be located in the same premises at Moradabad.

6.3. Supply of raw materials such as copper, zinc and the polishing materials needs to be organized so as to ensure adequate quantities at reasonable prices. The special export promotion scheme of the Handicrafts Board caters to the needs of producers for the foreign market ; but producers for the domestic market remain unattended. Perhaps the Indian Handicrafts Development Corporation can open a raw material depot at Moradabad and release the materials to the actual users from time to time at cost prices. This will help a long way in making the artwares economical, thus widening the market.

6.4. A common facility centre equipped with improved type of machines *viz.*, sheet Metal spinning machine, Pedal operated sheet cutting machine, scraping and turning lathes, electrically operated degreasing, Lacquering and lacquer drying equipment and wood wool machine plant should be set up. The working of these machines should be demonstrated for the benefit of craftsmen. Training of the craftsman in the new techniques and appliances will follow as a concomitant to technological improvements. Separate arrangements need also to be made for the craftsman to use such machines on hire-purchase basis and for provision of electricity at cheap rates.

6.5. New designs suiting the method of production should be evolved and released to the craftsmen and their associations at nominal charges. Design advice needs to be specially extended to the interested persons and parties as quite a few of them look forward to the same. Demonstration of designs would be most useful and arrangements should be made in this behalf. It

may be useful to open a design extension centre at Moradabad under some eminent designer who is given opportunities to study foreign tastes and trends in designing. This will help arouse some art-consciousness amongst the producers of even ordinary wares.

6.6. Quality marking of the artwares should be taken up forthwith. This needs early attention mainly for two reasons : firstly to ensure that export of shoddy and defective goods does not limit our market abroad and endanger foreign exchange earnings ; secondly to guarantee that the composition of brass scrap which is consumed in large quantities these days is of the requisite specifications. Initially the scheme of quality marking can start on a voluntary basis but should be made compulsory in due course. To encourage the manufacturers to join the scheme, certain incentives can be given in the marketing field.

6.7. Packing of consignments for despatch particularly to foreign markets is another aspect which warrants special attention. Difficulties in this field relate both to packaging as well as packing materials. To overcome the former, demonstration of packing techniques should be arranged and training facilities extended by starting a training centre like the one in Mysore. The second difficulty is due to the shortages of good packing materials and the resultant high prices of corrugated card board and wood wool because of the import restrictions. A plant for their manufacture may be installed ; but till such a plant is commissioned into services, measures may be taken to relax the import restrictions on these items.

6.8. To encourage healthy conventions in the conduct of business, the Brass Artware Manufacturers' Association should be given official recognition. Members of the trade need to be encouraged to subscribe to the Association. This Association should lay down prices for the various types of engraved and enamelled wares and ensure that the members do not quote prices below the minimum ceiling fixed. It can exert considerable influence in stopping such practices as interception of the mails, and obtaining inside information of their competitors through such sources as the banks and the employees of the firms, etc.

6.9. There is little publicity for artbrassware abroad, excepting through official channels. The Art Brassware Manufacturers, Association should be enabled to launch an advertising-cum-exhibition campaign abroad on a collective basis. It is estimated that, if each member of the Association contributes one per cent of the total sales, an amount of the order of Rs. 1 lakh would be available to the Association for the purpose. The All India Handicrafts Board may subsidize the programme by granting a suitable subsidy. Officers of the Board may be deputed to these exhibitions to ensure that the interests of the individual members are looked after impartially.

6.10. Most of the exporters are not conversant with the modern business. It is, therefore, recommended that a short term course in business management and export-import trade be organised at Moradabad with the help of Universities which impart training in Business Management. It is further recommended that an Export Information Centre, equipped with commercial directories, magazines, and periodicals devoted to the giftware trade and export business, be opened at Moradabad for ready and continuous reference of the trade.

6.11. It is recommended that a daily Q.T.S. service of the railways be introduced between Moradabad and Calcutta to avoid congestion at Moradabad and enable the exporters to effect timely deliveries.

6.12. The structure of production as such needs to be reorganised so as to lessen the domination of the dealer financier. This is expected to create

conditions conducive to the growth of the industry on sound lines and also ensure a better deal to the Craftsman. As a first step, associations of craftsmen should be formed on co-operative lines which can take up initially the supply of raw materials, provision of credit and marketing activities. Their activities can be extended further in the course of time to include production programmes etc.

6.13. Credit facilities on easy instalments should be extended to the Craftsman, to facilitate buying of raw materials and marketing of finished goods on his own. This would go a long way in eliminating the dealer-financier and middleman who dominate the industry. Availability of easy and cheap credit would also enable the craftsman to strengthen the capital base. The State Government as well as the local banking institutions should relax conditions of issue of credit to the Craftsman and their association. The Liberalised Loan Scheme of the State Bank of India for Artistic Metalwares is a good start in this direction. A co-operative bank can also be set up specifically for this industry for granting cheap credit.

6.14. The survey has brought out very clearly the unhealthy and economically unsound condition in which the workers have to live in spite of the hard work they put in to produce beautiful pieces of art. Their position with regard to indebtedness, diseases and general conditions of work is indeed touching and calls for immediate action on the part of the authorities.

6.15. It is suggested that an artware workers' colony be constructed in the city of Moradabad on the model of Handloom Weavers' Colony at Varanasi. In the colony the workers who are willing to shift may be given living quarters-cum-worksheds on a hire or hire-purchase system. The colony should be constructed near the city, so that they are not completely out of touch with the markets. Some exporters may also be persuaded to have their offices in the colony, so as to save the time and the energy of the workers. The colony should have all the necessary facilities of water, electricity, and other sanitary arrangements.

6.16. There is an urgent need for starting social welfare project for the welfare of the workers' families as the existing Labour Welfare Centre proves to be obviously insufficient. It is, therefore, recommended that a few more centres may be started and located where the craftsmen are centred. The centres should have the following facilities :

- (a) Each centre should have a dispensary attached to it and be provided with adequate supplies of medicines and necessary arrangements for the common diseases. The cases of serious nature should be sent to the civil hospital which should be well equipped with to deal with the diseases common to the industry.
- (b) Every centre should also have a maternity and child welfare section attached to it.
- (c) The facilities for training in sewing, embroidery and hand-printing should exist in each centre, so that ladies can be taught in these crafts and thus enabling them to add to their families' incomes.
- (d) The proportion of illiteracy among male and female population is alarming and in order to improve the situation, adult-education programme must be started by each of the centres.
- (e) Documentary films should be shown to them with the help of Central and State's publicity offices.

6.17. Provisions of the factory law in respect of child labour need to be rigorously enforced in the industry. Young children should rather be encouraged to get educated at the welfare centres and the schools run by the local bodies.