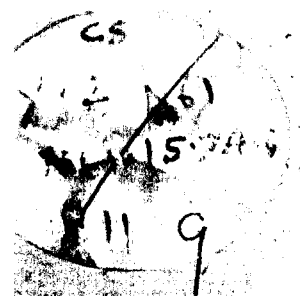


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CENSUS OF INDIA 1961

VOLUME XV

UTTAR PRADESH

PART VII A

HANDICRAFTS SURVEY MONOGRAPH NO. 4

General Editor
P. P. BHATNAGAR
of the Indian Administrative Service
Superintendent of Census Operations, Uttar Pradesh

BRASS AND COPPERWARE INDUSTRY
IN
UTTAR PRADESH
with special reference to
VARANASI

BY
R. C. SHARMA
of the Uttar Pradesh Civil Service
Deputy Superintendent of Census Operations

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*Superintendent of Census Operations,
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BRASS AND COPPERWARE INDUSTRY

in

UTTAR PRADESH

with special reference to

VARANASI



CONTENTS

Foreword	i
Preface	v
Acknowledgment	vi
SECTION I	Page
BRASS AND COPPERWARE INDUSTRY IN UTTAR PRADESH	1-13
SECTION II	
BRASS AND COPPERWARE INDUSTRY AT VARANASI	15-52
<i>Chapter</i>	
I. Introduction	.. 15
II. Labour	.. 17
III. Raw Materials	.. 22
IV. Tools and Implements	.. 25
V. Articles and their Forms and Designs	.. 27
VI. Technique of Production	.. 31
VII. Cost of Production	.. 37
VIII. Marketing	.. 39
IX. Conclusion	.. 41
PHOTOGRAPHS AND DIAGRAMS	between pages 42-43
<i>Appendix</i>	
I. Tables	.. 43
II. List of Units Surveyed	.. 47
III. Village Schedule of Industries and Crafts	.. 51

I. MAPS

1. Map of Uttar Pradesh showing workers engaged in manufacture of brass and bell-metal products .. Facing page 1
2. Notional Map showing location of brass and copperware units at Varanasi .. Facing page 15

II. PHOTOGRAPHS AND SKETCHES

1. Some tools used in manufacture of brass and copperware
2. Some more tools used in manufacture of brass and copperware
3. Sheet metal-work tools
4. Some tools used in repousse' work
5. Tools used in smoothening and polishing artware
6. Testing with templates
7. Base of the mould, locally called *dhibri*
8. Inner core (*bhitalla*), with the cap of clay fixed on it
9. Outer shell, locally called *upalla*
10. *Para*, consisting of the inner core and the outer shell
11. *Salnga*, a rough lathe used for smoothening the outer surface of the inner core of the mould
12. Inner core of the mould being smoothened on the *salnga*
13. Mould on which the crucible is prepared
14. U-shaped crucible used in *para* casting
15. Melting of metals
16. Moulding of German silver wares
17. Soldering of various moulded parts of wares
18. Craftsman engaged in filing a moulded brass *lota*
19. Craftsman engaged in scraping a moulded brass *lota*
20. Buff polishing of *lota*
21. Some processes of beaten metal work
22. Round copper plate being hammered for making a depression therein
23. Craftsman engaged in tracing the design on to the surface of a copper plaque
24. Craftsman elaborating the design with a blunt-nosed chisel
25. Process of chasing
26. Craftsman engaged in doing repousse' work from the back
27. Craftsman engaged in the process of chasing
28. Craftsman smoothening a plaque
29. Some engraving tools and finished products
30. *Lotas* of *surti* design
31. Champa *gagra*
32. Benarsi *gagra*
33. Mirzapuri *gagra*
34. Another Mirzapuri *gagra*
35. Brass *handa*
36. *Kansa batua*
37. Brass bucket
38. Copper jug
39. Nepali *karva*
40. Set of *gillet lota* and tumblers
41. Hammered wash basin of brass
42. Set of electroplated brass *dongas*

43. Tortoise-shaped electroplated *donga*
44. Set of electroplated brass tiffin carriers
45. Copper *safri lota*
46. Copper *kalash*
47. Brass salvers
48. Jointless artware bowl of copper
49. Copper plaque with artistic repousse' work
50. Copper repousse' plaque
51. Set of copper wall decoration plaques
52. Copper image of Natraja
53. Brass salvers with repousse' work
54. Perforated brass *gamla*-shaped chandelier
55. Perforated copper *lota*-shaped chandelier
56. Perforated brass *lota*-shaped chandelier
57. Perforated copper coconut-shaped chandelier
58. Perforated brass fish-shaped chandelier
59. Perforated brass waste paper basket
60. An artistic flower *gamla* with stand
61. Small engraved bowls
62. Set of engraved ash trays
63. Set of engraved flower vases of moulded brass
64. *Pandan* of *siah kalam* work
65. Flower vase of *siah kalam* work

III. DIAGRAMS

between pages 2-3

1. Percentage of male and female workers in brass and copperware industry
2. Percentage of workers in brass and bell-metal products in rural and urban areas
3. Distribution of workers in brass and bell-metal products in rural urban areas by household and non-household industry

between pages 4-5

4. Percentage of workers in brass and bell-metal products by household and non-household industry
5. Workers by caste in brass and copperware industry

FOREWORD

One of the first steps to be taken in the First Five Year Plan was the establishment of six Boards for the promotion of handicrafts, village and small industries : (1) The Khadi and Village Industries Board ; (2) The All-India Handicrafts Board ; (3) The All-India Handloom Board ; (4) The Central Silk Board ; (5) The Coir Board ; and (6) The Small Industries Board.

The rapid expansion of the activities of these Boards which concentrated not only on production and techniques, but also on organisation, extension, credit, marketing, and export, consolidated and enlarged the position that the household industries sector had so long enjoyed in the nation's economic life. It was this fact that forced itself upon the preparations for the 1961 Census and demanded that household industry should be separately investigated for a proper accounting of the nation's manpower, resources and its specific contribution to the national income. The 1961 Census therefore asked a special series of questions on household industry, input of family and hired labour, and the periods over which household industry is conducted. It was felt, however, that an enumeration of the total number of establishments and their industrial classification would be incomplete without a proper description of what they produce and how they produce. It was important to make an assessment of the limits of rigidity within which traditional skill operates. This could be obtained by studying the caste, occupational, social and economic stratifications, the limitations of credit and marketing facilities, the dominance of custom over contract, the persistence of traditional tools and design forms, the physical limitations of transport, communication and mobility, the inability to adopt new lines or adapt to changing circumstances. It was important also to make an assessment of the limits of flexibility that traditional skill is capable of, because the transformation of traditional skills to modern skills is easier said than done and a thorough study may well reveal that it is perhaps cheaper from the social point of view to develop industrial skills from scratch than to try to graft traditional skill on alien soil. A rather tragic case of failure to make what would on the face of it seem a minor adjustment cast its heavy shadow on the nation when it was discovered that goldsmiths used to working on 22-carat gold all their lives felt sadly helpless when asked to work on 14-carat, so narrow and unadaptable were the limits of their skill and proficiency and so rudimentary the tools and equipment with which they and their forefathers had worked. This fiscal accident revealed that tools are even more important than skills.

An early opportunity was therefore taken in February 1960 to suggest to State Census Superintendents, that the Census provided a unique opportunity for conducting and documenting a survey of this kind. As such a survey was quite outside the usual terms of reference of Census work it was thought prudent cautiously to feel one's way with the thin end of the wedge of what would, it was hoped, prove to be an exciting pursuit. It was therefore considered the wiser course

to wait until the State Census Officers felt so interested that they would no longer take the inquiry as an imposition but rather want to do it on their own and ask for the necessary staff and equipment. This office, too, in its turn, could make use of the interval to organise and elaborate the design of inquiry in order to feed the appetite that work in progress would serve to whet. Because it was a labour of love, sought to be unobtrusively thrust on one's colleagues and because the inquiry itself was so vast that normally it would demand in any country as big a set-up, if separately established, as the Census organisation itself and that over a much longer period, and because it was almost a pioneer venture, nothing like it having been undertaken since the 1880's, it was decided to move towards a build-up by stages, to let the inquiry unfold itself only as fast as my colleagues chose to ask for more.

Thus, in the first circular of 18 February 1960, it was suggested that the inquiry might be conducted through the agency of the Development Department, the State Director of Industries, the Director of Tribal Welfare the Registrar of Cooperative Societies, and other organisations concerned with the promotion of household industry. A draft questionnaire containing 30 questions in three parts was recommended for canvassing. It was suggested that information on this questionnaire, village by village and area by area, might either be obtained through the regular departmental channels of the State Government, or through the newly set up Census organisation, or through the hierarchy of the newly-created Panchayats. Stress was laid on the need of photographic documentation and illustration of designs, shapes and forms not only by photographs but with the help of line drawings or sketches together with a full description of the materials used.

Almost the whole of 1960 and the first half of 1961 were spent in organising and taking the census count, although several States even during this period had not allowed the grass to grow under their feet but made exploratory studies and decided in their minds how the inquiry should be organised. A series of regional conferences held in Trivandrum, Darjeeling and Srinagar in May and June, 1961 revealed much enthusiasm among State Superintendents to proceed with the survey, but the need of separate staff and equipment was felt at the same time as the realization dawned that this was much too serious an inquiry to be treated casually and left to be achieved through the usual administrative channels and State Census Superintendents proceeded to augment their staff with qualified research and investigating officers, technical persons, photographers, artists, draughtsmen and other trained personnel.

This was followed by rapid progress in coordination between the Central and State Census offices in the matter of exchange and processing of information, documentation and investigation, of assisting each other with trained investigators and in editing and finalizing drafts, layouts, presentations.

Mention has been made of a questionnaire in three parts and thirty questions. The idea was to make a beginning with empirical, analytical studies based on a structured questionnaire which would replace general descriptive accounts that had obtained so far. The primary aim was to obtain a picture as much of the artisan himself as of his craft, to obtain a perspective of the artisan and his craft in his social and economic setting, the extent to which tradition bound him and the winds of change ruffled him, the extent of his mobility and immobility, the conditions of market, credit, new contacts and designs in which he operated, the frame of new as well as traditional producer-customer relationships in which he still worked, and how far he was ready to pierce his own caste-tribe socio-economic cocoon and make a break through to new opportunities promised by the Five Year Plans. The aim was to hold up the mirror to hereditary skills struggling with the dialectics of tradition and change.

Thus the first part of the questionnaire, purporting to be a village schedule, sought to take account of the size and population of the village, its remoteness from or proximity to centres of trade and commerce, in short, the degree of isolation in which the artisan worked, and the relative strengths of various communities in the village which would afford clues to social interdependence and the prevalence of the *jajmani* system. The second part was devoted to artisan communities in the village : the several castes of artisans, the number of families in each, the total number of workers, males and females, the extent of cooperative activity among them, the extent of dependence upon employers and of wage or contract labour. There were questions on the raw materials used, the means of their procurement, the possible extent of dependence on others for raw materials, the extent of the material that artisans can handle within the limits of their skill. There were other questions on the exchange and flow of designs, the use of colours, the ancientness of the craft and legends associated, the colonization of the craftsman, on patrons and customers and on social and economic contract with the world inside and outside the village. There were specific questions on the workshop itself and particularly the tools and the source of supply of these tools, because it was felt that tools decide everything and are the surest index of inertness or flexibility. Separate blocks of questions were designed to bring out the ramifications of artisan castes throughout the country and the ways they sustained themselves, the type of clientele they catered for, the extent to which they operated on money or barter or service, how specialized their craft was, how wide the market, how dependent they were on their socially preordained clientele and how restricted the latter was by the seemingly unalterable laws of social custom ; the extent to which they could operate in the open market, the range of their wares and the sizes to which these were ordinarily restricted either by the limits of their own skill or the length of their customers' pursestrings. Inquiries were to be made about the operation of middlemen and of cooperative societies, the people who gave new designs and demanded new products. Finally the several stages of production of the articles themselves were to be fully described including the final and finishing stage and

a list of very skilled craftsmen of each community was to be furnished. The third part was devoted specially to tribal communities and designed to find out how self-sufficient or dependent they were on the production and supply of manufactured goods, the extent to which they produced themselves or depended on others, their contacts with other communities and the specific forms of production and commerce through which these contacts were maintained.

Particular emphasis was laid on the need of obtaining as full an account as possible of unique regional design differentiations as they reflect not only the very culture patterns of the country but the persistent inventive faculties of the craftsmen. The importance was emphasised of giving full attention to articles of domestic use as it is in their shapes, designs and forms that the culture patterns and traditional skills persist most tenaciously.

Simultaneously with the investigation of specific crafts, State Superintendents proceeded to compile a comprehensive list of all types of handicrafts obtaining in their State. As for the specific Crafts to be investigated several tables were devised from the structured questionnaire in order to guide investigators toward pointed observation and analysis, to enable them to write, not just general descriptions, but with their eye on the object and on facts.

Investigations conducted between September 1961 and May 1962, including a study group of all States and the Social Studies Division in December 1961 at Delhi, stimulated many of the States into going in for a much enlarged schedule. The revised village schedule itself, the counterpart of the first part of the February 1960 schedule, contained 19 large sections containing elaborate and probing questions. The Family Schedule for practising artisan families similarly contained 19 main questions each subdivided into many questions. The Family Schedule for non-practising artisan families contained 21 questions. There were schedules for the study of cooperative societies, of production-cum-training centres, and of consumer's preference. This enlarged schedule of investigation, in the formulation of which the States themselves actively assisted, was greatly welcomed. The surveys that will appear in this series will therefore consist of two main types : (a) those based on the original short schedule and (b) those based on the much enlarged schedule. In some cases Census Superintendents felt enthused enough to scrap the work based on the original short schedule and do it over again on the enlarged schedule. In the meantime much experience was gained on the analysis of facts and figures to clothe each observation with plenty of authentic information so that the reader could make his own judgement instead of being expected to see all the time through another pair of eyes.

This programme of survey of handicrafts and household industries has been fortified by several ancillary surveys, each one of which would deserve major attention. Along with the survey a compilation has been made of all handicraft centres in each State and an inventory prepared of skilled craftsmen. Photographic and other documentation has been built up to constitute what may now be regarded as the most considerable repository in the country. Elaborate and

accurate maps of craft centres in taluks, tehsils and districts are either ready or under preparation. A full census of all fairs and festivals, weekly hats and markets, throughout India, has been taken and is being published for the first time. Andhra Pradesh has embarked upon a project of chronicling the social and religious antiquity and uniqueness of every fair and festival. A separate volume will be devoted to each district which promises to be of the utmost value to sociologists and orientalist. A full and complete

New Delhi
July 30, 1964.

inventory, replete with sketches and measurements of every object, has been prepared of exhibits in museums of tribal crafts in India. There has been a fairly satisfactory survey of houses and buildings, indigenous architectural designs and use of local buildings material of the whole country. All this has been entirely a labour of love, patiently organised and executed under great strain and in disregard of health and comfort, for which I take this opportunity of expressing my appreciation and grateful thanks to my colleagues.

ASOK MITRA
Registrar General, India.

PREFACE

At the 1961 Census, a detailed study of household industries and industrial establishments was undertaken. Special questions on household industry and working establishments were introduced in the Household Schedule and the Houselist with a view to obtaining a sort of frame for all kinds of industries in the country. This information was further supplemented by the detailed survey of a few handicrafts. For Uttar Pradesh the following handicrafts were selected :—

- (i) Cotton Textiles
- (ii) Silk Textiles
- (iii) Pottery
- (iv) Woollen Carpets and Blankets
- (v) Basketry
- (vi) Leather Footwear
- (vii) Brass and Copperware

2. This survey was conducted in two parts. One was a General Survey carried out in every village, and the other was a Special Survey undertaken at the following selected places noted for these handicrafts :—

- (i) Cotton Textiles at Maunath Bhanjan, District Azamgarh
- (ii) Silk Textiles at Mubarakpur, District Azamgarh
- (iii) Pottery at Khurja, District Bulandshahr, and Chunar, District Mirzapur
- (iv) Woollen Carpets at Shahjahanpur and Woollen Blankets at Muzaffarnagar
- (v) Leather Footwear at Kanpur
- (vi) Basketry at Allahabad
- (vii) Brass and Copperware at Varanasi

3. The General Survey was conducted by the Planning staff, viz., Block Development Officers, Assistant Development Officers (Industries), Assistant Officers (Panchayats), Panchayat Inspectors, Village Level Workers and Panchayat Secretaries to whom training was imparted by the regional Deputy Superintendents. A draft Village Schedule

for collecting the desired information had been circulated by the Registrar General, India in February, 1960. Its printed copies in Hindi together with instructions were supplied to districts by the middle of 1961. Regional Deputy Superintendents remained in close touch with the work and undertook the scrutiny of filled-up Schedules. The information contained in the Schedules was processed and analysed in the Social Studies Unit at Lucknow, for being utilised in the writing of monographs.

4. Investigators were appointed for the Special Survey. The Village Schedule was adopted with necessary modifications. It was decided to fill up one Schedule for every establishment except where it was impracticable on account of the large number of establishments. In such cases it was thought sufficient to conduct the Survey on Stratified Random Sampling basis, covering 150-250 randomly selected units. Samples were drawn from the Houselist after correcting it through an actual count in *mohallas*.

5. This volume has two Sections, viz., Brass and Copperware Industry in Uttar Pradesh and Brass and Copperware Industry at Varanasi. Sri S. N. Kulkarni, investigator collected the data in 1961-62 by filling up Schedules in respect of 25 production units engaged mainly in the production of artware and 84 units engaged in the manufacture of domestic utensils and religious wares. Shri R. C. Sharma, Deputy Census Superintendent, of the Uttar Pradesh Civil Service, personally visited Varanasi for acquiring first hand knowledge of the handicraft. He is responsible for supervising the investigation, analysing the data and drafting the monograph. Dr. B. K. Roy Burman, Officer on Special Duty, Handicrafts and Social Studies Unit, in the office of Registrar General, India offered some valuable suggestions which have been incorporated in the monograph.

6. Opinions expressed and conclusions reached by the author of this monograph are based on the results of the investigation. They are his own and do not reflect the views of Government in any way.

Lucknow:

The 27th May, 1964.

P. P. Bhatnagar
Superintendent of Census Operations,
Uttar Pradesh.

ACKNOWLEDGMENT

This monograph is based mainly on the material and data collected at the spot. In addition, the following publications were consulted :—

- (i) *Indian Arts*, 1884 by G. C. M. Birdwood ;
- (ii) *A Monograph on the Brass and the Copper Wares of the N. W. Provinces & Oudh*, 1894 by G. R. Dampier ;
- (iii) *Report on an Enquiry into Labour Conditions in the Brassware Industry of Moradabad*, 1945 by R. D. Pant ;
- (iv) *Report on the Survey of the Brassware Industry at Moradabad*, 1960 by All India Handicrafts Board, Delhi ;
- (v) *Industry Outlook Reports*, 1960 by Director of Industries, Uttar Pradesh.

My indebtedness to the above works is gratefully acknowledged.

I am grateful to Sarvashri Lal Krishan Tabulation

Officer and Lakhan Singh Statistical Assistant for their valuable suggestions, to Shri G. T. Keswani Statistical Assistant for the hard work put in by him at various stages, to Shri Hari Mohan Singh U. D. C. for neatly typing out the monograph and to Shri Jagdish Prakash proof-reader for his good work at the proof-reading and printing stages.

I have to thank Mrs. Ruth Reeves, Honorary Adviser (Handicrafts and Social Studies) in the office of Registrar General, India and the Director, Central Design Centre, Lucknow for the photographs supplied by them and Dr. B. K. Roy Burman, Officer on Special Duty (Handicrafts and Social Studies) for his valuable suggestions in drafting the monograph.

Lastly, I express my deep gratitude to Shri P. P. Bhatnagar, Superintendent of Census Operations, for his valuable guidance and constant encouragement without which this assignment could hardly have been completed.

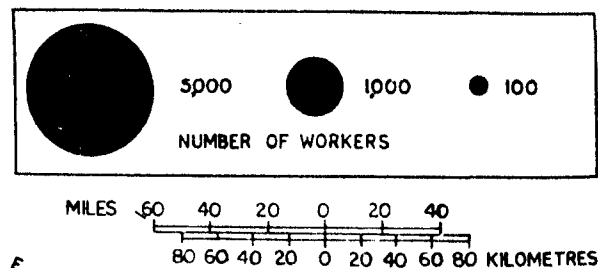
R. C. SHARMA

SECTION I

BRASS AND COPPERWARE INDUSTRY in UTTAR PRADESH

UTTAR PRADESH

WORKERS ENGAGED IN BRASS AND BELL-METAL PRODUCTS



The brass and copperwares serve the positive needs of our life. Besides this, *pūja* articles and statues of Indian gods and goddesses made of brass and copper are also utilised for religious purposes. The art wares cater to the aesthetic taste of man. These are also an expression of the creative urge and the personality of the craftsman. This handicraft has a place of unique importance because it emphatically depicts both the utilitarian and the aesthetic aspects of the articles produced. It also plays an important role in the national economy because it provides employment to some workers, adds to the national income and is a source of earning foreign exchange.

The general survey of brass and copperware industry in the State was conducted by the Census Organisation in the years 1961-62, mainly through the agency of the Planning Department. The Village Craft Schedule received from the office of the Registrar General of India was translated into Hindi and supplied to the districts. These Schedules were filled in by the Village Level Workers or Panchayat Secretaries in respect of the villages within their jurisdictions

where this craft was practised and sent to the Regional Deputy Superintendents of Census Operations through the Block Development Officers or District Planning Officers. Units producing brass and copperware in urban areas could not be covered because they did not fall within the jurisdiction of the agency which conducted the survey. In addition to this general survey in the rural area of the State, an intensive survey of the brass and copperware industry at Varanasi was conducted by the Census Organisation through its own agency.

WORKERS ENGAGED IN THE CRAFT

According to the filled-in Schedules received from the districts, brass and copperwares in the rural area were manufactured in 112 villages of 31 districts. Only 1,111 families with 3,018 workers (2,433 males and 585 females) were found engaged in it as a household industry. The usual production unit consists of members of the same household. A few bigger units casually employ other persons too, either on daily wages or on piece-rate wages or on a contract basis. Thus the manufacture of brass and copperwares is practised on a very small scale—just like an ordinary handicraft and not like a modernized industry. In Government schemes, too, it has been treated as a craft and not as an industry.

The following statement based on the information contained in the Schedules shows the number of villages, families and workers found engaged in this craft in various districts :—

District	Total Number of Villages	Total Number of Families	Population of Workers		
			Persons	Male	Female
1. Uttarkashi	2	2	4	3	1
2. Chamoli	5	91	303	217	86
3. Pithoragarh	18	141	229	153	76
4. Tehri Garhwal	2	2	3	2	1
5. Garhwal	7	27	313	180	133
6. Almora	25	289	381	309	72
7. Bareilly	1	1	2	2	..
8. Shahjahanpur	2	25	27	22	5
9. Meerut	2	7	8	5	3
10. Bulandshahr	1	1	2	2	..
11. Agra	1	5	8	8	..
12. Etawah	1	2	5	5	..

BRASS AND COPPERWARE INDUSTRY IN UTTAR PRADESH

13. Allahabad	2	181	556	531	25
14. Jhansi	1	9	54	54	..
15. Jalaun	1	1	4	2	2
16. Banda	2	16	68	68	..
17. Kheri	1	25	340	300	40
18. Sitapur	12	25	139	92	47
19. Hardoi	1	3	21	13	8
20. Unnao	3	24	47	40	7
21. Rae Bareli	1	4	14	14	..
22. Bahraich	2	12	23	17	6
23. Gonda	3	21	27	25	2
24. Faizabad	2	5	15	9	6
25. Sultanpur	2	108	260	210	50
26. Pratapgarh	2	6	12	10	2
27. Basti	4	15	47	37	10
28. Gorakhpur	1	7	18	18	..
29. Deoria	3	52	76	76	..
30. Jaunpur	1	3	5	5	..
31. Ghazipur	1	1	7	4	3
Total	112	1,111	3,018	2,433	585

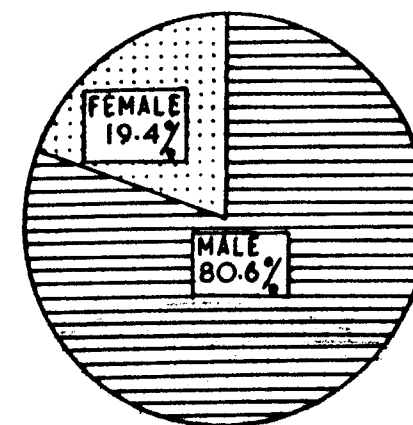
Obviously, the districts with the highest number of families engaged in this craft in the rural area are Almora (289 families with 381 workers), Allahabad (181 families with 556 workers), Pithoragarh (141 families with 229 workers), Sultanpur (108 families with 260 workers), Chamoli (91 families with 303 workers), Garhwal (27 families with 313 workers) and Kheri (25 families with 340 workers). Districts Moradabad, Mirzapur, Varanasi, Aligarh, Kanpur and Farrukhabad are conspicuous by their absence from the above list because no filled-in-schedules for this craft were received from these districts presumably because the few rural workers, who are engaged in this craft, actually work in the urban area. In fact, the main places known for this craft in Uttar Pradesh are Moradabad, Mirzapur and Varanasi. In the rural area, there is concentration of workers in this craft in the hill districts of Almora, Pithoragarh, Chamoli and Garhwal.

On an average, one village has 10 families of workers but in some districts the variations from this average are very high. In Allahabad, for example, two villages alone have as many as 181 households and in Sultanpur also, two villages have 103 households

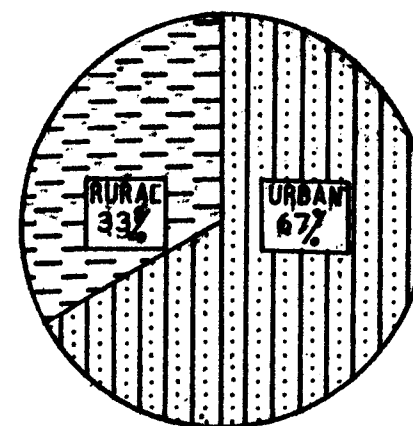
engaged in this work. Similarly, on an average, the production unit per household consists of 3 workers but in district Kheri the average comes to about 14 workers and in district Garhwal to about 12 workers. The work involves manual labour and hence only 19 per cent of the workers are females. In district Garhwal, however, about 42 per cent of the workers are females and in district Sitapur they form about 34 per cent of the workers. All the workers are males in 10 out of 31 districts, viz., Bareilly, Bulandshahr, Agra, Etawah, Jhansi, Banda, Rae Bareli, Gorakhpur, Deoria and Jaunpur.

Table B-IV Part C, prepared from the figures collected at the 1961 Census, gives a more comprehensive picture of the workers engaged in the manufacture of brass and bell-metal products (covered by Industrial Code No. 365) because it has covered the rural as well as the urban area. The number of workers in the household industry and the non-household industry has been calculated separately. The following statement based on this table gives an idea of the extent to which this craft is practised in various districts of the State :—

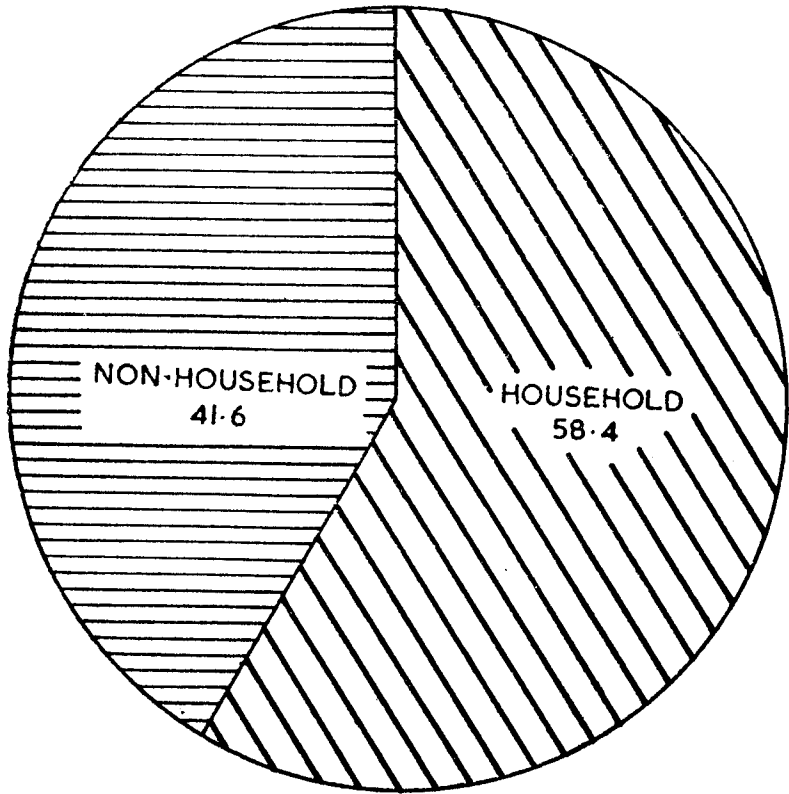
WORKERS IN BRASS AND COPPERWARE INDUSTRY (Surveyed Rural Area)



WORKERS IN BRASS AND BELL-METAL PRODUCTS (Table B-IV Part C)



WORKERS IN
BRASS AND BELL-METAL PRODUCTS
HOUSEHOLD & NON-HOUSEHOLD INDUSTRIES



District	Rural				Urban				Total
	At Household Industry		At Non-Household Industry		At Household Industry		At Non-Household Industry		
	M	F	M	F	M	F	M	F	
1. Uttarkashi	22	5	7	..	..	..	..	..	34
2. Chamoli	36	23	..	..	..	..	..	..	59
3. Pithoragarh	1	..	..	..	..	..	..	..	1
4. Tehri Garhwal	100	32	6	2	..	..	..	..	140
5. Garhwal	30	43	8	3	1	..	3	..	88
6. Almora	11	9	..	..	12	..	1	..	33
7. Naini Tal	15	..	..	..	19	2	14	..	50
8. Bijnor	86	..	13	..	34	..	44	..	177
9. Moradabad	6	..	124	..	844	5	4,132	17	5,128
10. Budaun	..	..	..	..	8	..	12	..	20
11. Rampur	1	..	60	..	26	..	12	..	99
12. Barcilly	10	..	..	..	10	1	20	..	41
13. Pilibhit	..	..	..	..	1	..	6	..	7
14. Shahjahanpur	..	..	..	..	6	..	..	..	6
15. Dehra Dun	10	..	2	..	1	..	4	..	17
16. Saharanpur	2	..	34	3	14	1	57	1	112
17. Muzaffarnagar	67	..	6	..	54	..	54	..	181
18. Meerut	39	..	64	..	86	..	168	..	357
19. Bulandshahr	12	..	14	..	47	..	19	..	92
20. Aligarh	23	..	81	..	379	..	497	10	990
21. Mathura	19	..	7	..	33	8	83	..	150
22. Agra	23	..	69	70	55	..	359	3	579
23. Etah	1	..	5	..	22	..	153	8	189
24. Mainpuri	16	..	..	..	6	..	5	1	28
25. Farrukhabad	2	..	6	..	154	..	295	4	461
26. Etawah	7	..	1	..	..	..	6	..	14
27. Kanpur	137	..	3	..	105	6	353	1	605
28. Fatehpur	20	1	..	..	131	3	1	1	157
29. Allahabad	308	10	79	1	23	2	43	..	466
30. Jhansi	60	2	4	3	168	2	16	..	255
31. Jalaun	22	..	..	..	27	..	2	..	51
32. Hamirpur	15	..	25	4	15	..	5	..	64
33. Banda	15	2	..	..	22	..	2	..	41
34. Kheri	92	..	1	..	..	..	3	..	96
35. Sitapur	36	1	1	..	7	..	8	..	53
36. Hardoi	33	..	1	..	1	..	..	..	35
37. Unnao	15	..	6	..	..	..	..	..	21

BRASS AND COPPERWARE INDUSTRY IN UTTAR PRADESH

District	Rural				Urban				Total
	At Household Industry		At Non-Household Industry		At Household Industry		At Non-Household Industry		
	M	F	M	F	M	F	M	F	
38. Lucknow	7	..	2	..	63	2	118	..	192
39. Rae Bareilly	43	1	84	4	..	..	..	..	132
40. Bahraich	54	..	18	..	24	..	5	3	104
41. Gonda	184	10	35	..	50	1	16	1	297
42. Bara Banki	215	1	16	..	..	..	8	..	240
43. Faizabad	23	1	18	..	26	1	9	..	78
44. Sultanpur	98	4	104	1	3	1	..	..	211
45. Pratapgarh	232	3	11	..	4	..	4	..	254
46. Basti	326	29	7	2	..	..	2	..	366
47. Gorakhpur	203	20	35	..	15	..	3	..	276
48. Deoria	96	3	23	1	93	..	27	..	243
49. Azamgarh	59	..	21	..	2	2	..	..	84
50. Jaunpur	23	..	9	..	15	2	9	..	58
51. Ballia	91	..	18	..	13	2	2	..	126
52. Ghazipur	..	..	..	..	1	..	3	..	4
53. Varanasi	190	4	256	..	857	10	657	1	1,975
54. Mirzapur	32	47	1,048	10	942	24	966	6	3,075
Total	3,168	251	2,332	104	4,419	75	8,206	57	18,612

According to this statement, 3,419 workers were engaged at household industry and 2,436 workers at non-household industry in the rural area of 50 districts. These figures are at variance with the figures collected through the village handicraft schedules. The survey was conducted after the 1961 Census. The variation in the figures of the rural area collected through the two sources may be attributed to the following reasons :—

(1) The survey and the Census figures do not relate to the same period of reference.

(2) It seems that some of the villages, where the number of workers was too small or the existence of this craft was not within the knowledge of the Village Level Worker or Panchayat Secretary concerned, were inadvertently left unsurveyed. There was almost no possibility of any such omission at the time of census. Consequently, in some districts the number of workers as arrived on the basis of survey was smaller than that entered in Table B-IV Part C.

(3) Another obvious reason is that in Table B-IV Part C only those persons have been included who returned manufacture of brass and bell-metal products as their main occupation, while in the survey even those persons were in some cases included who prac-

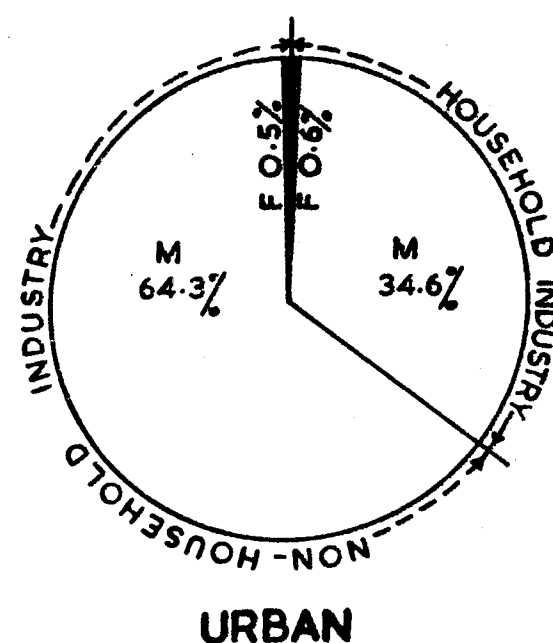
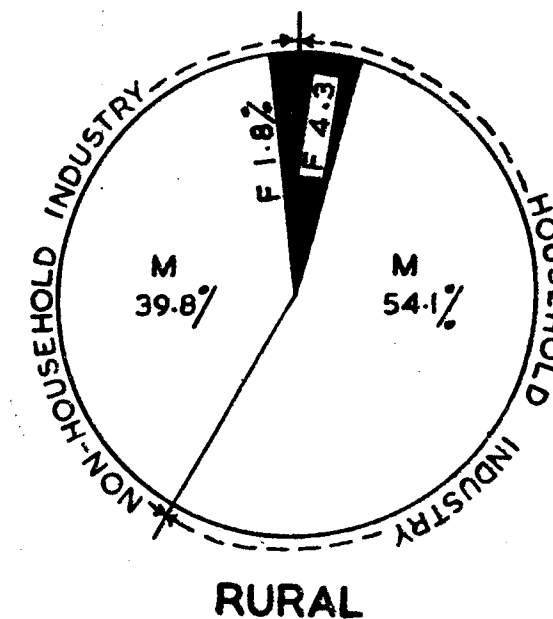
tised it as a secondary occupation. As a result, in some districts, the number of persons arrived on the basis of survey was larger than that entered in Table B-IV Part C.

Out of 18,612 workers engaged in the manufacture of brass and bell-metal products in the State, 12,757 (67 per cent) were found working in the urban area, and the remaining 5,855 (33 per cent) in the rural area. About 35 per cent of the workers in the urban area and about 59 per cent in the rural area were found engaged in it as a household industry.

The districts having the largest number of workers engaged in the manufacture of brass and bell-metal products are Moradabad (5,128), Mirzapur (3,075), Varanasi (1,975), Aligarh (990), Kanpur (605), Agra (579), Allahabad (466) and Farrukhabad (461). Thus the main districts where this craft is practised are Moradabad, Mirzapur and Varanasi. Districts having the smallest number of such workers are Pithoragarh (1), Ghazipur (4), Shahjahanpur (6), Pilibhit (7), Etawah (14), Dehra Dun (17), Budaun (20) and Unnao (21). In the rural area, about 6 per cent of the workers were females while in the urban area about 1 per cent were females. Thus the extent of female participation in this craft is almost negligible.

WORKERS IN
BRASS AND BELL-METAL PRODUCTS

(TABLE B-IV PART C)



CASTES ENGAGED IN MANUFACTURE OF BRASS AND COPPER WARES

The following statement based on the Schedules filled during the course of Survey shows the number of workers of various castes in this craft :—

Caste	Number of Adult Workers			Caste	Number of Adult Workers		
	Total	Male	Female		Total	Male	Female
1. Bora	18	7	11	10. Lohar	139	139	30
2. Brahmin	2	2	..	11. Shilpkar	302	181	121
3. Chamar	12	8	4	12. Sonar	2	2	..
4. Chanyal	10	10	..	13. Tamera	556	531	25
5. Gorkha	15	8	7	14. Tamtakar	54	54	..
6. Kasera	44	44	..	15. Tamta	722	528	194
7. Koli	12	6	6	16. Thathera	1,044	866	178
8. Kshatriya	7	7	..	17. Thathera (Muslim)	2	2	..
9. Kunjra	6	4	2	18. Vaish	41	34	7
				Total	3,018	2,433	585

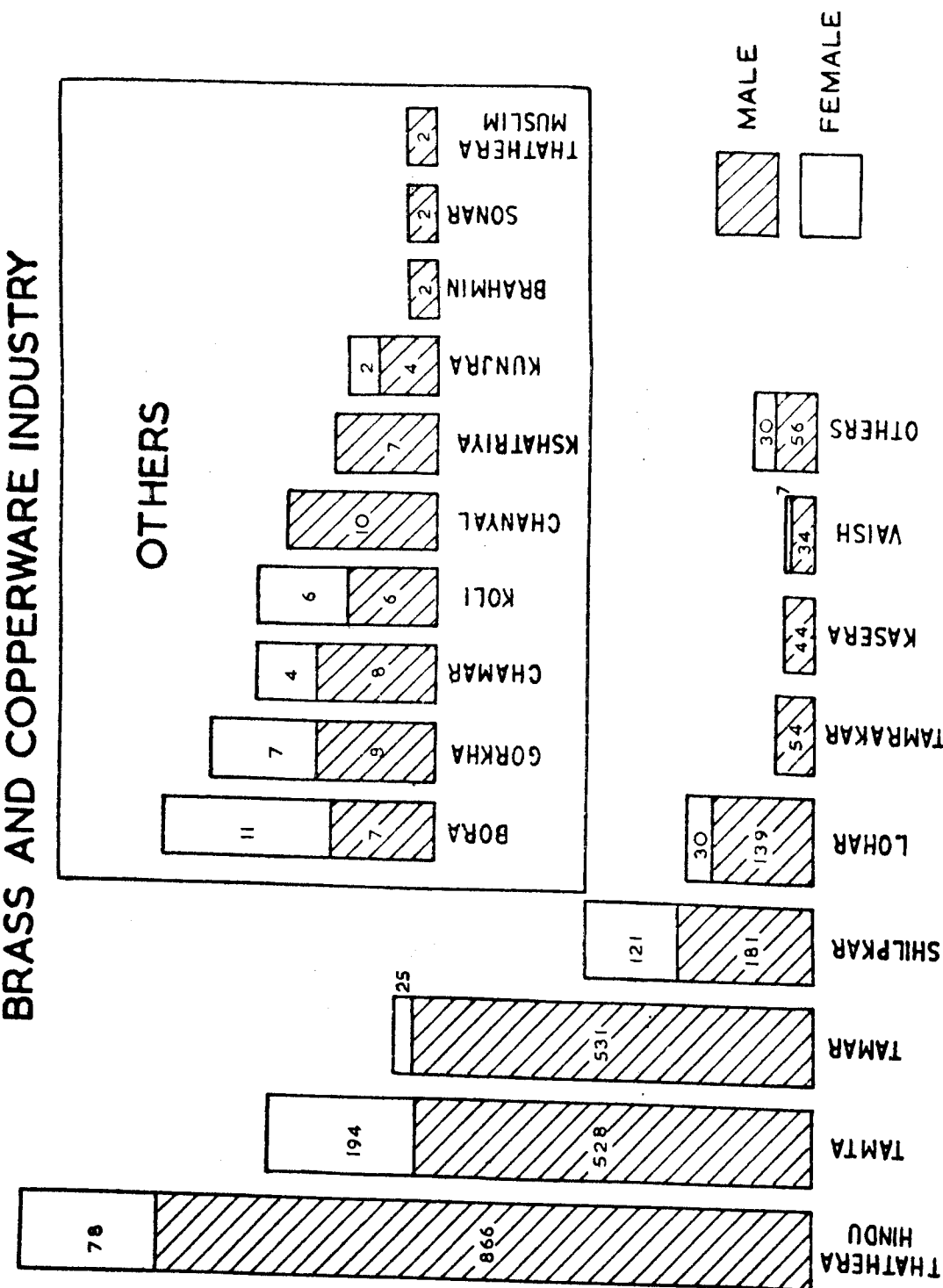
Some other castes also are presumably employed at places not covered by this survey. The predominant castes engaged in this craft in the rural area are the Thathera (about 34 per cent), the Tamta (about 24

per cent) and the Tamera (about 18 per cent).

The following statement shows the castewise distribution of workers in the districts :—

Name of District	Caste	Number	Name of District	Caste	Number
1. Uttarkashi	Tamta	4	16. Banda	Thathera	68
2. Chamoli	Koli	11	17. Kheri	Thathera	340
	Tamta	292	18. Sitapur	Thathera	134
3. Pithoragarh	Tamta	160	19. Hardoi	Thathera	21
	Lohar	40	20. Unnao	Thathera	47
	Koli	1	21. Rae Bareilly	Thathera	14
	Bora	18	22. Bahraich	Thathera	23
	Chanyal	10	23. Gonda	Thathera	9
4. Tehri Garhwal	Tamta	3		Kasera	18
5. Garhwal	Tamta	16	24. Faizabad	Vaish	12
	Shilpkar	302		Thathera	3
6. Almora	Lohar	119	25. Sultanpur	Thathera	260
	Tamta	247	26. Pratapgarh	Thathera	4
	Gorkha	15		Kasera	8
7. Bareilly	Thathera (Muslim)	2	27. Basti	Vaish	21
8. Shahjahanpur	Thathera	27		Kunjra	6
9. Meerut	Sonar	2		Chamar	12
	Lohar	6		Kshatriya	2
	Brahmin	2		Thathera	6
10. Bulandshahr	Vaish	8	28. Gorakhpur	Kasera	18
11. Agra	Kshatriya	5	29. Deoria	Thathera	76
12. Etawah	Tamera	556	30. Jaunpur	Thathera	5
13. Allahabad	Tamtakar	54	31. Ghazipur	Thathera	7
14. Jhansi	Lohar	4	Total		3,018
15. Jalaun					

WORKERS BY CASTE IN BRASS AND COPPERWARE INDUSTRY



BRASS AND COPPERWARE INDUSTRY IN UTTAR PRADESH

Traditionally, the manufacture and trade of brass and copperwares have been in the hands of the Kascaras and Thatheras—the former being the financiers and traders and the latter the artisans manufacturing the wares. Other castes, too, such as Brahmin, Kshatriya, Vaish, Lohar, Sonar, Gorkha, Chamar, Shilpkar, etc. have taken to this craft. With the pressure of population and force of economic circumstances, the so-called higher castes, viz., the Brahmins and the Kshatriyas too have drifted to this work. The force of circumstances compelled them to liberalise their attitude in the matter of orthodox adherence to caste principles. In 1894, Dampier had mentioned that at Benares, Bhangis were engaged in the manufacture of idols, (which ironically enough, they were not allowed

to worship in a temple) and sacrificial implements. He found Bania workers in 7 districts, Lohar in 6 districts, Sonar in 5 districts and Ahir in 2 districts. The various castes mentioned above continue to be socially separate from each other. They have their relations within their own castes. The only thing common among them is their profession. Sometimes, members of various castes are found working together in the same workshop.

ARTICLES PRODUCED

The following articles from brass and copper are manufactured in the State :—

Name of Article	Description	Metal used
(a) Utensils of Domestic Use		
1. Lota	Small water pot	
2. Gangasagar	Water pot with spout, used by Hindus	Brass, gillet, copper
3. Badhna	Water pot with a spout, like that of a tea-pot, used by Muslims for ablution	Copper or brass
4. Batua	Cooking pot	Copper (tinned) or brass
5. Thali	A round tray used for taking meals	Kaskut
6. Parat	A big round tray used for preparing dough	Beaten brass or phul or kaskut
7. Gilas	Tumbler	Brass
8. Lagan	Thali used by Muslims	Brass or gillet or tinned copper
9. Rikabi	A plate-like thali used by Muslims	Copper (tinned)
10. Degchi	Cooking vessel used by Muslims	Copper (tinned)
11. Patili	Cooking vessel used by Hindus	Kaskut, gillet or copper
12. Taula	A type of patili used in the hills	Brass, kaskut or gillet
13. Katora	A small utensil like a cup without handle	Brass, kaskut or gillet
14. Gagra	Large water pot for drawing and storing water	Kaskut, or phul if used by Hindus and copper (tinned) if used by Muslims
15. Chamcha	A ladle	Copper or brass or alloy
16. Seni	Large ornamental tray used by Muslims	Brass
17. Karchhal	Big ladle	Copper (tinned)
18. Sarposh	Cover for degchi, used by Muslims	Brass
19. Handa	Large vessel for holding water	Copper (tinned)
20. Gangal	Large vessel for holding water	Brass
21. Balti	Water bucket	Copper or brass
22. Katerdan	Vessel for holding food	Brass
23. Chhanni	Sieve	Brass or gillet
24. Sansi	Small tongs	Brass
25. Jharna	Perforated spoon	Brass
26. Nashtadan	Tiffin carrier	Brass
27. Deg	Large cooking pot	Brass
28. Tabaq	A big plate	Copper
		Copper

BRASS AND COPPERWARE INDUSTRY IN UTTAR PRADESH

29. Tashitari	A small plate	Copper
30. Aftaba	Small wash-basin	Brass
31. Chilamchi	Type of wash-basin	Brass
32. Pikdan or Ugalaan	Spittoon	Brass and other mtaals
33. Chiragdan	Lampstand	Brass
34. Khasdan or Pandan	Betel box	Copper or brass
35. Ittardan	Vessel for holding scum	Copper and alloy
36. Gulabpash	Rose water sprinkler	Copper, alloy or silver
37. Kali and farshi	Base of hubble bubble	Alloy (also electroplated)

(b) Art Wares

1. Repoussed plaque	Oval, round and rectangular Plates	Copper
2. Chandeliers		Brass
3. Natraja	Lord Shiva in dancing pose	Copper or alloy
4. Flower vase		Brass
5. Table lamp		Brass and copper
6. Ash tray		Brass, alloy
7. Powder pot		Brass, alloy
8. Repoussed bowl		Copper

(c) Puja Wares

1. Tamrapatra	Small lota for storing water	Copper
2. Gilas	Small tumbler for holding water	Copper, brass or silver
3. Panchpatra	Vessel for holding charnamrat	Copper or brass
4. Achmani	Small spoon used with panchpatra for making offerings of charnamrat	Copper
5. Samput	A thali in which the idol is bathed	Copper
6. Baithak	A seat for placing the shankh (couch shell)	Brass
7. Katori	Small saucer for keeping sandal (chandani)	Brass or copper
8. Artidani	Lamp of one, five or seven wicks used in puja	Brass
9. Dhoopdani	Small utensil in which dhoop (incense) is burnt	Brass
10. Garur Ghanti	A small bell used at the time of puja	Brass or kaskut
11. Singhasan	A seat for the idol	Brass, copper or silver
12. Dibia	Small vessel in which the idol of Saligram is kept	Copper or brass
13. Dolchi	Small basket for keeping flowers for offering	Copper or brass
14. Kanchan Thali or Naibedh	A plate from which fruit and sweets are offered to the deity	Silver or phul
15. Havankund	A vessel in which burnt sacrifices are offered	Copper
16. Chhatar	An umbrella held over the deity	Silver
17. Ghadiyal	A bell	Brass or phul
18. Jhanjh	Pair of cymbals, clashed at the time of offering	Brass or phul
19. Kalangi and kalash	Placed on top of the temple or Shivala	Brass or kaskut
20. Ghanta	A heavy bell	Brass, kaskut or panchdhatu (5 metals)
21. Kamandal	A vessel used for carrying water	Brass or copper

(d) Ornaments of bell-metal or some other alloy

1. Mathia	A set of about 30 rings worn from just below the elbow up to the wrist
2. Dua	A type of bracelet worn generally by Ahir and Chamar women, about half-way up the forearm
3. Ekmunha adhuriya	A type of bracelet worn chiefly by Lodhi and Kachhi women
4. Ghungharu	A sort of bracelet consisting of "a threaded row of small castings like miniature half-opened oyster shells containing a little ball of iron held captive inside", mainly worn by Ahir, Lodhi, Kachhi and Chamar women
5. Kara	Anklets—round (<i>gol</i>), six-sided (<i>pahludar</i>), plain (<i>sada</i>) or chased (<i>naqqashidar</i>)
6. Chhalla	Toe rings
7. Chhara	A type of thin light anklets—plain or with external dog tooth all the way round four; <i>chharas</i> are worn on each ankle.
8. Anwat	Ring for the big toe
9. Bichhiwa	Small rings decorated with crowns used for the little toe by married women
10. Pakwan	A ring worn on the middle toe
11. Hansli	Necklace

Generally speaking, the Muslims use copper vessels after getting these tinned. Brass is customarily detested by them, even though a few poor people among them or those who are not very orthodox use brass utensils. The Gujaratis too use copper vessels except the *tanlot*, a brass *lota* used for the office of nature. Copper utensils are used by Hindus especially for *puja* purposes. The *karwa* (*lota* with a spout) is casually used by them for holding or serving water. The *phul* (bell-metal) utensils are treated as defiled if a person of another caste uses them. They can be purified only after being heated in fire. *Phul* is considered to become impure so easily because it is

an alloy containing *ranga* (pewter), an impure metal, the presiding god of which is Sukra.

ESTIMATED PRODUCTION

In 1957-58 the Director of Industries had undertaken an industrial survey of the State. The following statement based on the Industry Outlook Reports of various districts published by him shows the estimated investment, the number of production units and workers engaged therein, the value of metal used and articles produced for the year 1956 :—

Name of District	Number of Units	Number of Workers	Investment (Rs.)	Value in Rupees of	
				Raw Metals used	Articles produced
1. TehriGarhwal (including Uttarkashi)	38	54	3,200	15,100	19,800
2. Pauri (including Chamoli)	60	71	4,100	67,600	80,900
3. Almora (including Pithoragarh)	275	..	71,200	428,100	570,400
4. Naini Tal	4	28	41,826	61,600	75,811
5. Bijnor	7	35	1,800	N. A.	40,600
6. Moradabad	6,141	31,860	3,959,400	28,381,500	46,002,000
7. Shahjahanpur	2	56	14,400	87,500	118,500
8. Dehra Dun	1	6	1,000	36,000	58,000
9. Jhansi	250	510	125,400	489,600	508,240
10. Muzaffarnagar	80	100	12,000	480,000	600,000
11. Aligarh	308	925	351,500	1,856,800	4,911,600
12. Mathura	4	221	241,500	296,950	468,575
13. Agra	5	150	500,000	800,000	1,300,000
14. Etah	3	6	900	17,160	21,660
15. Farrukhabad	105	551	192,000	N. A.	2,196,900

16. Kanpur	51	305	60,500	24,000	40,000 + 423,000 (Job work)
17. Fatehpur	45	244	13,600	1,689,600	2,199,700
18. Allahabad	25	333	207,000	496,700	679,700
19. Hamirpur	2	4	N. A.	5,400	7,500
20. Kheri	130	500	2,483,200	1,528,800	2,523,400
21. Sitapur	28	56	18,100	N. A.	19,200 (Job work)
22. Hardoi	20	100	20,000	54,000	72,000
23. Unnao	29	58	34,800	135,600	227,320
24. Lucknow	15	100	N. A.	486,400	614,654
25. Rae Bareilly	6	22	2,200	N. A.	34,300
26. Bahraich	160	549	626,300	2,556,400	3,914,800
27. Gonda	70	154	16,300	50,500	86,300 + 49,400 (Job work)
28. Bara Banki	29	96	83,900	293,100	373,000
29. Faizabad	87	N. A.	N. A.	N. A.	4,500 (Wages)
30. Sultanpur	82	550	125,000	967,000	1,425,000
31. Basti	75	200	200,000	124,900	172,000
32. Varanasi	601	1,547	270,700	693,600	1,243,500 + 668,000 (Job work)
33. Mirzapur	265	3,356	4,694,000	19,125,000	34,006,000 + 312,000 (Job work)
Total	9,003	42,747	14,375,826	61,248,910	106,068,260

As is seen, the industry was flourishing mainly in 33 districts having 9,003 production units with 42,747 workers engaged therein. An amount of Rs. 14,375,826 was invested in these units. After using metals such as copper, brass, alloy, *kansa*, *gillet* and bell-metal of the approximate value of Rs. 61,248,910 articles worth about Rs. 106,068,260 were estimated to have been produced all over the State.

CHIEF CENTRES OF INDUSTRY

The chief centres of brass and copper work in the State are Moradabad, Varanasi and Mirzapur. Utensils of domestic use are prepared at Moradabad but it is famous mainly for its lacquered work. It is the centre of the decorative brassware while Varanasi is the home of religious utensils and sacrificial vessels. On the decorative side, "coloured enamelling and intricate engravings in niello and lichmina" are the main characteristics of Moradabad products and intricate repousse work is the speciality of Varanasi ware. At Varanasi, they manufacture household utensils such as *gagra*, *lota*, *patili*, *gilas*, *batua*, *balti*, *karahi* etc.; *puja* articles such

as gongs, *ghanti*, *kalash*, *panchpatra*, *arti*, flower basket, images of deities; artwares like wall decoration plaques, images of *Natraja*, table lamps, flower vases; and *gillet* ornaments used by womenfolk of poorer families. The brass industry at Mirzapur confines itself to the manufacture of household utensils, its speciality being the manufacturing of heavy cast-utensils of bell-metal. In 1961, Mirzapur had 365 manufacturing units employing about 3,300 workers. Sheet rolling, particularly of bell-metal, is another speciality of this place. There were 58 rolling mills of which 19 did job work and the rest were engaged in production of articles for sale.

The industry at Moradabad is a few centuries old. Before the Moghul period, some Hindu Thatheras used to manufacture *lotas* and *thalis* only at this place. During the reign of Shahjahan, a few Mohammedan families entered the trade. They introduced new designs, especially catering to the Mohammedan taste. Improved tools and new methods were used by them. Household utensils consequently began to be exported to Iran, Turkey, Iraq, Egypt and other countries in

the middle East. The manufacture of art brasswares is said to have been introduced about 176 years ago by one Imam Baksh who migrated to this place from Lucknow. He started imitating the Bidar work which consists of silver florations inlaid into hard black wares of zinc and other grey metals similar to steel. Later on, he took to the manufacture of article with florations of golden colour on a surface made white by tin-polishing or *qalai*. The Moghul King Bahadur Shah extended his patronage to this work. In course of time, Moradabad became the home of art brassware. Since then, this industry has been flourishing there with periods of depression and boom from time to time.

Engraving of Bidar or *chikan* type designs add intricacy and beauty to the art brassware of Moradabad. The process requires the highest skill of an experienced artist. Engraving is of two types—*sada* (simple) and *siah kalam*. *Sada* engraving is locally known as *nakkashi* and *siah kalam* engraving as *khudai*. *Nakkashi* is done on tinned vessels while *khudai* is done on unpolished brasswares. The difference between *nakkashi* and *khudai* is that in *nakkashi* the indentations represent the pattern while in *khudai* the depressions represent the surface other than the pattern. In *nakkashi*, delicate designs are engraved by the engraver on the ware with the help of engraving tools and a light hammer after it has been shaped and scrapped. An ordinary design can be engraved by the worker straight away from his memory. In case of *siah kalam* work, the designs are very intricate. Hence in such cases, first a thin coating of lac is given to the vessel to be ornamented; the pattern to be transferred is then traced on it with a pencil and then with a steel-pointed *qalam* (pen). The pattern is subsequently engraved. Thereafter, the ware is heated, the engraved design is filled with pointed shellac sticks of various colours, viz., blue, green, red, violet, black and white. The colour is then levelled and extra lacquer removed.

Domestic utensils are prepared by both *para* casting and *darza* casting methods. Vessels like *thali*, *thal*, *parat*, *tashitari*, tray, etc. are prepared by the beating process. Polishing—both hand-tinning or *qalai* and electroplating—is another speciality of Moradabad.

“The dominating position in the industry is occupied by the dealer who finances the industry and car-

ries away the lion's share in the profits. He finances the purchase of raw materials, controls the design and markets the product, while the work of actual manufacturing is done either by the artisans each having his dealings direct with the dealer, or the workers through a *karkhanadar*, big or small. The whole thing works like this. The dealer asks an artisan (or a *karkhanadar* for articles which are manufactured in *karkhanas*) to manufacture articles that he (the dealer) requires and gives raw material for fabrication. The artisan, after operating within the scope of manufacturing processes undertaken by him, passes on his finished product to the dealer. The dealer then passes it on the articles to other artisans for further operations, it coming back to the dealer each time after the completion of any one operation. Thus, after the article has passed through different artisans each time through the dealer, it becomes ready for the market, and finally comes back to the dealer. Similar is the case with articles manufactured through the *karkhanadar* with only this difference that here more operations than one (but not all) are undertaken by different workers through a *karkhanadar* in one *karkhana*. An artisan provides his own tools; but in a *karkhana* they are supplied by the *karkhanadar*.”¹

In 1950-51, the leading exporters and dealers of brassware formed themselves into the Brass Artware Manufacturers' Association, with the objective mainly of preserving and promoting the art of *siah kalam*. The Association has only been effective in settling wage rates and other points of dispute between the members of the Association and the Unions of art brassware engravers, enamellers, moulders, *gulli* makers etc. Also Moradabad has six industrial co-operative societies engaged in the manufacture of brassware but only one of these undertakes marketing activity as well.

According to a survey of the industry conducted by the All India Handicrafts Board in 1960, Moradabad had 4,836 establishments engaged in copper and brass work. Of these, 2,537 establishments employing nearly 9,000 workers were engaged in the production of art brassware. The following statement based on the information contained in the survey report shows the number of establishments, fixed capital invested therein and the value of produce in the year 1959² :—

Sector	Number of Establishments	Value of Production Rs.	Fixed Capital Rs.	Working Capital Rs.
1. Moulding	369	11,570,813	709,790	239,482
2. Sheet work	52	2,952,380	142,980	38,875
3. Engraving	1,022	1,104,454	317,887	5,792
4. Lacquering	95	237,770	209,429	12,791
5. Scraping	533	1,406,782	873,168	98,266
6. Soldering	171	448,293	286,121	18,906
7. Pattern making	27	47,607	2,720	3,190
8. Electroplating	55	277,562	91,372	36,021
9. Polishing	104	1,154,748	171,623	82,671
10. Gulli	109	N. A.	264,400	52,908
Total	2,537	19,200,409	3,069,490	588,902

1. R. D. Pant : Report on an Enquiry into Labour Conditions in the Brassware Industry of Moradabad, 1945, Page 11.

2. All India Handicrafts Board : Report on the Survey of the Brassware Industry at Moradabad.

It was also estimated that about 12,000 maunds of brass sheets were used in the manufacture of artwares. Over 34,000 maunds of copper, 27,000 maunds zinc and 15,000 maunds of brass scrap were utilised in the moulding process; 15,000 tolas of silver, 7,000 lbs. of chromium and over 10,000 lbs. of nickle in the electroplating process; 13 maunds of lacquer, over 500 tolas of colour and a little less than 2,000 gallons of thinner in the lacquering process, and over 1,000 maunds nickle and about 400 maunds of German silver were utilised.

It was also revealed that the margin of profit varies from 6 per cent to 20 per cent of the cost of production. Majority of the dealers and exporters earn 10 per cent to 15 per cent profit. The following statement gives the income per household and income per capita in the various sectors :—*

Sector	Income per Household	Income per Capita
1. Moulding	Rs. 90.83 nP.	Rs. 15.94 nP.
2. Sheet work	Rs. 98.33 nP.	Rs. 18.67 nP.
3. Engraving	Rs. 104.37 nP.	Rs. 14.91 nP.
4. Lacquering	Rs. 96.25 nP.	Rs. 13.75 nP.
5. Scraping	Rs. 84.36 nP.	Rs. 14.35 nP.
6. Soldering	Rs. 113.20 nP.	Rs. 13.86 nP.
7. Kalai	Rs. 45.00 nP.	Rs. 15.00 nP.
8. Polishing	Rs. 131.83 nP.	Rs. 21.67 nP.
9. Gulli making	Rs. 310.29 nP.	Rs. 46.21 nP.

The level of income of the craftsmen as indicated above is very low.

GOVERNMENT SCHEMES FOR THE DEVELOPMENT OF BRASS AND COPPERWARE INDUSTRY

The Directorate of Industries has been taking an active interest in the promotion and development of the brass and copperware industry in the State. The following schemes deserve special mention in this context :—

1. Non-Ferrous Metal Scheme, Moradabad
2. Scheme for Development of Brassware Industry at Mirzapur and Varanasi
3. Quality Marking Scheme
4. Industrial Co-operative Scheme
5. Loans and Grants Scheme
6. Sanction of Brass and Copper on Quota System
7. Central Design Centre
8. Employment of Master Craftsmen
9. Government U. P. Handicrafts

*All India Handicrafts Board: Report on the Survey of the Brassware Industry at Moradabad, Page 37.

1. NON-FERROUS METAL SCHEME, MORADABAD AND VARANASI

A training-cum-production centre under the Non-Ferrous Metal Scheme was started at Moradabad in July, 1950. The scheme aims at imparting training in the manufacture of brasswares to the local artisan boys. The workshop is furnished with modern machines and equipment for bringing efficiency in workmanship. Up to June 30, 1963, 260 students were trained in various trades viz., moulding and casting, scraping, shape making, polishing, engraving, electroplating etc. A stipend of Rs. 15 p. m. is given to every trainee. A few Scheduled Caste trainees are awarded stipends @ Rs. 30 p. m. by the Harijan Sahayak Department of the State. The ex-trainees are absorbed in their trades in the local workshops. They are able to earn about Rs. 3 per day according to their efficiency and aptitude. During the year ending March 1963, the centre produced utility articles worth Rs. 9,200.43 nP. out of which articles worth Rs. 6,173.34 nP. were sold. Also about 4 new designs were reported to have been brought into actual shape and given to local small units for mass production. According to the Report on the Survey of the Brassware Industry at Moradabad the industry and trade have not been materially benefitted by the Centre in the matter of introduction of designs since a close liaison does not exist between the Government Centre and the industry and the trade.

Common service facilities are made available to the local small industrial units. The manufacturers are also helped in resolving their technical and other problems allied to the industry, besides rendering them necessary technical advice.

For proper publicity of the Scheme, participation is arranged in exhibitions at various places.

For providing facilities to the industrialist of the eastern districts, expansion of this industry was proposed in the III Five Year Plan by establishing a centre of Non-Ferrous Metal Industry at Varanasi. Staff including a Superintendent of Workshop (Gazetted) has been appointed and machinery installed. The Centre will shift to the Government building when its construction is complete.

2. SCHEME FOR DEVELOPMENT OF BRASSWARE INDUSTRY AT MIRZAPUR

At Mirzapur the following types of units are found :—

- (i) Heavy brassware casting units;
- (ii) Nickel silver-ware casting units;
- (iii) Bell-metal units;
- (iv) Scraping, turning, polishing and finishing units.

A Development Scheme was started at Mirzapur by the Directorate of Industries in 1961-62 for helping

the small units to make a gradual change over to the manufacture of sheet metal wares and rolling of strips, coils etc. The Scheme aims at extending technical guidance and common facilities of the following nature:—

(i) Small chemical laboratory to analyse the scrap and cuttings;

(ii) Magnetic separation of iron;

(iii) Manufacture of spinning and drawing dies;

(iv) Setting up of a heavy duty deep drawing press;

(v) Short-term training of local workers on spinning lathes;

(vi) Setting up of a small model type of thin strip and coil rolling unit;

(vii) Oil-fired tilting furnace to provide quick and cheap method of melting;

(viii) Designing of light weight sheet metal utensils;

(ix) Supply of literature on new non-ferrous alloys of industrial use.

The Centre is housed in a rented building where heavy types of machinery could not be installed. Hence, it has not been able to run effectively. A sum of Rs. 26,000 was spent on the Scheme in 1961-62 and another sum of Rs. 62,000 in 1962-63. Action has been taken to get a building constructed by the Public Works Department.

3. QUALITY MARKING SCHEME

The Quality Marking Scheme was initially introduced in the State in 1948. It aims at standardising the production and quality of various cottage and small scale industries as well as handicrafts. The Scheme has contributed significantly to the supply of standard goods, as well as to the creation scope for employment. It is a voluntary scheme and provides an opportunity to the manufacturers, desirous of producing goods according to the prescribed standards. They have only to execute an agreement bond to abide by certain terms and conditions, besides furnishing security to the satisfaction of Director of Industries. The technical personnel consisting of a Superintendent, an Examiner and a Viewer specially trained in the line, are posted at the Inspection Depots in order to examine the raw materials and goods at various stages of production and on finish. The finished goods, conforming to the prescribed specifications only are approved and stamped by the technical staff with a special "Q" seal, a popular symbol for the "U. P. Government Quality Certification Mark."

The achievements of the Scheme, which was extended to brassware and artware industry at Moradabad in October 1956 and December 1960 respectively, would be evident from the following statement:—

	Brassware, Moradabad	Artware, Moradabad
1961-62		
Number of Manufacturers	32	20
Samples Approved	125	—
Production (in Numbers)	202,579	18,468
Value of Production	Rs. 339,461.00 nP.	Rs. 112,264.04 nP.
1962-63		
Number of Manufacturers	35	22
Samples Approved	125	—
Production (in Numbers)	184,242	14,855
Value of Production	Rs. 238,925.00	Rs. 128,196.31 nP.
Value of Production since Inception	Rs. 1,767,006.21 nP.	Rs. 255,581.09 nP.

There has been a steady progress in this direction. Specifications of the articles produced are laid down in collaboration with the Indian Standards Institution, New Delhi. The price of approved productions is fixed with a view to obviating cut-throat competition. In order to give further impetus to production of quality goods, financial grants are given to producers who join the scheme. Such grants have been given to the Moradabad Pucca-Quality Brass Wares Producers' Co-operative Association, Ltd. for the smooth running of the industry on prosperous lines.

4. INDUSTRIAL CO-OPERATIVE SCHEME

The promotion of Industrial Co-operatives has been accorded a significant place in the Five Year Plans for ensuring rapid and balanced development of village small-scale industries which occupy an abiding place in the economy of the State. The Industries Department promotes the development and looks to the day-to-day problems of these societies. Subsidy is provided to them for construction of workshops to the extent of 50 per cent of the cost of construction. Tools and implements of improved variety are also distributed. The U. P. Industrial Co-operative Association Ltd., Kanpur is the apex co-operative organisation of the State for all the Industrial Co-operative Societies. It functions as a co-ordinating and balancing institution for channelising the loans and grants provided by the Government, guiding its member co-operatives in regard to production and marketing and finally for linking the industrial societies to each other. Similarly, the U. P. Industrial Co-operative Bank provides financial assistance to these societies.

According to the figures supplied by the Deputy Registrar, Industrial Co-operative Societies, Kanpur in September 1963, the following 81 Industrial Co-operative Societies in this industry were found in 37 districts of the State:—

Name of District	Number of Societies	Name of District	Number of Societies
1. Varanasi	7	20. Bara Banki	1
2. Mirzapur	4	21. Meerut	2
3. Gorakhpur	1	22. Bulandshahr	1
4. Basti	4	23. Muzaffarnagar	4
5. Deoria	3	24. Saharanpur	1
6. Allahabad	3	25. Dehra Dun	1
7. Fatehpur	1	26. Agra	5
8. Farrukhabad	1	27. Etah	1
9. Kanpur	3	28. Aligarh	1
10. Jhansi	2	29. Bareilly	1
11. Lucknow	1	30. Pilibhit	2
12. Hardoi	1	31. Shahjahanpur	1
13. Sitapur	3	32. Rampur	1
14. Rae Bareilly	1	33. Moradabad	9
15. Unnao	2	34. Bijnor	1
16. Kheri	2	35. Almorah	2
17. Sultanpur	2	36. Pauri Garhwal	2
18. Bahraich	1	37. Pithoragarh	2
19. Gonda	1		

5. LOANS AND GRANTS SCHEME

Under this Scheme, financial assistance is given to individuals and Co-operative Societies for helping the development and expansion of small scale and cottage industries in the State. The scheme was started in the year 1947-48. Loans for projects, the cost of which does not exceed Rs. 10,000, are sanctioned and disbursed by the District Magistrate in consultation with the District Industries Committee out of funds placed at his disposal.

6. DISTRIBUTION OF BRASS AND COPPER ON QUOTA SYSTEM

The Non-Ferrous Metals Control Order, 1958 was enforced on April, 2, 1958. Non-ferrous metal refers to imported copper, lead, tin and zinc. These metals can be purchased only on a permit issued by the Controller. In the year 1962-63, a quota of 4,950 tons of non-ferrous metals including copper, zinc, lead and aluminium had been placed at the disposal of the Industries Directorate by the Government of India for distribution to the Small Scale Industrial Units engaged in the manufacture of utensils, cables, wire, buckets etc.

7. CENTRAL DESIGN CENTRE

Generally speaking, the artisans are neither educated nor progressive enough to give up their designs and switch over to the latest designs conforming to the changing tastes of consumers. For improvement in existing designs and introduction of the latest designs, the

Central Design Centre Lucknow has attached one Design Extension Officer each at Moradabad for the brassware industry and Varanasi for the copperware industry. Their main task is to introduce new designs according to the latest market trends both in this country and abroad. They are also responsible for improving the designs of articles which have export potentialities. These officers are directly under the control of the Central Design Centre and are in close touch with its activities. There is, however, a feeling that the Central Design Centre and its officers have a tendency to make "designs in abstract without co-ordinating and assessing its acceptability in open market. A piece designed by them may be good in aesthetic sense but in order that it may be a profitable venture, the workers engaged in it need be ensured of its marketability and its commercial aspect. Secondly, whatever designs they are making do not have a wider dissemination due to lack of proper liaison."

The Centre has a scheme of carrying out the survey and recording all existing designs of some crafts, including brassware. All these designs will be classified, arranged and published in the form of a Designs Gazetteer of the State. This scheme is expected to help a lot in making further improvements in the designs, by linking the present ideas with the spirit of past tradition.

8. EMPLOYMENT OF MASTER CRAFTSMEN

This scheme aims at employing reputed craftsmen to give the benefit of their art and experience to other craftsmen. It was introduced in the year 1961-62. One master craftsman each was selected for giving training to 5 apprentices in manufacture of brassware, at Moradabad and repositusse' work at Varanasi. Each apprentice gets a stipend of Rs. 25 p. m.

In 1961-62 a Common Facility Centre for copperware industry at Varanasi was organised. It aims at giving technical guidance to members of Co-operative Societies and providing facilities to the artisans to enable them to produce goods conforming to the tastes of consumers.

9. GOVERNMENT U. P. HANDICRAFTS

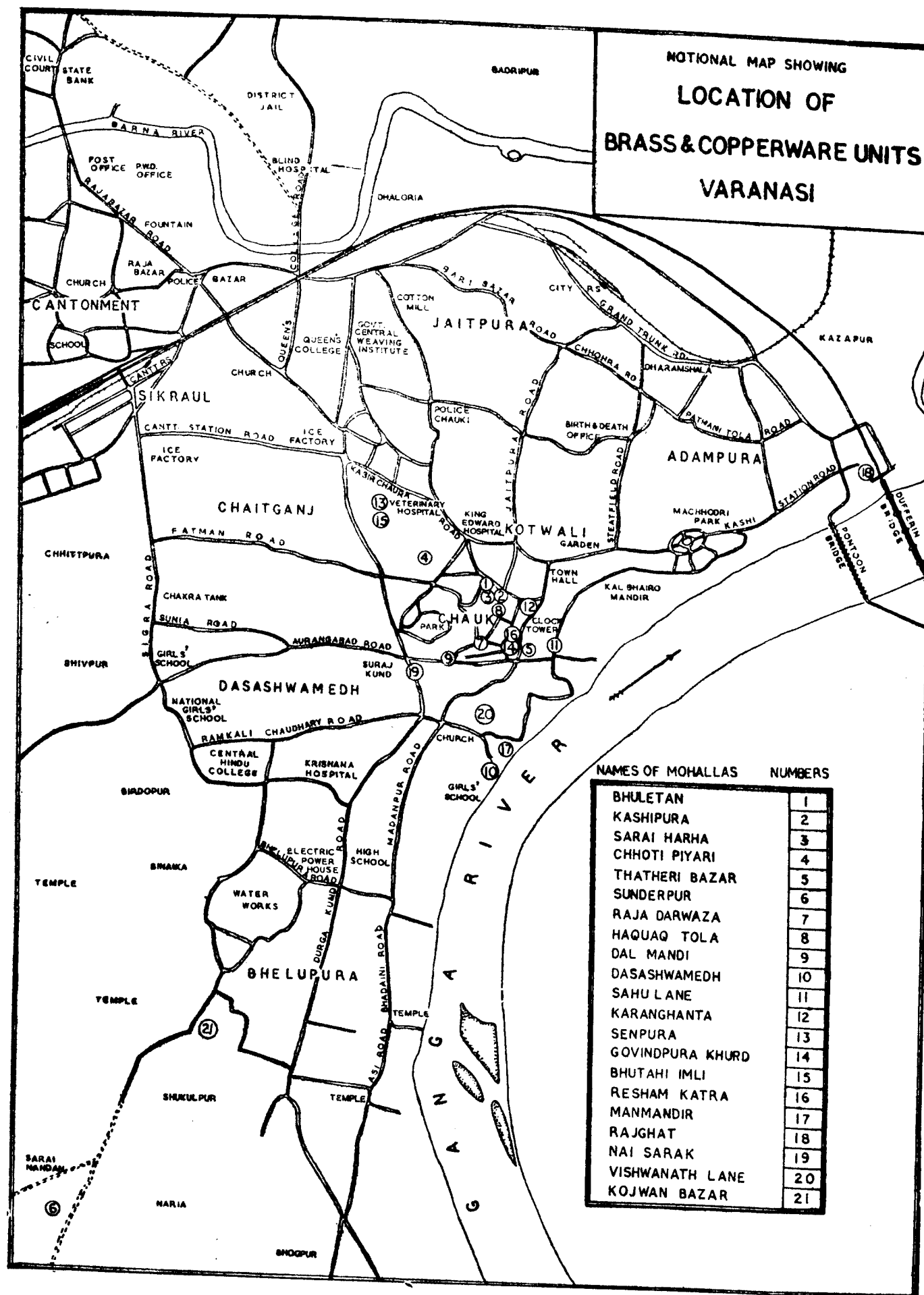
The Government of Uttar Pradesh set up the Handicrafts Organisation for solving primarily the problems of workers in cottage industries, not only in regard to the marketing of goods and adoption of design but also to guide them in planned production in close conformity with the demand and changing tastes. This State Marketing Organisation is engaged in reviving the decaying handicrafts by giving wide publicity to their products for popularising them in India and abroad. Publicity of handicrafts products is also given through the medium of newspapers within and outside the State on the occasion of All-India Handicrafts Week. The artistic brass and copper wares produced at Moradabad and Varanasi are sold through its emporia throughout the country.

SECTION II

BRASS AND COPPERWARE INDUSTRY

at

VARANASI.



CHAPTER I INTRODUCTION

LOCATION

Varanasi, one of the holiest and oldest cities of India, is unrivalled for its sanctity as a place of pilgrimage. It is situated in the eastern part of Uttar Pradesh on the bank of river Ganga on the junction of Northern and Eastern Railway at 25° 25' north latitude and 82° 57' east longitude. The Grand Trunk road also runs through the city. The district lies on both sides of the Ganga between the parallel 24° 56' and 25° 35' north latitude, and 82° 14' and 83° 34' east longitude. It is bounded on the north and north-west by district Jaunpur, on the east and north-east by district Ghazipur, on the south by district Mirzapur and on the south-east by district Shahabad. The river Karmnasa separates district Varanasi from district Shahabad. The previous name of the city was Benares but in 1958 it was renamed by the State Government as Varanasi, after the two rivers Varuna and Asi, which flow within its boundaries. The total population of the city at the time of 1961 Census was 471,258 persons.

LOCALISATION

Varanasi has been known for its silk and lace cloth industry and brass and copperware industry. Birdwood refers to Benares (Varanasi) as "the first city in India for the multitude and excellence of its cast and sculptured mythological images and emblemata, not only in brass and copper, but in gold and silver, and also in wood and stone and clay." It is difficult to say how and when manufacture of copper and brassware was taken up at Varanasi and how it developed into a big centre of this industry. Varanasi, being a holy place, has been visited every year since times immemorial by millions of pilgrims who stand in need of *puja* articles. Miss Gordon Cumming says that it is impossible to walk through the bazars of this city without recalling the description of the vessels of the Temple of Jerusalem: of "the cauldrons, pots and bowls; the shovels, the candlesticks, and all manner of things to be made either of gold or of bright brass, which might be continually scoured. Here in the open sunlight are stalls heaped up with all sorts of brass work for the use of worshippers. Incense burners and curious spoons, bassoons and lamps, pots and bowls, and a thousand other things..."¹ Some of these articles, especially idols of deities, are taken by pilgrims as souvenirs of pilgrimage. It was perhaps originally for meeting this demand that copper and brassware industry came into existence at Varanasi. In course of time, utensils for domestic use and the artware also came to be manufactured. Since the handicraft has been practised at Varanasi for a long time, the craftsmen have imbibed hereditary skill in their work, and hence there is no paucity of skilled workers required for this handicraft.

In 1914, the brass and copper artware industry of Varanasi received a serious setback because the crafts-

men, in their craze for heavy profits, had started producing articles, whose weight was increased by adulteration of lead in alloy. The foreign purchasers of these articles ultimately detected this malpractice and consequently stopped purchasing these articles. The period of slump continued up to 1950, when the market was revived and the artware industry re-established. Since then, the industry has made steady progress, as is evident from the following figures showing the production of copper and brassware from 1957 to 1961 by the 35 units which are members of the Benares Brass Merchants' and Manufacturers' Association :-

Year	Production and Value	Utensils of Domestic Use	Puja Articles	Artware
1957	1. Production	2,135 tons	51 tons	2 tons
	2. Value	Rs. 8,572,800	Rs. 163,800	Rs. 60,300
1958	1. Production	2,143 tons	66 tons	4 tons
	2. Value	Rs. 8,624,800	Rs. 211,200	Rs. 112,800
1959	1. Production	2,228 tons	80 tons	9 tons
	2. Value	Rs. 8,952,000	Rs. 280,000	Rs. 148,000
1960	1. Production	2,580 tons	85 tons	18 tons
	2. Value	Rs. 11,429,509	Rs. 410,000	Rs. 413,000
1961	1. Production	2,635 tons	88 tons	15 tons
	2. Value	Rs. 10,970,794	Rs. 340,000	Rs. 278,000

Source : Benares Brass Merchants' and Manufacturers' Association

In addition to the above, there is a large number of other units producing these articles. The value of their products is not correctly known. According to the estimate of the Association, in 1960 about 12,400 workers, consisting of 5,300 skilled male workers, 2,500 unskilled male workers, 1,500 female workers, 2,100 child workers and about 1,000 more persons, were found engaged directly or indirectly in the copper and brassware industry at Varanasi, either as whole-time or as part-time workers.

METHOD OF SURVEY

The survey of the brass and copperware industry at Varanasi was taken up in December, 1961. An exhaustive questionnaire was first prepared and a thorough training was imparted to the investigator in the method of investigation and collection of data from those engaged in the craft, by recording their replies to the various questions and discussing their problems with him.

The houselist prepared in November, 1960 in connection with census operations was consulted for finding out the number of households engaged in this industry. Since this houselist had become one year old, it was brought up-to-date, so far as possible, by

1. G. C. M. Birdwood: *Indian Arts*, 1884.
2. *Ibid.*

consulting the members of the co-operative societies of workers and the Benares Brass Merchants' and Manufacturers' Association. An exhaustive list of households or units engaged in the production of brass and copper wares within the boundaries of Varanasi Corporation was not prepared by going from house to house, because of pressure of time and paucity of staff.

Only 25 units were found engaged mainly in the production of artware. Hence all these units were surveyed and studied. Since the number of units producing utensils for domestic use was very high, only a 10 per cent sample was taken up on the basis of the Stratified Sampling Method. The basis of the stratification was the categorisation of number of workers in a production unit. The 384 units engaged in the production of domestic utensils were divided into those having one worker only, 2-5 workers, 6-9 workers, 10-19 workers, 20-49 workers and 50 workers

and above. Thereafter, sampling was carried out on the random basis for each category. The sampling fraction was decided to be every tenth unit in the total number of units in each category. Unorganised units, too, were surveyed.

Particulars of the units arrived at by using the above method are given at the end of the monograph under the heading 'List of Units Surveyed'.

After all the schedules had been filled up, the information contained therein was sifted and arranged and 7 tables and a master schedule containing information about the various aspects of the industry were prepared. The author visited Varanasi, verified some of the information collected by the investigator, contacted those in the industry and discussed the various problems with them, for having a first hand knowledge of the various aspects of the industry and its problems.

NUMBER OF WORKERS

In 1960 the total number of workers engaged directly or indirectly in the brass and copperware industry at Varanasi, as estimated by the Benares Brass Merchants' and Manufacturers' Association was 12,400, consisting of 5,300 skilled workers, 2,500 unskilled workers, 1,500 female workers, 2,100 child workers and 1,000 workers on miscellaneous jobs. Out of these, 1,500 workers were engaged in moulding and casting, 300 workers in filing, 450 workers in scraping, 400 workers in polishing, 100 workers in acid cleaning, 400 workers in decoration and repousse' work and 2,200 workers at various other stages. This number of workers, however, appears to be an over-estimate.

This survey covered only 109 units and hence the total number of workers covered was much too small. Only 806 workers were found engaged in these units. The following table shows the number of workers engaged in the manufacture of brass and copperwares in the units covered by the survey :—

Name of Caste	Number of Units in which working	Number of Workers			Number of Workers working in	
		Total	Male	Female	Own Houses	Others' Work-shops
1. Kasera	51	275	275	..	275	..
2. Kumhar	18	205	190	15	205	..
3. Kunbi	30	84	81	3	..	84
4. Koeri	30	50	50	..	..	50
5. Kalvar	30	30	30	..	..	30
6. Muslim	7	7	7	..	..	7
7. Raidas	47	112	112	..	..	112
8. Lohar	30	30	30	..	..	30
9. Yadava	7	13	13	..	..	13
Total	250	806	788	18	480	326

In 1894* workers belonging to a number of castes such as Siqligar, Kanchan Ramjani, Chhipi, Kayasth, Teli, Halwai, Barai, Bhunja, Hajjam, Ahir, Bhang, Saraogi, Baniya, Ummar Baniya, Kunbi, Koeri, Chhattri, Sunar, Bangali, Khatri, Kalwar, Brahman, Kumhar, Gond, Gosain, Patwa, Musalman, Lunia, Marhatta and Christian were found working at Varanasi in this industry. Workers of the Raidas and Lohar castes are an addition to the old list. Traditionally, the Kumhar are potters,

*G. R. Dampier : *A Monograph on the Brass and the Copper Wares of the N. W. Provinces & Oudh*, 1894.

CHAPTER II

LABOUR

the Kunbi are agriculturists, the Koeri are weavers, the Kalwar are dealers in country liquor, the Raidas are shoemakers or dealers in hides, the Lohar are ironsmiths and the Yadavas (Ahirs) are agriculturists or herdsmen. The copper and brassware industry has attracted workers from a number of castes. With the spread of education and the increase in economic pressure, the barriers of caste and creed have weakened and persons belonging to castes other than those traditionally engaged in this handicraft have taken to this vocation.

The largest number of workers (about 34 per cent) in this industry belongs to the Kasera caste, followed by the Kumhars (about 25 per cent) and Raidas, a sub-caste of Chamar (about 13 per cent). The Kasera community has been traditionally associated with the manufacture and finance of this industry. All the Kasera and the Kumhar artisans work within their own houses while workers of other castes are employed in the factories or workshops not owned by them. Out of 806 workers covered by the survey, only 18 were female. No child workers were found engaged in these units.

All the processes of production of brass and copperwares are not carried out in all the production units that were surveyed. The following statement shows the distribution of units by the processes carried out therein :—

Name of Process	Number of Units	Number of Workers engaged	Average Number of Workers per Unit
1. All processes			
(a) Artware units	21	29	1.4
(b) Other units	30	618	20.6
2. Moulding	28	54	1.9
3. Filing	8	35	4.4
4. Chiselling	18	63	3.5
5. Polishing	4	7	1.7
Total	109	806	7.4

The average number of workers in units producing utilitarian articles where all the processes of production are carried is the highest (20.6 persons per unit), while in moulding and polishing processes, the average number is as low as 1.9 and 1.7 persons respectively. In the units where artware are manufactured, the average number of workers per unit is only 1.4, the model number being one only, in spite of the fact that all the processes of production involved in artware production are carried out in these units.

The following statement shows the distribution of production units surveyed according to their organisations :—

Name of Association or Society	Number of Units which are Members	Number of Workers engaged	Process carried out
1. Peetal Udyog Sahkari Samiti, Sunderpur	8	22	Moulding
2. Dhatu Kala Udyog Sahkari Samiti, Adityanagar	10	22	Moulding
3. Barta Udyog Sahkari Samiti, Bhuletan	11	75 (a) Filing (8 units) (b) Chiselling (1 unit) (c) All processes (2 units)	
4. Hastkala Peetal Udyog Sahkari Samiti, Kashipur	17	60	Chiselling
5. Benares Brass Merchants' and Manufacturers' Association, Thatheri Bazar	28	581	All Processes
6. Artware Units	25	36 (a) All processes (21 units) (b) Polishing (4 units)	
7. Other Units	10	10	Moulding
Total	109	806	

The units which are members of the various co-operative societies or the Association do not have any joint workshops or production programmes. Each member unit is engaged in production of articles or one process of production, independent of others.

SKILLED WORKERS

The distribution of workers in the category of skilled and non-skilled workers is quite difficult. When one visits a unit of production and watches the workers moulding and casting, filing and scraping and chasing and embossing, one is impressed by the technical dexterity of the craftsman and treats him as skilled. Actually speaking, the craft is hereditary and hence the workers do not receive any formal training, except picking up work in the usual course through a prolonged period of working. In course of time, they become so expert in their work that they go on performing the various processes of production almost automatically. There can be no hard and fast distinction between the skilled and the semi-skilled workers. Roughly speaking, the workers engaged in the manufacture of domestic utensils and *pua* articles may be treated as semi-skilled, except for the *dhalaiya* or the worker who casts the wares. The element of technical skill comes into greater prominence in the manufacture of artware, especially the repousse' work. Workers engaged in shape-making, chiselling, embossing, polishing and lacquering are definitely skilled workers. In fact, repousse' work is the crux of the craftsman's skill. Out of the workers covered by the survey, the following 31 workers were reported to be highly skilled and efficient craftsmen in the various processes of production :—

Process	Names of Craftsmen	Mohalla	Name of Units
1. Moulding and Casting	1. Hori Lal	Sunderpur	Own shop
	2. Ram Narain Lal	"	"
	3. Harihar Singh	"	"
	4. Chhedi Ram	Adityanagar	"
	5. Laxman Ram	"	"
	6. Hamid Ahmad	Sarai Haraha	Azimullah Bus & Co.
	7. Punnu Bhai	"	"
	8. Ram Sanehi	Thatheri Bazar	Basant Lal & Bros.
	9. Ram Lal	"	"
2. Scraping	1. Ram Lakhna	Kashipur	Own shop
	2. Panna Ram	"	"
	3. Nasim	"	"
	4. Ram Harta	"	"
	5. Hari Nath	Bhuletan	"
	6. Shyam Nath	"	"
	7. Hanuman Singh	Thatheri Bazar	Nepal Ram & Co.
	8. Ram Yadava	"	"
	9. Bachi Ram	"	"
3. Polishing	1. Imam Ahmed	Raja Darwaza	V. P. Rastogi & Co.
	2. Chandan Singh	"	"
	3. Chandu	Thatheri Bazar	Basant Lal & Bros.
	4. Ram Dulare	"	"
	5. Dulhajan Ram	"	"
4. Repousse	1. Bholu Ram	Haraha	Own shop
	2. Chhedi Ram	"	"
	3. Moti Lal	"	"
	4. Ram Lal	Dal Mandi	"
	5. Hira Lal	"	"
	6. Laxmi Narain	Thatheri Bazar	"
	7. Punnu Lal	"	"
5. Lacquering	1. Azimullah	Dal Mandi	"

WAGES

Generally the workers are employed by the workshop owners on contract basis. In some cases, they work in the workshop of the producer and are paid in direct proportion to their output, according to the stipulated rates. The workers are supplied with tools and raw materials. In other cases, they work in their own workshop where utensils or other wares are brought in an unfinished state for a particular process, the payment for every process to be made according

to prescribed charges by weight. For example, one set of workers moulds and casts the utensils by sand-casting method and charges for this process by weight. The various parts of utensils are then sent to another set of workers for the processes of soldering, filing and scraping and thereafter for polishing, if needs be. Payment for these processes is to be made to them according to the fixed charges by weight. In such cases, sometimes all the workers engaged belong to the same family—father and sons working together and hiring one or two labourers according to necessity.

Workers in various processes have their trade unions which meet from time to time and lay down the rates of charges for various processes. The middle-man-financier also has a strong hand in determining these rates because work is done to his order and he finances the industry and arranges for the marketing of the finished products.

The following statement shows the average daily earning of various types of artisans engaged in the brass and copper ware industry :—

Artisan	Work done by the Artisan	Average Daily Earning
I. CASTING PROCESS		
1. Para maker	Worker who prepares clay moulds for para casting	Rs. 2.50
2. Taiyariwala	Worker who gives the finishing touches with the plaster of <i>pindol mitti</i> and joins the inner and outer structure of the para	Rs. 2.50
3. Dhalaiya	Worker who casts the wares	Rs. 3-4
4. Galaiya	Worker who puts the raw material into the crucible and heats it in fire, worked by bellows	Rs. 3.00
5. Bhattiwala	Worker who joins <i>gharia</i> to the para and heats the mould in the <i>bhatti</i> (furnace)	Rs. 3.00
6. Mitti Safaiwala	Worker who breaks the para and removes the baked clay out of the ware	Rs. 2.00
7. Ritaiya	Filer	Rs. 2.00
8. Chhilaiya	Scraper	Rs. 3.00
9. Khinchaiya	Worker who pulls the strap backward and forward for revolving the roller and so also the vessel during the process of scraping. In case of another type of scraping machine, he has only to turn a big wheel round.	Rs. 1.50
10. Niyariya	Worker who collects scrapings and filings of brass and also small pieces of brass, copper or <i>kaskut</i> from the ashes or <i>masala</i> (sand) used in the casting process	Rs. 2.00
11. Koyala tornewala	Worker who reduces big pieces of coal into smaller ones	Rs. 1.00
12. Juraiwala	Worker who solders together various parts of ware	Rs. 3.00
II. REPOUSSE' AND ENGRAVING WORK		
13. Shape maker	Worker who makes the pencil drawing of the article to be prepared	Rs. 3.00
14. Naqqashiwala	Worker who does the repousse' or engraving work	Rs. 3.50
15. Jaraiwala	Worker who joins <i>kundas</i> or handles to the wares	Rs. 2.50
16. Tezabwala	Worker who cleans the ware with the help of acid	Rs. 2.00
17. Polishwala	Worker who finally polishes the ware	Rs. 2.25

MOBILITY OF LABOUR

Labour in the copper and brassware industry is not mobile in the sense of having seasonal migrants as artisans. All the workers are engaged full-time in the craft throughout the year. They have no strings elsewhere. The industry is spread over the different *mohallas* of Varanasi city and the two adjacent villages Sunlapur and Adityanagar, which have become part of the Corporation. Workers engaged in their own workshops do not move to another establishment, unless their own workshops are liquidated and closed down. In course of time they attain efficiency in the various processes requiring higher skill. Thus an unskilled worker becomes semi-skilled and a semi-skilled worker becomes skilled and so on. Vertical mobility is, therefore, but natural.

In case of workers not working in their own workshops, both vertical and horizontal mobility takes place. A worker moves from one workshop to another either when he is no longer wanted or when he can get more wages or better working conditions in another working unit.

EFFICIENCY

The efficiency of workers depends upon their personal skill and attainments, the technical training imparted to them, the wages offered, the working conditions in the workshops and the living conditions of the workers. A large percentage of workers have not received any formal technical training. They have picked up the work by experience after working as apprentices in the workshops with other workers.

Even then they are quite well-up in their work. The wages offered to the craftsmen are low and hence with their poor earnings they cannot maintain a reasonable standard of living. The working conditions leave much to be desired. The moulders and casters are found working in corrugated galvanised iron sheet sheds without any ventilation. The heat of the iron sheet above and the furnace below is simply intolerable. No coloured glasses are supplied to them to be used while working near the furnace and hence eyesight is likely to be impaired early. Similar conditions exist in sheds where soldering, filing, scraping and polishing are carried out. They are situated in the lanes and are dark and ill-ventilated in most cases. Electric light during the day is not used except in a few workshops. In course of time, the workers get used to these working conditions.

TECHNICAL TRAINING

Facilities for technical training exist at the Batuk Prasad Khattri Government Polytechnic, Chowkaghat, Varanasi. From its date of establishment in 1927 up to July 1955 this institution was known as the Batuk Prasad Khattri Industrial Institute, after the name of Rai Bahadur Batuk Prasad Khattri, who donated one lakh of rupees for its establishment. The institute was taken over by the U. P. Government in 1955.

The main object of the Institute is to improve the traditional methods of design and craftsmanship of copper and brass work and ornaments, to train students in the methods of making articles of artistic merit and utility to suit the modern demands. The school provides instruction in the following trades :—

- (i) Shape-making, Turning and Polishing
- (ii) Repousse' and Chasing
- (iii) Engraving and Enamelling
- (iv) Casting and Clay-modeling
- (v) Goldsmithy
- (vi) Electroplating

The course of study for every trade is of three years except electroplating which takes only two years. Certificates are awarded to the successful candidates by the Government. Admission to every class is decided on the basis of an entrance examination which is held on 2nd July every year.

In 1962, the Industries Department established a separate Embossing and Repousse' Training Centre at Varanasi for imparting training to students in embossing and repousse' work. Stipend is also given to encourage the trainees. In 1962, training was imparted to 5 trainees only.

Subsequently, a Common Facility Centre was also established at Varanasi in order to make the latest technical know-how available to the artisans engaged in the manufacture of copperware. The craftsmen are given technical guidance in matters of producing a

number of articles. They are allowed to use the machinery, tools and equipment at the Centre. Assistance is given to local manufacturers in producing quality goods of modern and attractive designs. Co-operative societies engaged in production of copperware are given financial help as well as technical guidance in the production and marketing of goods.

For determining the expenditure pattern, a study of the budgets of 31 households of various categories was made after interrogating the heads of the households and filling in proforma of budgets. The probability of error in the figures of income and expenditure is expected to be greater because everyone has a tendency to understate the income and inflate the expenditure. Besides, hardly anyone maintains proper accounts of income and expenditure.

Budgets of the following four persons are discussed to bring out the expenditure pattern :—

1. Shri N. D., an owner of a production unit, with an average income of Rs. 600 p.m.

2. Shri K. C., a skilled craftsman, with an average income of Rs. 200 p.m.

3. Shri P. L., a skilled craftsman, with an average income of Rs. 200 p.m.

4. Shri M. L., a skilled craftsman and owner of an artware unit, with an average income of Rs. 375 p.m.

Shri N. D. has seven members in his family. His income from the industry is Rs. 600 p.m. His expenditure pattern was reported to be as follows :—

Items	Expenditure
1. Cereals and pulses	Rs. 54.00
2. Vegetables	Rs. 23.00
3. Ghee and oil	Rs. 55.75
4. Condiments	Rs. 4.65
5. Milk	Rs. 37.00
6. Sugar	Rs. 10.00
7. Tea	Rs. 4.50
8. Bhang	Rs. 9.60
9. Meat	Rs. 8.00
10. Fuel and light	Rs. 26.50
11. Smoking, <i>pan</i> , <i>supari</i>	Rs. 11.50
12. Clothing and footwear	Rs. 48.62
13. House rent	Rs. 110.00
14. Education	Rs. 40.00
15. Servant	Rs. 15.00
16. Miscellaneous	Rs. 60.00
Total	Rs. 518.12

The expenditure on food items in the family is 40 per cent of the total expenditure. The expenditure on house rent is excessive and so is the expense on intoxicants. There is a saving of Rs. 81.88 nP. per month.

Shri K. C. has eight members in his family and has an income of Rs. 200 p.m. as a craftsman. His monthly expenditure was reported to be as follows :—

Items	Expenditure
1. Cereals and pulses	Rs. 46.50
2. Vegetables	Rs. 14.50
3. Meat	Rs. 5.50
4. Milk	Rs. 18.00
5. Ghee and oil	Rs. 30.50
6. Condiments	Rs. 4.25
7. Sugar and <i>gur</i>	Rs. 8.37
8. Tea	Rs. 1.50
9. Fuel and light	Rs. 10.56
10. Chewing tobacco, <i>pan</i> and <i>supari</i>	Rs. 3.75
11. Clothing and footwear	Rs. 10.00
12. House repairing	Rs. 8.00
13. Education	Rs. 5.00
14. Miscellaneous	Rs. 13.00
Total	Rs. 179.43

The expenditure on food items is about 72 per cent of the total expenses. The expenditure on clothing and footwear is very low. It seems to have been understated. The budget is surplus by Rs. 20.57 nP. per month.

Shri P. L. has six members in his family and his monthly income as a craftsman is Rs. 200 p.m. His expenditure pattern was returned as follows :—

Items	Expenditure
1. Cereals and pulses	Rs. 37.00
2. Vegetables	Rs. 18.00
3. Meat and fish	Rs. 11.00
4. Milk	Rs. 20.00
5. Ghee and oil	Rs. 18.00
6. Condiments	Rs. 4.12

Items	Expenditure
7. Sugar and <i>gur</i>	Rs. 6.31
8. Tea	Rs. 1.50
9. Tari	Rs. 1.25
10. Fuel and light	Rs. 10.56
11. Chewing tobacco, <i>pan</i> and <i>supari</i>	Rs. 6.25
12. Clothing and footwear	Rs. 11.00
13. House repairing	Rs. 5.00
14. Education	Rs. 10.00
15. Payment of debt	Rs. 6.25
16. Miscellaneous	Rs. 19.00
Total	Rs. 185.24

The expenditure on food items is about 63 per cent of the total expenditure. The budget is a surplus one, as even after payment of debt in instalments, there is a saving of about Rs. 14.76 nP. per month.

Shri M. L. has eight members in his family and has a monthly income of Rs. 375 p.m. by working as a highly skilled craftsman in artware production. His expenditure pattern was returned as follows :—

Items	Expenditure
1. Cereals and pulses	Rs. 80.00
2. Vegetables	Rs. 24.50
3. Meat and fish	Rs. 14.50
4. Milk	Rs. 37.50
5. Ghee and oil	Rs. 36.25
6. Condiments	Rs. 4.50
7. Sugar	Rs. 10.62
8. Tea	Rs. 2.25
9. Fuel and light	Rs. 20.88
10. Chewing tobacco	Rs. 1.25
11. Clothing and footwear	Rs. 17.00
12. House repairing	Rs. 12.50
13. Education	Rs. 20.00
14. Servant	Rs. 10.00
15. Miscellaneous	Rs. 28.00
Total	Rs. 319.75

The expenditure on food items is about 66 per cent of the total expenses. The budget is a surplus one as there is a saving of about Rs. 55.25 nP.

CHAPTER III RAW MATERIALS

The main raw materials used in this handicraft are copper and brass and the subsidiary ones are zinc, borax (*sohaga*), sulphur, nickel, etc. Zinc is used for preparing brass, nickel for obtaining German silver and tin or pewter for getting bell-metal. Borax is used as a flux in the moulding and soldering process and sulphur is used for cleaning silver. Nitric acid is used for melting silver for silver plating of artware.

Copper (*tanba* in Hindi) "has a reddish-brown colour, inclining to yellow, a faint but nauseous and disagreeable taste, and when rubbed between the fingers imparts a smell somewhat analogous to its taste. It is much more malleable than it is ductile, so that far finer bars can be obtained from it than wire."¹ Copper of three types is mainly used—first, block copper (*sil*) which is the best kind of copper and is largely used in making alloys; secondly, copper sheets (*chaddar*) and thirdly, copper shavings and old and broken utensils.

Zinc (*jasta* in Hindi) is a "bluish-white metal of considerable lustre and susceptible of polish. In ingots and castings it is brittle, though tough in sheets, and is more tenacious than either tin or lead."¹

Tin and pewter (*ranga* in Hindi) are used as alternatives. "Tin in general appearance is white, approaching silver, and has metallic lustre. It is malleable, ductile and tenacious and heavier than zinc. Pewter is a tin alloy of most uncertain composition; some state it to be an alloy of 20 parts of tin to one of copper, while others say that it is an alloy of tin and lead. But whatever the other component metal be, whether copper or lead, its volume is always very insignificant in comparison with the tin with which it is mixed."²

Nickel is a white magnetic metal, very malleable and ductile.

Brass (*pital* in Hindi) is an alloy having 1 part zinc and approximately 1 or 2 parts of copper. The alloy known as *kaskut*, *bharat* or *kansa* is obtained by mixing copper and zinc in equal parts. It is generally used for casting *batuas* and other cooking vessels or for preparing cheap ornaments for women of the poorer classes. "The colour of *kaskut* is somewhere between that of brass and bell-metal, but it has not the sheen of the latter composition."²

Bell-metal (*phul* or *kansi* in Hindi) is obtained by mixing 4 parts of copper and one part of tin or pewter. *Phul* is largely used in making *thali*, *katori*, *katora*, cymbals, ornaments etc. Acid does not effect this alloy as it contains tin or pewter. Hence, edibles like curds or tomato vegetables do not go bad in *phul* utensils.

German silver is an alloy of copper, nickel, and zinc. It is white like silver.

1. G. R. Dampier: *A Monograph on the Brass and Copper Wares of the N. W. Provinces and Oudh*, 1894.
2. *Ibid.*

The approximate price of the above metals and alloys and other raw materials is given below :—

Raw Material	Price
1. Copper	
(a) Sheet (<i>chaddar</i>)	Rs. 8.02 nP. per kg.
(b) Copper cutting	Rs. 6.29 nP. per kg.
(c) Old utensils	Rs. 5.88 nP. per kg.
2. Brass	
(a) Sheet (<i>chaddar</i>)	Rs. 6.15 nP. per kg.
(b) <i>Chanda</i> brass (Mirzapuri)	Rs. 5.35 nP. per kg.
(c) Old utensils	Rs. 4.40 nP. per kg.
(d) Bars	Rs. 8.02 nP. per kg.
3. <i>Kansa</i>	
(a) Ingot (<i>silli</i>)	Rs. 4.28 nP. per kg.
(b) Old utensils	Rs. 4.28 nP. per kg.
4. <i>Phul</i>	
Old utensils	Rs. 11.76 nP. per kg.
5. Zinc	
(a) English Zinc (Metal cut)	Rs. 2.50 nP. per kg.
(b) <i>Patia</i>	Rs. 2.14 nP. per kg.
(c) <i>Deshi</i> zinc (<i>tanki</i>)	Rs. 2.06 nP. per kg.
6. Pewter (<i>ranga</i>)	
Ingot (<i>silli</i>)	Rs. 7.45 nP. per kg.
7. Lead (<i>sisu</i>)	
(a) <i>Patia</i>	Rs. 1.76 nP. per kg.
(b) Old <i>sisu</i>	Rs. 1.60 nP. per kg.
8. Aluminium	Rs. 2.94 nP. per kg.
9. English Lustre	Rs. 2.50 nP. per bar
10. <i>Deshi</i> Lustre	Rs. 0.88 nP. per kg.
11. Peerless	Rs. 12.00 nP. per kg.
12. <i>Lal</i> (red) powder	Rs. 64.20 nP. per kg.
13. <i>Ral</i> (lac)	Rs. 2.67 nP. per kg.
14. Potassium Cyanide	Rs. 15.40 nP. per kg.
15. Black clay	Rs. 2.14 nP. per kg.
16. Delhi mitti	Rs. 0.75 nP. per <i>tokni</i>
17. Pili mitti	Rs. 0.25 nP. per <i>tokni</i>
18. <i>Bhusa</i>	Rs. 0.13 nP. per kg.
19. Mobiloil (used)	Rs. 1.34 nP. per kg.
20. Oil <i>rendi</i>	Rs. 2.14 nP. per kg.
21. Kerosene oil	Rs. 0.37 nP. per bottle

RAW MATERIALS

22. Hard coke	Rs. 0.18 nP. per kg.
23. Soft coke	Rs. 0.13 nP. per kg.
24. Charcoal	Rs. 0.18 nP. per kg.
25. Firewood (<i>sal</i> or <i>mango</i>)	Rs. 0.08 nP. per kg.
26. Used blankets	Rs. 0.94 nP. per kg.

The following statement shows the amount of some of the raw materials in tons used at Varanasi from 1957 to 1961 :—

Year	Brass	Copper	Zinc	German Silver	Nickel
1957	540	725	400	500	21
1958	550	750	400	510	3
1959	800	657	450	400	10
1960	722	590	730	628	13
1961	842	630	700	560	8

Source : Benares Brass Merchants' and Manufacturers' Association.

About 90 per cent of the requirements of the above metals of the country are met but of imports. Copper is imported from Africa, America and Great Britain, zinc from Australia and Russia and nickel from Canada. Up to 1957 there was no restriction on the import of the above articles from abroad but thereafter restrictions had to be imposed due to paucity of foreign exchange. Consequently, prices of raw materials began soaring. In 1958, the scarcity of these raw materials began to be felt. Hence on April 2, 1958, the Government of India promulgated the Non-Ferrous Metals Control Order, 1958, for controlling the price and distribution of imported copper. Stocks of copper in the country were seized and frozen. This order was subsequently amended by the Non-Ferrous Metals (Control) Amendment Order, 1959 dated December 4, 1959. According to the new scheme, the quota of non-ferrous metals, especially copper, for the actual users was fixed on the basis of their average consumption of this metal in the year 1957. At present, the quota is distributed after every six months by the Director of Industries through the District Industries Officer. About 25 per cent of the demand of the producers can be met from the raw materials thus supplied. The remaining demand is met by making purchases in the open market. Brass and copper scrap is purchased in huge quantities. The small producer cannot possibly make purchase at high price from the market and hence he has to curtail his production.

According to information collected in December, 1962, the following Associations, Co-operative Societies and individuals were eligible for allotment of brass copper by the Industries Department :—

1. Co-operative Societies

(a) Peetal Udyog Sahkari Samiti

The society was registered on July 18, 1955 and has 52 members. It is engaged in manufacture of artwares and domestic utensils of brass and copper. No quota of brass and copper was reported to have been allotted to this society.

(b) Hastkala Pital Udyog Sahkari Samiti, Kashipura

The society was registered on February 6, 1957 and has 126 members. It is engaged in manufacture of artwares and domestic utensils. The Industries Department allotted to it 2.90 tons of brass during April-September 1960 and 22.80 tons of copper during April-September 1961.

(c) Kashi Kala Kendra Sahkari Samiti Ltd., Thatheri Bazar

The society was registered on February 26, 1958 and has 15 members. It is engaged in the manufacture of artwares and general wares. No brass or copper was reported to have been allotted to this society.

(d) Dhatu Kala Udyog Sahkari Samiti, Aditya-nagar

The society was registered on May 3, 1959 and has 127 members. The Industries Department allotted 8.20 tons of copper to this society from October, 1960 to March, 1961.

(e) Pital Udyog Sahkari Samiti Ltd., Sunderpur

The society was registered on November 17, 1960 and has 49 members. It manufactures domestic utensils only. No copper or brass was reported to have been allotted to it.

(f) Bartan Udyog Sahkari Samiti Ltd., Bhuletan

The society was registered on January 2, 1961 and has 77 members. It manufactures *lotas* and *batlohis* of brass and copper. No copper or brass was reported to have been allotted to it.

2. Associations

(a) The Benares Brass Merchants' and Manufacturers' Association, Thatheri Bazar represents the manufacturers and merchants of artware, domestic utensils and *puja* articles made of brass, copper and German silver. The Industries Department allotted to it 6.95 tons of brass during April-September 1960 and 118.90 tons of copper between April-September, 1960.

(b) The Wire and Wire Mesh Manufacturing Association, Raja Darwaza received in allotment 3.65 tons of brass and 100 tons of copper during April-September, 1960.

(c) The Kashi Dhalai Sangh, Navapura did not get any allotment.

(d) Similarly the Varanasi Non-ferrous Metal Rolling Manufacturing Association, Sarai Harha was not given any allotment.

The allotment to individual dealers was as follows :—

Name of Dealer	Period	Allotment
(a) M/s Vishwakarma Engineering Works, Kashipura	April-September 1961	0.35 tons of copper
(b) M/s Khanna & Sons, Kalika Gate	April-September 1961	3 tons of copper
(c) M/s Vinay Engineering Works, Assi	April-September 1961	1.5 tons of copper
(d) M/s India Sales & Service (Pvt.) Ltd., Vidyapith Road	April-September 1961	0.30 tons of copper
(e) M/s Ballabh Metal Works, Chowkaghat	—	—
(f) M/s Agarwal Metal Store, Raja Darwaza	—	—

(g) M/s Maheshwari Metal and Cottage Industry, Loharta

The small producers and members of the various co-operative societies complained that in the distribution of quota of copper and brass there is a bias in favour of the members of the Benares Brass Merchants' and Manufacturers' Association which is better organised and has vast resources and is, therefore, able to get a lion's share of the quota. They were, therefore, in favour of the distribution of raw material quota through the Co-operative Department. The Association has its counter-allegations against the co-operative societies.

The industry suffers from the non-availability of adequate raw materials at reasonable prices. Consequently, it cannot progress at a fast speed nor can the quality of the finished products improve. Availability of raw materials is a necessary pre-requisite to the progress of the handicraft.

CHAPTER IV

TOOLS AND IMPLEMENTS

The following main tools and implements are required for manufacturing brass and copper wares by the moulding process :—

1. Furnace

The furnace may be of two types—the mould furnace (*sanche ki bhatti*) and the crucible furnace (*mal ki bhatti*). "The mould furnace (*sanche ki bhatti*) is built round or square and is from five to six feet high by three to four feet in diameter. It is made of bricks, thickly coated with mud. A little more than halfway down is fixed a rough lattice framework of clay, generally made of bits of old crucibles; on this the moulds are placed to bake. Beneath this again lies the fuel which is introduced by a small aperture in the side of the *bhatti* below the frame. In some districts the top of the furnace is covered with a roughly shaped dome, in others slabs of indurated clay are slid over the top of the *bhatti* to prevent the heat escaping."

This type of *bhatti* is used in the mould casting (*para dhalai*) method of manufacturing wares.

"The crucible furnace or *mal ki bhatti* is generally sunk three feet below the surface of the ground and projects to about two feet above. It is almost invariably circular in shape and has ordinarily a diameter of from four to six feet. The same latticed platform is constructed halfway down the cylinder on which to rest the crucibles. An aperture is made below the platform, by which to feed the furnace, and near this are let in two ducts (*dhudka*). These connect with the nozzle of the bellows (*khal, khali* or *dhaunkni*) and thus introduce the blast into the lower chamber of the furnace; thence it escapes through the lattice platform and finally makes its exit through the slits left for this purpose between the slabs that cover the top of the furnace. The fuel used is usually cow dung, charcoal, and wood. A layer of fuel cakes is first spread and covered loosely with charcoal and wood."

Nowadays hand-operated bellows are not used. Instead, the wheel operated bellows (plate no. 15) are used for melting of metal scraps and billets, both in the mould casting (*para dhalai*) and the sand casting (*darza dhalai*) methods.

2. Crucible

The crucibles (locally called *gharia*) may be of clay or of graphite. The clay crucible (plate no. 14) is prepared from *kali mitti* (black clay), *pili mitti* (yellow clay) or *balua mitti* (sandy clay). Rice or *bajra* husk, *munj* or *ban*, *bhusa*, cow dung or horse dung, cotton, etc. are mixed with it to strengthen it. The *gharia* can be prepared either by hand or on the potter's wheel by the throwing method. The graphite crucible is made out of body prepared by mixing 13 parts of white clay, 6 parts of graphite and one part of cotton

by weight, kneaded by adding water. Graphite powder obtained from used and broken graphite crucibles can also be used for preparing the crucibles.

It is generally of two shapes. The U-shaped crucible (plate no. 15) is especially used in the *para* casting method in which the *para* and the *gharia* are joined together for casting the ware. It is, however, used in other methods of castings, too. The other type of crucible has the shape of an ewer, with its top closed in, but having a small hole left in one side, near the top. A crucible has three legs for being rested upon, so that it might not fall on one side. Its capacity varies from one seer to 20 seers, depending upon the quantity of metal to be melted.

3. Manually operated bow type lathe (locally called *kharad*) for making patterns and brass master-moulds.

4. Tools such as chisels (plate no. 1), foot rule (*foota*), wooden mallet (*moongri*) (plate no. 1), iron hammer (*hathaura*) (vide plate no. 1), divider (*parkar*), outside and inside calipers, right angle, (*guniya*), screw driver (*paichh*), pliers (*plas*) (plate no. 2) etc. for making patterns and brass master moulds.

5. Set of tools for moulding brass castings, including iron sheet mould boxes.

6. *Salnga* (plate no. 11), a rough lathe for finishing the inner core of the clay mould in the *para* casting method.

7. *Kharadni* (plate no. 12), a small strip of iron used for scraping the inner core of the clay mould on the *salnga*.

8. *Sansa* (plate no. 15) a large pair of tweezers for placing in and taking crucibles out of the fire. It is made of iron.

9. *Sansi* (plate no. 15), a small pair of tweezers used for holding or picking up any hot substance.

10. *Karchhul* (plate no. 16), an iron ladle used for skimming the molten metal and also for transferring it into the mould during the process of casting.

11. *Basuli*, an implement made of iron, with a wood handle, used for removing the molten metal which might be accumulated round the ingate of the moulds during the process of casting.

12. *Konch*, a big iron implement used for taking moulds out of the furnace.

13. *Reti* or steel files (plate no. 1) of different shapes and sizes for rough shaping of brass castings. These are used during the process of filing.

1. G. R. Dampier: *A Monograph on the Brass and Copper Wares of the North-Western Provinces and Oudh*, 1894.

2. *Ibid.*

14. *Wooden Sandan*, "a two pronged triangular piece of wood, in the apex of which the vessel is fixed" during the process of filing.

15. *Iron Sandan*, "a heavy piece of rod iron, turned up at one end to give it a firm hold when pressed against the wall and flattened at the other. The flattened end is introduced into the vessel, and acts as a kind of anvil, on which the filer can remedy any minor defects of shaping by beating with the hammer."

16. *Chheni*, an iron chisel used for cutting any metal also for striking off the nails from the vessel.

17. Wheel-operated lathe, called the *charakh* for scraping the utensils. The wooden lathe consists of a heavy roller, about 5 feet in length. The bottom of the vessel is heated and it is affixed to the thin end of the roller by means of lac (*chapra*). After the lac has become cold and the joint has become firm, a boy worker begins revolving the lathe by turning the big wheel round. The vessel also revolves. The *Kumwa* or scraper applies the various scraping instruments called the *lahni* and *randa* etc. to the vessel for peeling the unwanted portion off the vessel.

18. Electrically operated lathe consisting of two ball bearings and steel shaft for turning and scraping of brass or other castings. This type of scraping lathe (plate no. 19) is replacing the wheel-operated lathe.

19. Set of steel tools, including *lahni*, *randa* etc.; for turning and scraping of castings on the lathe and smoothing their joints.

20. Workers' table fitted with vice, (*bank* or *shikanja*) (plate no. 2) which can hold any article firmly for being worked upon.

21. Galvanised sheet metal tub and basins for washing of wares in kerosene oil prior to their polishing on buff.

22. Wheel-operated or electrically operated buff machine (plate no. 20).

The following tools and implements are required for manufacturing wares from metal sheets :—

1. Beating furnace or *bhatti pitai* or *anna* for heating the brass or copper plates (*chakka* or *chanda*) to make these easily workable.

2. Pair of compasses (*parkar*) for marking pieces of round sheets to be cut for making *thali*, *thal*, *parat*, *tashtari*, etc.

3. Steel snippers (*kat* or *gainchi*) (plate no. 3) for cutting of brass and copper sheets pieces.

4. Hand-operated metal sheet circle cutting machine.

5. Steel-pointed needle for making outlines of designs on wares.

6. Set of engraving tools, such as *bulia*, *tilia*, *pan-wari*, *chaurasi*, *lorhata*, *summi*, *moli*, *dana*, *badami*, (plate no. 5). These tools also used for making repousse' and relief designs on wares.

7. Hand-operated screw presses and steel dies for making cut designs on wares.

8. *Thia*, *adda*, or *kunda*, (plate no. 4) a stand made of wood used in repousse' work. Lac is affixed on a separate round piece of wood. The ware to be worked upon is heated at the bottom and affixed to the lac plate, which is placed on the *thia* during the repousse' work.

9. Various stakes such as bick iron, extinguisher stake, (*sandan*), halfmoon stake (*sabra*), tinman's anvil (*nihai*), cannister stake, creasing iron, hatchet stake, funnel stake, etc. (plate no. 3).

10. Templates for testing the symmetry of the ware (plate no. 6).

11. *Dari*, a brass stand with depressions of different sizes on its six faces for making necessary hollows or depressions in the ware (plate no. 4).

12. Set of drawing instruments for making designs on paper sheets.

13. Spray painting machine for spraying synthetic clear lacquer on metal wares to safeguard the wares against getting tarnished due to the effect of weather.

14. Stands for air-drying of lacquered wares.

In addition to the above, a few more tools and implements are used. All these are available in the local market at Varanasi. Some of these are prepared by the local ironsmiths and carpenters while others are manufactured in factories.

CHAPTER V

ARTICLES AND THEIR FORMS AND DESIGNS

Varanasi is the home of utilitarian utensils, *puja* vessels and decorative art pieces. They are made of brass, copper and brass-copper combination. The utensils used for religious purposes are almost invariably made of copper as it is considered to be a purer metal. Since copper is quite costly some utensils used for religious purposes are also made of brass but to add a tinge of religious sanctity to them, a copper sheet is soldered in the middle. *Ganga-Jamuni lota* which is used for carrying *Ganga jal* (water of river Ganga) is a typical example of this kind. This vessel is made of brass but has a copper sheet soldered in the middle. Thus the vessel looks more beautiful. Besides, the use of two metals is indicative of the confluence of the two holy rivers, Ganga and Yamuna. The ornamental pieces may or may not have copper in them.

A. UTILITARIAN UTENSILS

A large variety of utilitarian utensils is manufactured at Varanasi. *Katori* (bowl or cup), tumblers (plate no. 40) *katordan* (bowl with a lid), *thali* (a big metal plate used for taking food), *parat* (large shallow dish of brass used for kneading the dough), *gagra* (pitcher), *handa* (water container), *lota* (a small metal pot or ewer as shown in photo plate no. 40), water jug, *balti* (bucket), *batua* (a cooking vessel), *patili* (a vessel for boiling rice or dal or cooking vegetables), tiffin carrier, and *karhai* (frying pan) are some of these products which are used in the kitchen. The Nepali *karva* is sometimes given as a marriage present while the hammered wash basin shown in photo plate no. 41 is used in the household. All these articles are manufactured by two methods, viz., casting and beating processes. The surface of these articles is either smoothened by chiselling, in which case the surface gives a bright appearance, or by hammering in which case a dotted surface is the result (plate no. 35). No special colouring whatsoever is done on these vessels.

The traditional forms and designs of a few utensils produced at Varanasi, e.g., *lota*, *gagra*, *batua*, *patili*, *karahi*, *balti*, *pandan*, jug and *karva* are described below:—

One of the designs of *lotas* is known as the *Surti* design (plate no. 30). It is a non-moulded pot made of copper sheet and is produced in various sizes. It has a squarish body with a comparatively long and broad neck; the rim of the mouth almost resembles the shape of a funnel. It is used for religious purposes, i.e., for keeping *ganga jal* (water of river Ganga) for *puja*. It is, therefore, quite popular in holy places, viz., Hardwar, Madras, Allahabad, Varanasi, etc.

Another type of *lota* prepared at Varanasi is locally called the Benarsi *gol* (round) *lota*. It has a flat bottom. It is made of brass or *gillet* by the *darza* casting method and is used for domestic purposes. The weight of *lotas* of this design varies from 600 gms. to 1½ kg. The size also varies according to weight. A *lota* of 600 gms. in weight has a height of 4" and breadth of 5" and its market price is Rs. 4.97 nP.

The traditional forms of the *gagras* are *Champa gagra*, *Benarsi gagra*, *Mirzapuri gagra* and *Jaipuri gagra*.

(a) The *Champa gagra* is a water pot made of copper or brass. The one made from copper is used for rituals. It has an oval shaped body, a short narrow neck and a broad mouth with a rim. At times, concentric circles are made at intervals throughout the vessel in order to beautify it. It is moulded into two parts which are soldered together. The upper portion is chiselled and looks bright while the lower portion is only filed and smoothened (plate no. 31).

(b) The *Benarsi gagra* is a speciality of Benares and hence the name. It is shaped by beating metal sheets. It has an almost spherical body and a narrow neck. Its mouth gives the appearance almost of a funnel. It is manufactured in varying sizes and weight, ranging from 1½ kg. to 4½ kg. As in the case of *Champa gagra*, its upper portion is chiselled while the lower portion is filed only. It is usually used for storing water (plate no. 32).

(c) The *Mirzapuri gagra* (plate no. 34) is a vessel used for storing water. Its design originated in Mirzapur but has been adopted by the craftsmen of Varanasi. It is prepared usually by the *para* casting method. The one shown in photo plate no. 34 has been moulded as one piece by the *para* casting method. The lower portion has only been filed while the upper portion has been chiselled and polished. Concentric circles have been made with a chisel during the process of scraping. The *gagra* shown in photo plate no. 33 is a hand-beaten pot made out of sheet brass. Comparatively, it has a rectangular shape. The upper portion has been chiselled and polished.

(d) The *handa* is a vessel used for carrying and storing water. It is manufactured by beating sheet brass in two parts which are soldered together for preparing a composite whole. The vessel is manufactured both at Varanasi and Mirzapur in various sizes, its weight ranging from 2½ kg. to 10 kg. The one shown in the photograph (plate no. 35) is of 5 kg. The lower portion is hammered with an iron hammer and the upper portion is chiselled. It is quite popular in Madhya Pradesh, Bihar and Uttar Pradesh.

Different forms of *batuas* (cooking vessels) are also prepared in Varanasi. Some of these traditional vessels are the *Mirzapuri batua*, the *Poorbi batua* and the *Gol batua*. These are especially liked by the people because of their heaviness and durability. These are all moulded wares. The size naturally depends upon the weight which ranges between 1½ kg. and 5 kg. The upper portion of such *batuas* is generally filed and chiselled while the lower portion is only filed. Chiselling after filing gives a bright appearance. The metal used for the preparation of *batuas* contains 2 per cent of lead and 0.5 per cent of tin. Acidic edibles like tamarind and tomatoes do not go bad if cooked in vessels of such an alloy.

(a) The *Mirzapuri batua* is a fine example of an ordinary cooking vessel in extensive use. It is called *Mirzapuri* because this design is believed to have originated from Mirzapur. Nowadays Varanasi is noted for the manufacture of *Mirzapuri batuas*. But this articular design is confined to the craftsmen living in Adityanagar and Sundernagar, which are villages forming the southern portion of Varanasi Corporation. These *batuas* have a semi-spherical body and a tapering short neck over which is a flattened rim. As in other *batuas*, the upper half is filed and chiselled while the lower portion is only filed. Concentric circles are also made at intervals on the lower half of the vessel (plate no. 36) during the process of scraping.

(b) *Poorbi batua* is a long-sized cooking vessel which is not very popular.

(c) The *gol batua* which is a round-shaped and flat-bottomed vessel is quite popular.

The *Benarsi patili* is a speciality of Varanasi and hence the name. It is made of *gillet* or brass by the *darza* casting method. The upper and the lower portions are cast separately and are then soldered together. The upper portion is both filed and chiselled while the lower portion is only filed and does not, therefore, have a glossy and shining surface. It is used for cooking *dal*, boiling rice or preparing vegetable. It is manufactured in varying sizes and weights ranging from 500 gms. to 3 kg. It is sold @ Rs. 6.50 nP. per kg. A *patili* of 630 gm. in weight has a height of $3\frac{1}{4}$ " and a breadth of $5\frac{1}{4}$ " and costs Rs. 4.60 nP.

The *karahi* (frying pan) is made of brass by the *darza* casting method. The two handles are cast separately and then riveted to the edges. At the bottom it is quite thick while at the edges it is thinner. It is manufactured in various sizes and weights. A *karahi* of one kg. weight has a diameter of 8" and a depth of 3" and costs about Rs. 6.50 nP.

The *balti*, (bucket as shown in plate no. 37), which is used for carrying and storing water, is made of *chanda* brass. It has soldered joints. The handle and the clips (*kunda*) are prepared separately by the *darza* casting method. The clips are riveted to the body made of sheet brass. A *balti* weighing one kg. and 400 gm. costs Rs. 9.80 nP. It is sold @ Rs. 7 per kg.

The *Benarsi pandan* (betel box) is prepared by the machine press process. Its handle is, however, prepared by *darza* casting method. Its weight varies from 1 kg. to 2 kg. A *pandan* of 1 kg. weight has a size of $6\frac{1}{2} \times 4\frac{1}{2} \times 3$ ". It is quite popular due to its durability and light weight. A *pandan* of *siah kalam* work, manufactured at Moradabad, is shown in photo plate no. 64.

The copper jug shown in photo plate no. 38 is manufactured in Varanasi and Moradabad. It is made either purely of brass or purely of copper, without any mixture. The upper portion of the jug is of beaten sheet while the lower portion and the handle are moulded. This vessel is more popular in Bengal and Bihar while in Varanasi itself it is seldom used.

The *Nepali karva* shown in photo plate no. 39 is a moulded pot of an alloy of copper and white lead fused in the ratio of 95 : 5. It is also made of silver and German silver. It is more popular in Bihar and Bengal than in Uttar Pradesh. Such wares form part of presents in marriages.

Photo plate nos. 42—45 show some utensils manufactured at Moradabad—a set of electroplate brass *dongas*, a tortoise-shaped electroplated *donga*, a set of electroplated brass tiffin carriers and a copper *safri lota* with a tumbler inside.

B. PUJA ARTICLES

The utensils used in the kitchen are generally made of brass or alloy but the vessels used for religious purposes are made either of copper or a combination of copper and brass. Copper is treated by the Hindus to be a purer metal and hence vessels used for *puja* are generally made of copper. Secondly, utilitarian articles are heavier in weight, because these are subject to greater wear and tear. The articles put to ritual use are much lighter in weight. Some of the articles are used exclusively for ritual purposes, e.g., the *tamrapatra*, the *panchpatra*, the *achmani*, the *samput*, the *dhoopdani*, and the *havankund* made of copper; the *gilas*, the *katori*, the *singhasan*, the flower basket, the *dibia*, the *dolchi* and the *kamandal* made of copper or brass; the *baithak*, the *arti* and the *dhoopdani* made of brass; the *ghadiyal*, the *jhanjh* and the *ghanta* made of brass or *phul*; the *garur ghanti* and the *kalash* made of brass or *kaskut* and so on. "The *achmani* or *panchpatra* used in the *Vaishnava* worship bears the figure of Ganesh or Hanuman marked on it, while that used by a *Saiva* will have a cobra (*nagphan*) on it or a *nandi*, and will be moreover *ashtadhataka*, or compounded of eight metals and made in the *Sivala* shape."

Photo plate no. 46 shows a copper *kalash* with a *trishool* (triad) design, after the three-headed spear of Lord Shiva, used on the top of a Shiva temple. It is manufactured by beating copper sheet. Finally, it is gilded to give it a golden look.

C. DECORATIVE ARTWARE

Other wares manufactured at Varanasi are the decorative and ornamental pieces. Wall plaques, images of deities, plates, lanterns, table lamps, wall planters, rose bowls, powder pots, flower vases, *surahis*, coasters, candy boxes, ash trays (plate no. 62), pin trays (plate no. 29), fruit bowls, flower pots, scented stick stands, etc. are some of them. These are made of copper, brass, brass-copper combination (encrusted ware) and copper with silver plating; but sometimes articles made of one metal are also encrusted with natural objects made of another metal in order to provide a contrast of colour (plate no. 47).

A common pattern is known as the *danewala* and another the *rukha*—the latter taking its name from a chisel locally called *rukha* which is used for making small spots on the surface of the salver. Repousse' work or *ubhar ka kam* is the most prized of all the ornamental processes in brass and copperware for which Varanasi is known. In this work, a variety of designs is adopted for ornamentation of wares. The motifs are

provided by objects of natural phenomena, e.g., trees, flower plants, mountains, animals, etc., Hindu gods and goddesses or mythological heroes, e.g., Indra, Krishna, Rama, Shiva and Parvati, and also sketches from the life of cultivators and workers. Among the motifs depicting natural phenomena, palm trees are met with very frequently while deer, elephant and tiger are the most common among the animal motifs. The flower plants, such as *angoori* (grape vine), *gulab* (rose), *gairda* (marigold), *chameli* (jasmine), etc. are generally used for bordering the various subjects. In these designs, the surface of the motif figures is raised elaborately from behind the article and chased from the front side to highlight the details of the patterns. The surface between the figures is levelled and frosted in order to give a natural background of the earth, river, etc.

Some of the very common motifs adopted by the Varanasi craftsmen on brass trays, wall plaques, flower vases, etc. are discussed below.

Processions of Rajas and Nawabs on elephants, rural folk dances (plate no. 49), dancing *Natraj*, Shiva and Parvati goddess, Saraswati, Tansen (famous musician in the court of Emperor Akbar), a scene from the Moghul court or from the life of Lord Buddha, depictions of ideas contained in Rubaiyat of Omar Khayyam, and hunting scenes are some of the common motifs utilised on brass trays, wall plaques and flower pots. Farmers at work, village *belles* carrying water pitchers and grazing scenes are also often met with. *Indra sabha* is an attractive motif used by some craftsmen. In photo plate no. 50, Indra is shown seated on the throne attended by female courtiers and enjoying the dance of a *nartaki* (professional dancer). Dancing *Natraj* is another subject commonly used in ornamentation. This seems to be an adaptation of the South Indian Art. In photo plates no. 51 and 52 Shiva (*Natraj*) Lord of dancers is shown in a dancing pose, signifying the cosmic rhythm. The cosmos is His theatre. He is surrounded by a halo of fires in the form of the setting sun. He dances on a dwarf demon.

The wall plaques depicting the above designs are made of copper, brass, combination of copper and brass, and copper with silver plating in sizes from 3" to 48" in oval, rectangular and round shapes. The oval and round shapes are the most popular (plate nos. 47, 49, 51 and 53).

The hanging lanterns of various designs—*gamla*-shaped, *lota*-shaped, coconut-shaped and fish-shaped as shown in photo plate nos. 54, 55, 56, 57 and 58 and waste paper baskets (plate no. 59) made of brass or in brass-copper combination, with fine perforation work, are produced in various shapes and sizes ranging from 6" onwards.

The form of the brass *gamla* (flower pot) is the most traditional one and appears to have been in great demand during the Moghul days. These are used for growing flower plants. The *gamlas* are produced in brass, copper as well as brass-copper combination. The surface of these wares may be kept plain which shines

like gold or ornamented with hunting scenes, Indian dances, etc. (plate no. 60).

The jointless copper bowl shown in photo plate no. 48 is purely a decorative ware. The repousse', chased and frosted work is done after a copper sheet has been shaped by raising with a hammer on a blocking tool. A rural folk dance scene of the Moghul period is engraved on the outer surface.

The moulded flower vases made of brass, shown in photo plate no. 63, have artistically engraved scenes or motifs. The flower vase of *siah kalam* work, shown in photo plate no. 65, has been manufactured at Moradabad.

Changes in designs and a marked shift in utility of the articles are also noticeable in the craft in Varanasi. To cite an example, the brass *gamla* (flower pot) is used as flower vase as well, after being kept on a long stand made of brass. The bowls of the Moghul period have been adopted as rose bowls. The large ornamental brass or copper plates are also being used as table tops and trays which are placed on wooden or iron removable legs or stands to serve as casual tables in living rooms.

Efforts are being made to achieve a standard of excellence in designing, which is in keeping with the present day trends in tastes and fashions by creating new designs. With the passage of time, the craftsmen have acquired ideas of new motifs from magazines, books and calendars and sometimes from the cinema. Another source of new designs is the various mythological pictures published in Hindi magazines, viz, Dharmyug, Hindustan Saptahik etc. The Design Centre at Delhi and the All India Handicrafts Board also supply designs from time to time. Attempts are being made not only to create new designs for experimentation but also to explore new fields of improvements in existing motifs and reviving what has been inherited from the past, by picking up the best in tradition and remoulding it in the light of contemporary aesthetics. Emphasis is laid on an objective approach, giving full scope also to the characteristics of the material. Designing is also being done with an eye on the utilitarian aspect, blending in it all that is useful and artistic.

The government agency entrusted with the evolution of new designs in keeping with the changing trends is the Central Design Centre at Lucknow. It aims at providing designs to the craftsmen free of cost, helping them to evolve new designs at their working centres and guiding them as and when required. Paper designs are expected to be prepared and released to the individual craftsman, the manufacturers of handicrafts and Producers' Co-operative Societies, for being used in their production programmes. The Centre is also carrying out a survey of all existing designs in handicrafts including brass and copper wares. This scheme is expected to help in the revival of oriental designs and effecting of improvement in our designs by linking the present ideas with the spirit of past traditions.

It was, however, felt that most of the designs evolved at the Centre did not become quite popular in the market. The Divisional Evaluation Committee on Industries (Varanasi Division) made the following observations about the working of the Central Design Centre at Lucknow on page 34 of its Report, published in January, 1960 :—

“The Committee in its tours to the districts had tried to elicit the views of individuals and organisations and it was found that the consensus of opinion was that most of the work done by the Central Design Centre is not appreciated by the workers in the field. The reasons are two-fold, firstly because the Design Centre, according to the general opinion, is making all designs in abstract without coordinating and assessing its acceptability in open market. A piece designed by them may be good in aesthetic sense but in order that it may be a profitable venture, the workers engaged in it need be ensured of its marketability and its commercial aspect. Secondly, whatever designs they are making do not have a wider dissemination due to lack of proper liaison. The Central Design Centre while working artistically on a piece should have close coordination with the staff of the Industries Department in the districts, where specific industries are located, for proper display of these designs and for meeting any consequential difficulty that may be encountered in the manufacturing process.”

A branch of the Central Design Centre was started at Varanasi in February, 1962 so that there might be closer liaison between the Design Centre and the actual producer. The Design Extension Officer is expected to introduce new designs in artware according to the latest market trend both in the country

and abroad. He also visits the production units, which have undertaken the production of articles of designs introduced by the Centre, and gives necessary directions on the spot. Up to November 11, 1962, 25 paper designs were reported to have been prepared and passed on to the manufacturers. Articles of three designs out of those supplied by the Centre were reported to have been demanded by foreign tourists. The Director of the Central Design Centre Lucknow and the Design Extension Officer, Varanasi could not, however, indicate as to which designs, evolved by them, had been actually adopted by the producers.

The main difficulty in adoption of new designs is that either the manufacturer does not have enough financial resources to undertake the production or he would not like to take a risk in experimenting with a new design for which a market is not assured from before. There is, however, no hitch in undertaking the production of articles for which an order has been placed either by the financier-middleman or by a government emporium or any other customer. The Industries Department has provision for giving grant to Workers' Co-operative Societies for encouraging the production of new designs.

The brass and copperwares of Varanasi have attracted the attention of world markets. Tourists and curio hunters like to possess some brass or copper artware as a souvenir of their visits to the place. The craftsmen have adopted certain changes in the forms, designs and motifs of the articles, to suit the taste of foreigners. Images of Christ and Virgin Mary have, for example, been adopted as motifs for the wall plaques and plates.

Manufacturing of brass and copper wares is done in Varanasi by two methods, viz., mould manufacture and beaten metal work. The main stages of manufacture in the two processes are the following :—

I. Mould Manufacture

1. Casting (*Dhalai*) by one of the following two methods :—

- (a) *Para* casting
- (b) *Darza* casting
2. Soldering (*Ranjai*)
3. Filing (*Relai*)
4. Scraping (*Chhilai* or *Kunai*)
5. Polishing (*Polish karna*)

II. Beaten Metal Work

1. Shaping (*Pitai* or *Thukai*)
2. Repousse' work (*Ubhar ka Kam*)
3. Chasing
4. Frost work
5. Finishing
6. Engraving
7. Soldering and Riveting
8. Lacquering

I. MOULD MANUFACTURE

1. CASTING (*Dhalai*)

Stone, wood, bone or shell have to be chipped or rubbed to shape but metal has the great advantage of being moulded into any shape. Casting (*dhalai*) is one of the oldest, cheapest and most popular method of working metal. Casting of copper and brassware is done in Varanasi in two ways, viz., mould casting known as *para dhalai* and sand casting, known as *darza dhalai*. The wares manufactured by the *para dhalai* method are of the composite whole class while in case of *darza* casting these are usually produced in parts and then soldered together to get composite wares. The wares having simple forms, like tumbler, *lota* (a small metal pot or mug), etc., are produced by the *para* casting method while the wares having intricate forms, i.e., having a number of convolutions, viz., flower vases, decanters, etc., are produced by the *darza dhalai* method.

(a) *Para* casting

The first stage in *para* casting is the preparation of moulds or *sanchas* from *kali mitti* (black clay), *pili mitti* (yellow clay) or *balua mitti* (sandy clay), strengthened by mixing with it rice or *bajra* husk, *munj* or *ban*, *bhusa*, or cow dung, etc. Every mould has two parts—the inner core locally called the *bhitalla* or *gutka* and the outer shell called the *upalla*. The artisan who makes the mould is called the *sanchia* or *ara-maker*. The preparation of the inner core is taken up first. Initially, a base, like a shallow saucer,

CHAPTER VI

TECHNIQUE OF PRODUCTION

is prepared by shaping the kneaded clay on the inside of the sample vessel. Some experienced mould-makers do not take the help of the sample but prepare the base of the mould faultlessly without referring to it. The base of the mould is called the *dhibri* (plate no. 7). Further, clay is applied to its ends little by little and the mould is extended and modelled into shape till it assumes the form of inside portion of the vessel, proposed to be manufactured. A cap of clay called *tikli* or *topahi* (plate no. 8), is fixed on the top of the inner core (*bhitalla*) which is then coated with a paste of cow dung, yellow clay and sandy clay, for strengthening it. When the inner core has fully dried in the sun, its outer surface is smoothened and made symmetrical on a rough lathe called the *salnga* (plate no. 11). The lathe has a rod of iron about 15 to 24 inches in length, with pointed ends and a piece of wood near the thicker end (plate no. 12). One end of the rod is fixed in a notch in a wood *khunta* (big peg) driven into the ground and the other end in another notch in a block of wood which is held in position by keeping a heavy stone as dead weight on it. Now the iron rod is passed through the bottom and the *topahi* (cap) of the mould which is hollow from inside. The *salnga* (lathe) is held in a horizontal position. Portion of the earth, where the mould is to revolve on the *salnga*, is hollowed out so that the mould could be turned freely without striking against the ground. The operator sits with the lathe in front, holding a scraper (locally called *kharaadni*) in his right hand. The mould is turned round with the left hand, the scraper is plied dexterously by the operator on the mould, scraping off the unwanted clay very quickly (plate no. 12). Some water is also kept handy in a bucket for being applied with a rag to the surface of the mould as it revolves so that the scraper may go smoothly over the damp surface. Thus the inner core becomes smooth and symmetrical.

Thereafter, the outer shell (*upalla*) is prepared. For this, the same clay as was used in preparing the inner core is utilised. It is plastered on to the dry core and smoothened. When almost dry, this outer shell is cut into two pieces vertically. Each of the two parts of the shell is called a *palla*. Their inner surface is smoothened by applying a thin coat of a fine whitish clay, locally known as *pindol mitti*, which has some properties of French chalk. The two parts are again applied to the core to ensure that they fit well.

The inner core is again put on the lathe for taking off a layer of clay all around equal to the thickness of the proposed vessel so that when the outer shell is applied to the inner core just before casting, a hollow space equal to the thickness of the removed clay is formed. A thin coating of *pindol mitti* is then given to the surface of the inner core for making it smooth, so that the molten metal can run easily into the hollow portion left between the inner core and the outer shell. A few small brass nails are inserted partially into the inner core, in order to keep the outer shell equidistant from the former to ensure uniformity

of thickness for the proposed vessel when cast. Sometimes wax pieces are also used in place of brass nails. The inner core is then enclosed inside the two parts of the shell, the joinings of which are plastered together with clay. A funnel-shaped hole is left in the bottom through which the molten metal can be poured into the hollow space between the two surfaces. This mould is called *para* and the worker who joins the two portions after smoothening them with a thin coating of *pindol mitti* (white clay) is called the *taiyariwala*.

The earthen crucible, locally called the *gharia*, is also made of the same material as the mould. It is generally U-shaped. The requisite raw material of which the ware is proposed to be prepared and other materials to serve as flux are placed in the *gharia*. The bottom of the mould is placed on the mouth of the crucible with a clay sieve (*chalni*) of the same size in between. The *para* and the *gharia* are solidly joined together by the *bhattiwala* with a thick plaster of clay. A number of such *para-gharia* (combined mould and crucible with a sieve in between) structures are prepared and placed in the baking oven (*bhatti*), with the *gharia* downwards. The *bhatti* is round or rectangular in shape and is covered with a brick dome so that heat might not escape.

Since the process of casting involves a lot of heat, the work is usually done in the night during summer. Coke or firewood or dung cakes are used as fuel for melting the metal in the *bhatti* (baking oven). After sufficient and prolonged heating, when the metal has attained a proper state of fusion, the *para-gharias* are taken out of the baking oven with the help of a big *sansi* (pair of tweezers) and placed outside with the crucible upwards and the mould downwards. Consequently, the molten metal in the crucible runs uniformly down into the hollow portion of the mould through the sieve which prevents impurities from flowing into the mould. This process is called *dhalai*, from Hindi *dhalna* meaning "to pour". The mould-cum-crucible structures are allowed to cool for 5-6 hours. The mould is broken when cooled and the vessel taken out. The baked clay is removed from the inner and the outer surfaces of the ware by a worker known as the *mitti safaiwala*. At this stage, the vessel is somewhat greenish in colour and quite rough in appearance.

This process is generally used for casting the smaller utensils or wares. In case of casting the large vessels, the *gharia* (crucible) is kept separate from the *para* (mould). The moulds are baked in a separate furnace called the *sanche ki bhatti* and the metal is melted in crucibles in a separate crucible furnace called the *mal ki bhatti*. In this case, "the crucible is built somewhat after the shape of an ewer, the top closed in, and a small hole left in one side, near the top. This hole contrives to pay a double debt: from it the founder pours the molten metal into the mould and by watching it during the process of fusion he is able to tell by the coloured vapour that issues from it whether or not the metal is ready for running."¹ Both

the furnaces are heated with bright fire for 5-6 hours. Greater temperature is needed for the crucible furnace. When the metal in the crucible has fused properly, the baked moulds are taken out from the furnace. The *dhalaiya* takes out a crucible from the *bhatti* (furnace) by holding it with a *sansi* (large iron tongs) and gently pours in the molten metal through the funnel-shaped aperture (*mohra*) left in the mould. The mould is gently tapped for ensuring permeation of the molten metal in the mould. The liquid metal has to be poured into the mould in continuity of temperature with great dexterity. The moulded article is taken out of the mould when cooled. The famous gongs of Varanasi are also manufactured by this method of casting. The *para* casting method is quite cumbersome and is, therefore, going out of vogue except in case of articles which have by necessity to be cast as a composite whole.

(b) Darza Casting

The other method of casting, widely prevalent at Varanasi, is known as the sand casting method or *darza dhalai*, so named after *darzas* or moulding boxes used in the process. This is also an old process but it became more prevalent at Varanasi after 1918 when one Kanhai Lal of this city went on a tour of Europe, saw it being followed there, and popularised it at Varanasi on modern lines.

In sand casting, every ware has to be cast in two or three parts, e.g., the *lota* is cast in two pieces only. 'Samples' of the pieces which constitute the ware to be cast are usually prepared of brass, either by turning on lathes, or by casting or with the help of files and scrapers. These 'samples' should have a smooth surface, free from pinholes and depressions, which have to be removed by filling in with brass.

The sand (*masala*) used in castings is prepared from fine quality sand which is first sieved for removing mica, stone pieces etc. and then mixed with waste molasses generally in the ratio of four to one. If castings having fine edges and bends are to be prepared, *masala* having fine sand, cow dung ash and *rendi* oil or used lubricant has to be used. During summer a little water is added to the mixture before it is used for preparing castings, so that it might not become very dry soon.

Small pieces of metal to be melted for making a casting are put in a clay or graphite crucible which is placed in a furnace and heated with fire from hard coke. The temperature in the furnace is raised by the blast caused by turning round the wheel of the bellows from time to time. Borax in small quantities is added to the metal in the crucible during the process of melting for removing the impurities which float on the surface and are easily removed with the help of a big metal spoon locally called the *karchhul*.

The *darza* or moulding box generally consists of two parts—one being a sort of flat dish having a raised iron rim and the other being an iron rim which fits over the raised border of the former. It may, however, have 3 parts, depending upon the shape and size of the article to be prepared. The bottom half

of the moulding box is called the drag. (locally called *talla*) and the top half the cope (locally called the *upalla*). A small quantity of the sand-molasses moulding mixture (*masala*) is put in the drag as a layer on its bottom, and levelled by pressing it with the palm of the hand. The metal model is then placed on this sand layer and the box is pressed and rammed with thumbs and a wood pestle. The cope, filled similarly with the moulding mixture, is placed over the drag. Both the drag and the cope are pressed together firmly so that the model leaves a clear imprint in the moulding mixture. The box is opened and the model withdrawn. After the model has been withdrawn, an ingate (*mohra*) connecting the circular runner with the cavity in the lower part of the moulding box is made so that the molten metal (*mal*) can flow easily into the cavity, thereby giving shape to the ware. Scientifically speaking, another channel parallel to the runner-ingate, known as 'riser' should be provided for serving as an exit for the gases generated during the process of pouring the molten metal. If gases cannot escape, there is a possibility of pin holes being caused in the ware.

During the process of casting, the two pieces of the moulding box are pressed and held together by the caster (*dhalaiya*) (plate no. 16) with his feet when the molten metal contained in a crucible placed on bright fire in the furnace is poured in through the vertical runner-ingate (*mohra*) by him with a big iron spoon (*karchhul*). The metal sets in the mould within a couple of minutes and the excess molten metal is poured back from the runner, back into the crucible. The process of pouring of the fused metal into the mould is called *dhalai*. The part of the ware that has been cast is taken out and the moulding mixture again mixed with the pile. Another mould is passed on to the *dhalaiya* for casting another ware and so on. One mould is used only for one casting but the mould is prepared swiftly within a couple of minutes.

Some of the moulding boxes are prepared in such a manner that the vessel as a whole can be prepared in one casting instead of two, thereby obviating the necessity of soldering the two or more parts together.

The tools and equipments required for this process consist of a furnace (*bhatti*), crucible (*gharia*), crucible tongs (*sansi*), moulding box (*darza*), a rod of iron for shaking the burning coke, a *karchhul* and so on. The following workers are required in *darza* casting:—

(1) The mould maker who prepares the mould by filling in the *masala* and passes it on to the *dhalaiya*;

(2) The boy worker who turns the wheel of the wheel-bellows for melting the raw material in the crucible;

(3) The *gallaiya*, who melts the raw material in the crucible by placing it in the furnace; and

(4) The *dhalaiya* or the caster, who casts the ware in the moulding box.

When the casting of wares is over, each piece is minutely examined for moulding defect, if any,

that might have been caused either because the molten metal did not flow fully through the mould and gaps were left or because the gases generated during the process of pouring the molten metal failed to escape and thus caused pin holes. Such minor defects in castings are later on removed by soldering.

2. SOLDERING (*Ranjai*)

The various parts of wares prepared by *darza* casting method have to be soldered to get a composite whole (plate no. 17). Soldering (*Ranjai*) is the process of joining parts of metal with a metal alloy called solder (*ranj*). The solder has a melting point lower than that of the metals being joined. When melted, it adheres to the surfaces of the metals to be joined. Solders with the following contents can be used for joining the parts of cast wares:—

(i) four parts of copper and four parts of pewter for soldering copper vessels;

(ii) four parts of copper and one part of pewter for soldering brass vessels;

(iii) seven parts of *phul* and one part of pewter for soldering *phul* vessels.

Soldering may be hard or soft, the latter process being more common. Soft solder is usually supplied in sticks and is melted with the aid of heated soldering iron (plate no. 17) or the flame from a blow pipe. A flux is necessary for making the liquid solder flow evenly over the metal surfaces and adhere to them. The equipments and materials used for soldering consist of an open hearth, a soldering bit, borax, solder (usually an alloy of tin and lead), emery cloth etc. Soft soldering is done with direct heat by the blow pipe. The surface of the metals to be joined is cleaned thoroughly with emery cloth and the pieces of ware to be soldered are put in a proper form. Thin iron wire is used for keeping the parts in position. Then a flux of borax is applied to the parts to be joined. It helps the solder to flow evenly and combine with the metal. Small pellets of solder are placed along the joint and the surface is heated as a result of which the solder melts and flows into the joint. When the ware has cooled down, the excess of flux is washed off. The traces of soldering and flux disappear from brasswares but a yellowish stain persists in case of copperware. The local workers are not aware of any process or chemical by which these yellow stains can be made to disappear. Hard soldering is not resorted to in the brassware industry at Varanasi.

3. FILING (*Retai*)

The next stage involves filing (*retai*) of the ware for smoothening the rough surface of the ware. The filer (*retia*) files off the rough surface with a file (*reti*), flat or round, (plate no. 1), after holding the ware on a wooden or iron *kharawat* (a type of anvil). The flat file is used in filing small round shaped articles such as round *lotas* (plate no. 18). The filing process does not require much time and is carried on generally by unskilled workers, both males and females

1. G. R. Dampier: *A Monograph on the Brass and Copper Wares of the North-Western Provinces and Oudh*, 1894.

4. SCRAPING (*Chhilai* or *Kunai*)

After the filing operation is over, the ware is passed on to a scraper for making the surface smooth by the process of scraping or chiselling, locally called *kunai* or *chhilai*. Till about 25 years back, scraping was done by hand. The scraper used to carry out the process with a chisel in one hand and the ware held between his two feet. It was gradually replaced by the method of scraping by *charakh*, a manually operated lathe. The ware to be turned was fixed with shellac on one end of the spindle. The *charakh* was worked with a strap rotating the spindle in clockwise and anti-clockwise direction. Chisels or other tools were used for scraping the revolving ware for making its surface smooth. The hand drawn lathe required two persons to do the job, one called *khinchaiya* for pulling the strap and the other called *chhilaiya* for scraping the revolving vessel with a scraping chisel, locally called *lahui*. Similarly, the wheel-operated lathe requires two persons—one a boy worker for revolving the wheel and the other a scraper. Nowadays, the electrically driven lathe is in general use. The vessel is heated and affixed with shellac to the end of the roller and scraping is done by a single person with the help of various scraping chisels (plate no. 19) which are prepared by the local blacksmith or sometimes by the craftsmen themselves out of used steel files. After scraping, the ware assumes a fine sheeny appearance. Sometimes, concentric circles are also made on the ware after scraping, to add to its appearance.

5. POLISHING (*Polish karna*)

Final finish to the ware is given by the process of polishing which not only makes it glossy but also enhances its saleability. Polishing may be done by hand or by a polishing lathe. The ware is first cleaned and then the polishing compound is rubbed on it with a pad of cloth and wool. If polishing is done by foot traddle or a power-driven buff polishing machine the vessel is mounted on the spindle of the lathe (plate no. 20). The polishing compound is applied to the periphery of the revolving mop and the ware to be polished is pressed against it, thereby imparting the requisite finish and gloss to it. If the ware has deep scratches, it is first polished on a leather mop, coated with emery paste and then with the polishing compound. After polishing, the wares are cleaned with kerosene oil. The main tools and appliances involved in the process are the polishing compound, the polishing lathe, the linen mops, etc.

After going through the above processes the metal assumes the shape of a vessel ready for being brought to the market for sale to the consumer.

II. BEATEN METAL WORK

Some of the articles produced by beating metal sheets are *katori*, *patili*, *parat*, *thali*, *pandan* or betel box, *arti* used for offering *puja*, artistic wall decoration plaques, ash trays, table lamps, images of deities, artistic trays, bowls, *surahs*, scented-stick stands, *kalash* of temples, etc.

The main process of manufacture of articles out of sheet metal are given below:—

1. SHAPING (*Pitai* or *Thukai*)

The pieces of metal sheets are beaten into shapes by suitably hammering them over a stake. This process is locally known as *pitai* and *thukai* (beating). Simple tools like shears, stakes, hammers, mallets, etc. are used in this process. Both brass and copper sheets of $\frac{1}{8}$ " to $\frac{1}{4}$ " in thickness are used in this process. The sheets are beaten or hammered into various shapes by bending, hollowing, raising, stretching and contracting. For instance, when the metal is to be shaped into a dish or bowl, it can be hollowed or raised (plate no. 21). In hollowing, hammering is done on the top in concentric circles with a bossing mallet, resting the sheet on a wooden block (plate no. 22). Hammer marks are not visible on the sheet, if a wooden block is used. Hollowing tends to stretch the metal and make it thinner. Therefore, the shapes that can be obtained in this way are limited. The raising is generally done with specially-shaped hammers on suitable stakes. In this process the metal sheet is kept against an iron stake and hammered with a mallet or hammer from outside. Whenever required, the metal sheets are heated in the beating furnace (*bhatti pitai*) so that it could be worked upon easily.

The shapes of the various articles cannot be satisfactory unless they are regular in their form. The curvature of the ware has, therefore, to be checked up at frequent intervals by the use of templates—the metal sheet instruments used as gauges or guides in bringing any piece of work to the desired shape (plate no. 6).

Another method of shaping sheet wares is by pressing the metal sheets in a pressing machine for turning out articles like *katori*, *katordan*, *thal*, *parat*, *bhagana*, tiffin-carrier, etc. The equipment consists mainly of the circle cutting machine, fly presses, punches, dyes, etc.

The casting and beating processes are combined in manufacturing some of the wares. Some parts are cast and others are beaten. Subsequently, these parts are soldered together for obtaining the ware. The copper *gagra* is such a vessel. First, two circular sheets of copper are cut out by a snipper or chisel. Each sheet is placed over an *okhli* and beaten into the dip with a wooden mallet till it assumes a basin-like shape. One of these serves as the lower half and is called *pendi*. A hole of about 4 inch diameter is cut into the middle of the upper half and the mouth piece, which is prepared separately from a cast copper plate, is inserted into it. The mouth piece is beaten to the desired extent from the centre outwards with a chisel and hammer. It is then soldered with the opening of the upper half of the *gagra*. Subsequently, the edges of the upper half and the lower half are dovetailed and soldered. The roughness of the joints is removed first by filing and then by chasing. Finally, the utensil is polished.

For shaping of flat wares, the outline of the ware to be produced is first marked on the metal sheet and

pieces are cut from the sheet according to the outline, with the help of snippers. In case of a wall plaque, the outline is first marked on the metal sheet with a style, after placing the paper drawing of the design over it. Another line is marked about $\frac{1}{2}$ " outside the actual circumference of the wall plaque in order to indicate the depth of the turned edge of the proposed article. While marking the outline, care is to be taken to ensure that the metal is not scratched except where it is to be cut, because such scratches might mar the beauty of the ware as they cannot easily be removed. The sheet is cut out on the latter line with a *kat* (tinman's snippers). The rim of the plaque is then shaped by pressing or beating method. This is done by beating the sheet with a hammer on a stake.

2. REPOUSSE' WORK

Repousse' work is the speciality of Varanasi, where the motifs are raised in relief by hammering by hand from behind or within. This process is locally known as *ubhar ka kam* (raised work, from *ubhar* meaning 'a swelling or rising' and *kam* meaning 'work').

For manufacture of an artistic wall decoration plaque, first of all the designer makes a pencil drawing on a piece of paper, cut to the exact size and shape of the plaque of one of the designs in his large collection of historical, mythological or present day Indian themes. After the ware is shaped, with the help of this paper design the motifs are traced on to the face of the article. For this purpose, the paper on which the design has been drawn is lightly gummed on the face of the article so that it may not budge. Then the craftsman traces the design on to the surface of the copper by hammering a series of dots following the pencilled lines of the drawing with a pin-pointed chisel called a *summi* (plate nos. 23 and 26). The hammering is done with such light but sure strokes that only a barely discernible dotted design appears on the back side of the article, for guiding the craftsman during the process of raising the motifs of the subject from behind.

After the drawing has been removed, the copper plaque is affixed in an inverted position in a warmed bed of the *ral* (decoction of resin, mustard oil and brick-dust) that has been heated over a fire for about an hour and then laid on an iron plate (plate no. 24). When the *ral* has cooled down and hardened, it serves as a cushion for the metal sheet and safeguards it against the danger of being pierced when the repousse' work is in progress.

The craftsman then depresses the pictorial elements of the subject or design by following the faintly suggested dotted outlines of the chisel-traced design on the bed of the plaque by means of a hammer with a longish head rounded off at one end, locally termed a *gol hathauri*, while the design is elaborated (*sachcha karna*) with several kinds of blunt-nosed chisels of various shapes and sizes locally known as *maskalis* (plate no. 26). When the lac base is heated and the plaque is removed and turned face side up, the depressed areas will be seen as raised up in varying heights of relief from the flat metal background (plate no. 25).

3. CHASING

Chasing is the art of engraving on the outside of raised metal work. It gives definition to raised work and accentuates the pattern.

In case of a wall plaque, after the repousse' work is over, the ware is taken off from the lac bed and placed on the fire, then taken off, cooled, and cleaned with sand and a solution of alum and tamarind. All undue elevations are corrected with the help of *gol hathauri* (hammer). The ware is turned face side down and filled to the top of the rim with hot *ral* and then covered with an iron plate. When cooled, the ware is placed face side up. The outlines of the figures are then sharpened (*kinarna*) with a tool called the *gol qalam* (plate nos. 25 and 27) and the figures themselves carefully finished off with a number of small fine chisels, a process which comes under the large heading of engraving.

4. FROST WORK

The tracery which gives roughened or finely granulated surface to glass, metal or the work resembling frost tracery, etc., is called frost work. This work is locally known as *rukha* which takes its name from the local name of the chisel which is used for granulating the surface of the article.

After the chased work is completed to the craftsman's entire satisfaction, the clear spaces between the figures are levelled (*chauras karna*) with the *chaursi* (a tool with a sharp and flat blade) and lightly hammered with *rukha* (a square shaped chisel the working end of which has been chiselled at right angles into fine crossed lines resembling sharp little steel teeth). The all-over stippled effect produced by the *rukha* on the flat background spaces around the configurations, raised by the repousse' work and finished by chasing is referred to as frost work. It serves to simplify the background of repousse' composition so that the figures in the court scene, for example, will dominate the picture-plane of the plaque (plate no. 50).

5. FINISHING

The *ral*, having been melted out by heat from the rimmed interior of the reverse face of the finished plaque, is rinsed clean in a bath of diluted sulphuric acid and given for polishing to the finishing expert. Plate no. 28 shows a craftsman holding the plaque firmly with the toe of his right foot so that both hands may remain free for polishing. By means of a steel tool, the bottom edge of which is rounded, he briskly rubs the surface of the copper and presses the interspaces of the design after having applied a Brasso type of paste on the plaque. The forefinger of the craftsman's left hand, closely following the course of the knife-like tool, is covered with a rubber glove for protecting it from injury, should the tool accidentally slip. Silver plating of some of the copper plaques is also done.

6. ENGRAVING

Decoration on some of the artwares is done by punching, engraving, etching etc. (plate no. 29).

Punching creates a decorative effect by arrangement of lines and dots in a definite artistic pattern. Engraving is the earliest method of decorating metal by cutting or scratching lines on its surface. Etching is similar to engraving except that the lines in etching are thinner and superficial, and are created with the help of acid. The main tools required are punches, tracers, a small pitch block, a downing block, a hammer with a thin shaft, a mallet, etc.

7. SOLDERING AND RIVETING

Where necessary, soldering and riveting are done for fixing together two pieces. For example, plate no. 52 exhibits the copper image of *Natraja*, executed in repousse' and cut-work, riveted to the base. Sometimes one part of the ware is moulded and the other beaten into shape and the two are joined together by soldering. Soldering and riveting are also necessary in making articles by cut-work in brass and copper sheets.

8. LACQUERING

When the articles have been properly polished and have obtained the requisite gloss, they are degreased. Thereafter, they are lacquered with a solution of synthetic clear lacquer and thinner mixed in the ratio of 1:2 approximately. The lacquer is sprayed on the wares with the help of a spray painting machine. The

coating should be thin and uniform so that the original shine of the ware remains intact. The lacquer imparted at Varanasi is not lasting. The ware becomes tarnished within a year or so. The manufacturers do not give any guarantee as to the period for which the lacquer will last and hence the wares cannot find a stable and wide market in foreign countries.

On the persistent demand of the local manufacturers of artwares, the Government established a Lacquering Centre at Varanasi on July 1, 1961. Actually it started functioning in October 1961 when the chemist joined his post. The U. P. Government allotted Rs. 10,900 for it during the year 1961-62. A sum of Rs. 15,988 was allotted for it during the year 1962-63. The artwares are in huge demand in America, England and other soft currency areas. Unfortunately the lustre of copper gets tarnished within a short time, and consequently the ware loses its beauty. Even lacquers imported from London do not bring lustre which can last for six months. Experiments conducted at the Lacquer Research Institute, Ranchi have not been able to produce any fruitful results. The aim of the Centre is twofold—first, to find out a correct composition of lacquer of cellulose nitrate or any other substance the use of which might give a permanent shine to the ware and thus increase its marketability and secondly, to serve as a common facility centre by lacquering the pieces prepared by manufacturers on a no-profit no-loss basis.

CHAPTER VII

COST OF PRODUCTION

Analysis and estimation of cost of production form the most difficult part of a survey of the brass and copperware handicraft because the units engaged in production do not have any cost accounting system. In most of the cases, the proprietor himself is the craftsman, his family members are the other participants in production and his own house is the workshop where all of them work. Accounts are not naturally maintained properly. Some of the producers have formed co-operative societies which maintain some accounts for audit purposes. But these accounts, too, do not give an exact idea of the cost of production of various types of products.

An *ad hoc* study of the cost of production of some articles such as *gagra*, *lota*, *patili*, *batua*, *balti*, *kaldash*, *arti panchpatra*, flower basket etc. was made on the basis of information supplied by the producers with a view to forming a general idea about the cost structure and the extent of profit accruing to the manufacturers.

For manufacturing a *gagra* weighing about 4 kilogram, brass sheet weighing $4\frac{1}{2}$ kg. will have to be used, allowing $\frac{1}{2}$ kg. for scraping, cutting and polishing. The scrapings and cuttings can be sold or utilised by the *karkhanedar*. Payment for the various processes involved in manufacturing the utensil is made according to its weight in the finished state. In this case, for example, these payments will be made for a weight of 4 kg. and not $4\frac{1}{2}$ kg. The cost of manufacturing a *gagra* of 4 kg. would approximately be as follows:—

Items of Cost		Expenditure
1. Brass sheet $4\frac{1}{2}$ kg.	@ Rs. 6.15 nP. per kg.	Rs. 27.67 nP.
2. Borax 15 gm.		Re. 0.62 nP.
3. Conversion into finished product, involving		
(i) Beating	@ 67 nP. per kg.	Rs. 2.68 nP.
(ii) Soldering	@ 20 nP. per kg.	Re. 0.80 nP.
(iii) Filing	@ 10 nP. per kg.	Re. 0.40 nP.
(iv) Scraping	@ 27 nP. per kg.	Re. 1.08 nP.
(v) Polishing	@ 10 nP. per kg.	Re. 0.40 nP.
	Total	Rs. 33.65 nP.

The scrapings and cuttings would be sold for about Rs. 2.65 nP. Thus the cost of manufacturing the *gagra* of 4 kg. to the *karkhanedar* would come to Rs. 31.00. He would sell it to the wholesale dealer for about Rs. 32.50. The wholesale dealer would sell it to the retailer for about Rs. 34.00. The consumer will have to pay about Rs. 36.50 nP. for it.

The cost of production of a *lota* made of *kansa* weighing $2\frac{1}{2}$ kg. was reported to be as follows:—

Items of Cost		Expenditure
1. <i>Kansa</i> $2\frac{1}{2}$ kg. @ Rs. 4.28 nP. per kg. (old utensils)		Rs. 11.77 nP.
2. Borax 15 gm.		Re. 0.62 nP.

3. Conversion into finished product, involving

(i) Moulding and casting @ 67 nP. per kg.	Re. 1.67 nP.
(ii) Soldering @ 20 nP. „	Re. 0.50 nP.
(iii) Filing @ 10 nP. „	Re. 0.25 nP.
(iv) Polishing @ 10 nP. „	Re. 0.25 nP.
	Total Rs. 15.06 nP.

Thus the *lota* would cost Rs. 15.06 nP. to the *karkhanedar*. He would sell it to the wholesale dealer for Rs. 16.00 or so. In his turn the wholesale dealer would charge Rs. 17.00 from the retailer who would sell it to the customer for Rs. 18.00 or so.

The cost of production of a brass *balti* weighing $5\frac{1}{2}$ kilograms is as follows:—

Items of Cost		Expenditure
1. <i>Chanda</i> brass @ Rs. 5.35 per kg.		Rs. 30.75 nP.
2. Borax		Re. 1.35 nP.
3. Conversion into finished product		Rs. 7.70 nP.
	Total	Rs. 39.80 nP.

The cost of conversion has been calculated @ Re. 1.34 nP. per kg. because the polishing process is also involved. A *balti* of this size and weight is sold to the consumer for about Rs. 44, thereby giving a profit of about 10 per cent to the *karkhanedar*, the wholesaler and the retailer.

The *panchpatra* is manufactured from sheet metal. The following processes have to be gone through for manufacturing the article:—

(i) Shape-making	@ 50 nP. per kg.
(ii) Scraping	@ 27 nP. per kg.
(iii) Polishing	@ 10 nP. per kg.
(iv) Acid cleaning	@ Rs. 2.0 per kg.

The approximate cost of production is as follows:—

Items of Cost		Expenditure
(i) Brass sheet $\frac{1}{2}$ kg.		Rs. 3.07 nP.
(ii) Sulphuric acid		Re. 0.25 nP.
(iii) Conversion into finished product		Re. 1.44 nP.
	Total	Rs. 4.76 nP.

It is ordinarily sold for Rs. 5.50 nP., thereby giving a profit of about 13 per cent to the *karkhanedar*, the wholesaler and retailer.

BRASS AND COPPERWARE INDUSTRY AT VARANASI

SALE PRICE

The following statement gives an idea of the prices charged for various artwares in 1962 :—

Article	Size (Inches)	Price
1. Copper plaques, round	20	Rs. 70
" "	12	Rs. 18
" "	10	Rs. 10
2. Copper plaques, oval and rectangular	20	Rs. 75
" "	14	Rs. 22
" "	9	Rs. 9
" "	7	Rs. 7
" "	5	Rs. 5
" "	3	Rs. 5
3. Copper plaques, silver-plated	13	Rs. 23
" "	12	Rs. 19
" "	9	Rs. 10
" "	7	Rs. 8
" "	5	Rs. 6
" "	3	Rs. 4
4. Brass and copper bedside table lamp	10	Rs. 30

5. Copper cut-work Nataraja on base	24	Rs. 70
" "	20	Rs. 65
" "	15	Rs. 22
" "	9	Rs. 10
6. Brass pipe flower vase	12	Rs. 16
" "	50	Rs. 12
" "	8	Rs. 10
" "	6	Rs. 6

The prices have gone up considerably after the Chinese aggression in 1962 because the cost of production has also increased. At present there is paucity of raw materials. The quantity of raw material available through the Quota system is too little to meet the needs of the craft. The remaining quantity has to be purchased from the local market at a high price.

A Common Facility Centre has already been established at Varanasi. Machines required in the production of various wares are made available to the craftsmen on payment of hire charges. This arrangement is expected to bring down the cost of production to some extent.

Lastly, better training should be imparted to the craftsmen in the art of manufacture of the various articles. Consequently, their efficiency will increase and they will be able to produce articles of better quality in lesser time.

CHAPTER VIII

MARKETING

Marketing plays an important part in the development and survival of an industry, more so a small scale or cottage industry. If a proper marketing organisation does not exist, adequate profit would not accrue on account of the weak bargaining power of the producers and the existence of cut-throat competition among them.

According to the estimates of the Benares Brass Merchants' and Manufacturers' Association, Varanasi, the products of copper and brassware industry at Varanasi are sold in the following States and foreign countries :—

Percentage of Products consumed in different States and foreign Countries			
State	Percentage	State	Percentage
1. Uttar Pradesh	20.0	9. Rajasthan	2.0
2. Bihar	32.0	10. Maharashtra	4.0
3. Assam	3.5	11. Gujarat	2.0
4. West Bengal	8.0	12. Andhra Pradesh	4.0
5. Orissa	4.0	13. Madras	3.0
6. Punjab	2.5	14. Kerala	2.0
7. Himachal Pradesh	1.0	15. Foreign Countries	2.0
8. Madhya Pradesh	10.0		

Thus Bihar, Uttar Pradesh, West Bengal and Madhya Pradesh are the main States where the brass and copper wares of Varanasi are absorbed. Products only of the value of 2 per cent of the total value are exported abroad. In fact it is only the artwares that are in demand in foreign countries. Articles of domestic use or those meant for religious purposes are sold only within the country.

The articles meant for domestic use or for religious purposes are sold in the local market in wholesale as well as in retail. The Thatheri Bazar is known for such shops. The actual producers do not generally undertake the marketing of the produce. They are mere artisans producing the articles to the order of the dealers or the *karkhanedars*. The dealer asks either an artisan or a *karkhanedar* to prepare for him articles required by him. He indicates the weight, the design and the shape of the articles and supplies the raw materials required in their manufacture. The various processes of manufacture are gone through by different artisans. The article is returned to the dealer each time after an artisan has completed the operation entrusted to him. When the last process

is completed, the article becomes ready for the market. The artisans provide their own tools and work in their own workshops. If the work is got done through the *karkhanedar*, more processes than one are undertaken within the same *karkhana*. And if it is a big establishment, all the processes are gone through in the same *karkhana*. The artisans, who perform the various 'operations' in the *karkhana*, work with tools supplied by the *karkhanedar*.

The dealers are thus the middlemen-financiers who finance the industry, dictate the designs and control the markets. Naturally they carry away the major share of profits. They sell the articles to the retailers who in their turn sell these locally, in *hats*, bazars and fairs within the State and in some of the neighbouring States. The wholesale dealer also exports the wares to dealers in other States on receipt of orders. Sometimes the dealers from outside come to Varanasi and make purchases in lots. During the *puja* holidays, many visitors from West Bengal purchase *puja* articles, artwares and some articles of domestic use.

The Co-operative Societies sometimes receive orders from the All India Handicraft Board or U. P. Handicraft Board. The wares are prepared by members of the society and supplied to the Boards directly. The All India Handicraft Board, New Delhi and the U. P. Handicraft Board, Lucknow have been quite helpful in marketing the artwares of Varanasi within the country and abroad through their emporia. Artwares of Varanasi were displayed in fairs and exhibitions in foreign countries from 1958 onwards through the courtesy of the Board and the Government. Within the country, these wares were displayed in the India 1958 Exhibition held at Delhi, and other such exhibitions. The industry also participated in the display of Varanasi art products organised on the occasion of the visits of foreign dignitaries such as Queen Elizabeth II, Shah of Iran, Mrs. J. Kennedy, King of Arab, King of Ethiopia, Marshal Tito and prime ministers of foreign countries. A number of articles reached foreign countries through this medium. The artwares became more popular in U. S. A. and European countries. Consequently, the value of artware products sold in 1961 was just the double of the value of artwares in 1958.

The Central and Provincial Governments also got documentary films prepared on this handicraft. The films have been shown in foreign countries, as a result of which the curiosity of foreigners about these articles has been aroused and a number of trade enquiries and orders have been received.

The Benares Brass Merchants' and Manufacturers' Association has opened a show room at Varanasi on May 28, 1960. The various copper and brass wares manufactured in Varanasi are displayed in the show room. Foreign visitors and tourists are allured to visit the show room, the Cottage Industries Emporium near Vishwanath temple and the Industries Emporium at Nadesar. A small show room also exists at Clarke's Hotel where most of the foreigners stay. In this

manner, the artwares catch the attention of the tourists who also make purchases. Suggestions given by them for improvement in the wares are also considered.

No catalogue containing photographs and prices of articles has been prepared as yet. Hence it is quite difficult for anyone from outside to place orders without any hitch for a ware that has only been described to him and has not actually been seen by him. A price list has been got printed by the Benares Brass Merchants' and Manufacturers' Association. It is reported that a catalogue is being prepared by the All India Handicraft Board, New Delhi, that would facilitate the marketing of these products.

At present, artistic wares outside India are exported only by the All India Handicraft Board after making purchase from the Association or Co-operative Societies at Varanasi.

Adequate arrangements do not exist for attractive and artistic packing for the finished products, perhaps because the cost of packing is a bit too heavy and the packing material is not easily available.

Another hurdle in the sale of the artware products is that their quality is not guaranteed. The lacquer is of poor quality. The glossy articles are prone to get tarnished just within one year of purchase. The purchaser is consequently sorely disappointed. No guarantee of any sort is given by the producers; the purchaser has to take a dip in the dark. Somewhere

in 1914, the demand for artware had shot up. To meet this demand the craftsmen of Varanasi started mixing lead in huge proportion in the metal of the wares, as a result of which the weight increased and the quality fell down. In course of time, the importers detected this adulteration and stopped purchasing these articles. It was with difficulty that this craft could be revived and rejuvenated in 1950 and thereafter. As a safeguard against such unscrupulous practices, the Quality Marking Scheme should be introduced so that the customer can feel assured about the quality of the article that he is going to purchase. The scheme may be enforced with effective persuasion. Those who participate should be given some added incentives on the marketing side. The improvement in the quality of the wares is no doubt a pre-requisite to the introduction of this scheme.

At present there is a cut-throat competition amongst the producers, as a result of which the margin of profit falls, ultimately leading to the fall in the quality of wares through underhand practices and a fall in the wages of the craftsmen as well. In the interest of the industry, this competition should be eliminated. Prices of various articles should be fixed and no one should be allowed to sell at a price higher or lower than the fixed price.

Another incentive for promoting the sale of these articles would be to grant an exemption from the payment of sales tax as is done in the case of *khadi* products.

CHAPTER IX

CONCLUSION

The copper and brassware industry at Varanasi provides employment to about 13,000 workers, who produce wares worth about a crore of rupees every year.* It is an expanding industry and the value of the production has an increasing trend. There is a great demand for the artware of Varanasi in U.S.A. and European countries. The industry can, therefore, be a good earner of foreign exchange. With concentrated and coordinated efforts there is a great possibility of developing the industry at a quick speed in the near future. For ensuring an integrated development of the industry, the hurdles holding its progress in check have of course to be removed.

The main problem with which the industry is faced is the inadequate supply of the main raw materials, viz., copper, brass and zinc at reasonable rates. In the year 1959, 800 tons of brass, 450 tons of zinc and 657 tons of copper are estimated to have been used in the industry. About 90 per cent of these raw materials have to be obtained from foreign countries. The paucity of foreign exchange for purchasing the requisite quantity is the main bottleneck. On account of the consequent scarcity, prices of copper, brass, zinc and scrap metal have gone up considerably. The quantity of these metals available under the quota system does not suffice the requirements of the industry. Those who can afford make purchases at high rates from other sources but the small producer cannot do so. As a consequence, the production does not expand much, the quality of the wares becomes inferior and the prices go up, thereby adversely affecting their sale in the market. It is, therefore, necessary to make proper arrangements for the supply of adequate raw materials at a reasonable price. The small producers in the craft who have even become members of co-operative societies have a feeling that they are not able to get their due share of the raw materials which are distributed through the quota system and that a preferential treatment is given to the members of the Benares Brass Merchants' and Manufacturers' Association, which is better organised. If somehow arrangements for adequate supply of raw materials at reasonable rates can be made, the production will expand, the prices will go down and quality of the wares will improve. Consequently, the market for the products, especially the artware, will expand.

On the artware side, designs are sometimes supplied by the Design Centre at Delhi and the recently established Design Extension Centre at Varanasi. New designs are evolved and released to the craftsmen and their associations. Production of articles of new designs is taken up without hitch if an order for such production has been placed by the emporium or Handicrafts Board or any other customer. But if there is no such order, the manufacturers are quite reluctant to start the production of articles of these new designs, obviously because they do not have enough financial resources to conduct an experiment in the production

of these designs, for which a market has yet to be established.

If Quality marking of the artwares is taken up, the customer can be sure of the quality of the ware that he purchases. Also, defective goods will be eliminated locally and not sent to foreign countries and allowed to bring a bad name to the art of Varanasi as well as spoil our market abroad. The Quality Marking Scheme may, therefore, be introduced in the artware handicraft.

The arrangements for packing are quite poor. There is a shortage of good packing material and consequently packing charges are quite high. So one should be encouraged to fix up a plant for the production of packing materials such as corrugated card board and wood wool. Facilities for training in the technique of packing should also be made available.

Cut-throat competition among the producers can be eliminated if they form themselves into one big association and lay down prices for the various types of wares produced by them. No one should be allowed to sell at a price higher or lower than the standard price.

The publicity for art brass and copperware abroad can be intensified by launching an advertising-cum-exhibition programme. This can be done effectively only when the quality of the wares improves and the foreign purchaser is sure of their sterling merit.

The craftsmen engaged in the industry feel that they are not given a proper deal. They work hard but receive poor payment. The domination of the middleman-financier should be made less effective. The craftsmen should be encouraged to organise themselves into effective and active Industrial Co-operative Societies which may ultimately take up production programmes. The industry would then develop on sound lines and the gains thereof would be equitably distributed. While organising the co-operative societies, it should be ensured that the unscrupulous middleman does not sneak into the organisation, otherwise the very purpose of the society would be defeated. Also proper arrangements for supply of adequate credit and raw materials to these societies at reasonable rates is a necessary pre-requisite for their success.

Some arrangement for providing better credit facilities to the craftsmen on easy instalments should be made so that they can buy raw materials and sell the finished goods without banking on the middleman. The Liberalised Loan Scheme of the State Bank of India for artistic wares is quite helpful. Loan is also available to some extent from the Industries Department but one has to wait for it. The Co-operative Bank may perhaps be induced to provide cheap credit facilities to the craftsmen.

*Estimated by Benares Brass Merchants' and Manufacturers' Association, Varanasi.

The quality of the artwares has to be improved. Lacquering, at present, is not lasting and effective. Just within a year or so, the ware becomes tarnished, thereby giving an inartistic look. Intensive efforts should be made to find out a method of giving a lasting glaze.

Arrangements for training students in the traditional and modern art of copper and brassware production already exist in the Batuk Prasad Khattri Government Polytechnic Institute, Varanasi.

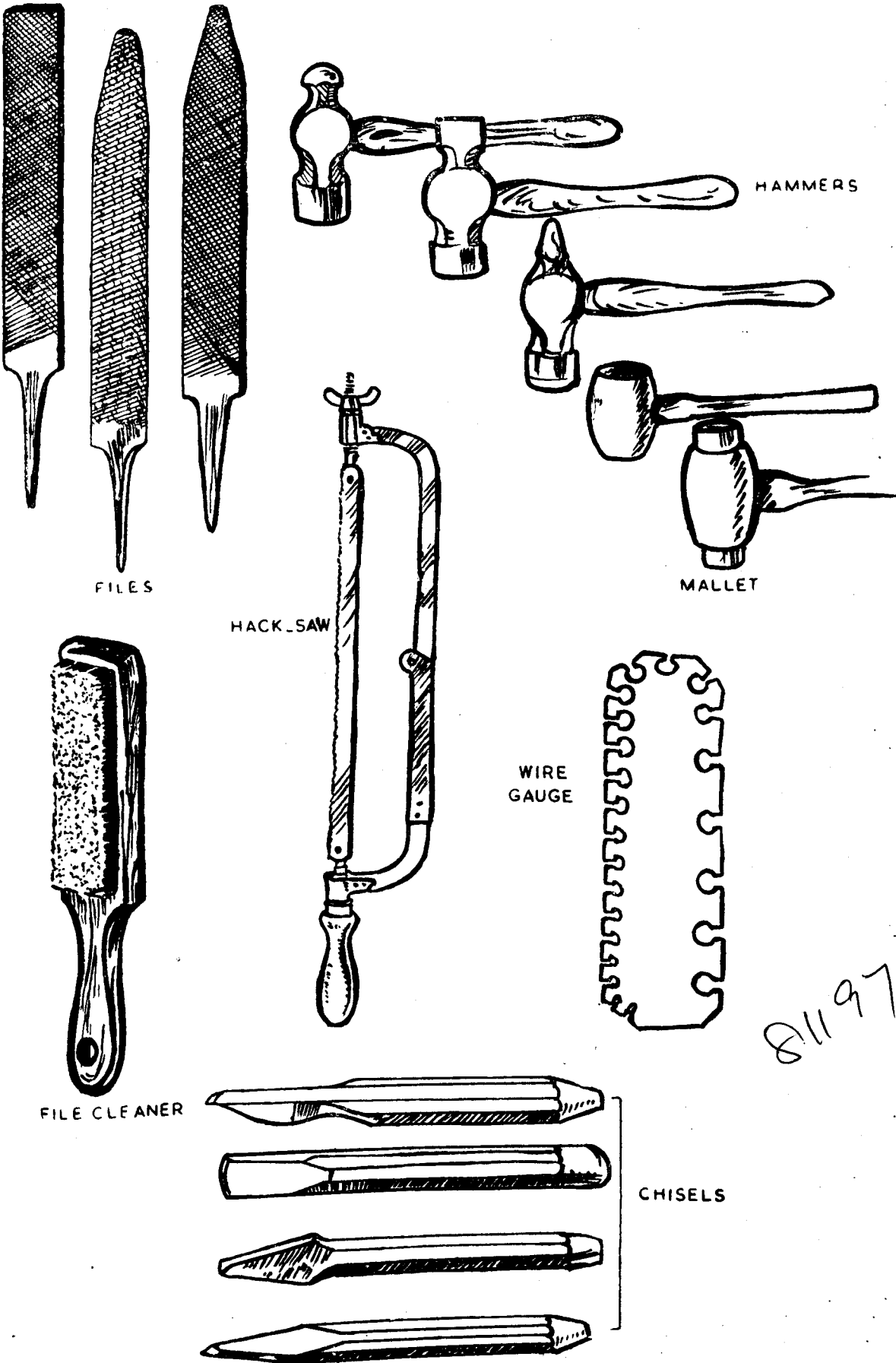
Lastly, the workers who produce these artistic wares are found living in inartistic and unhealthy surroundings. Their financial condition, living condition and working condition simply evoke sympathy. Steps should be taken early to emancipate them. There is a pressing need of an Artware Workers' Colony

on the model of Handloom Weavers' Colony at Varanasi or the Potters' Colony at Khurja—providing them with dwellings-cum-workshops on a hire or hire-purchase system. Welfare activities such as a dispensary, child welfare centre, adult schools, documentary films for the workers and their families are equally necessary for their emancipation.

The copper and brassware handicraft at Varanasi is expected to have a bright future. Government assistance to some extent is available to this craft in various ways—supply of raw materials on the quota system, technical training facilities, provision for loans, publicity and advertisement, design suggestions and so on. With greater assistance by the government and intensified efforts by those engaged in production the craft is bound to establish itself on a sound footing.

BRASS AND COPPERWARE INDUSTRY IN PICTURES

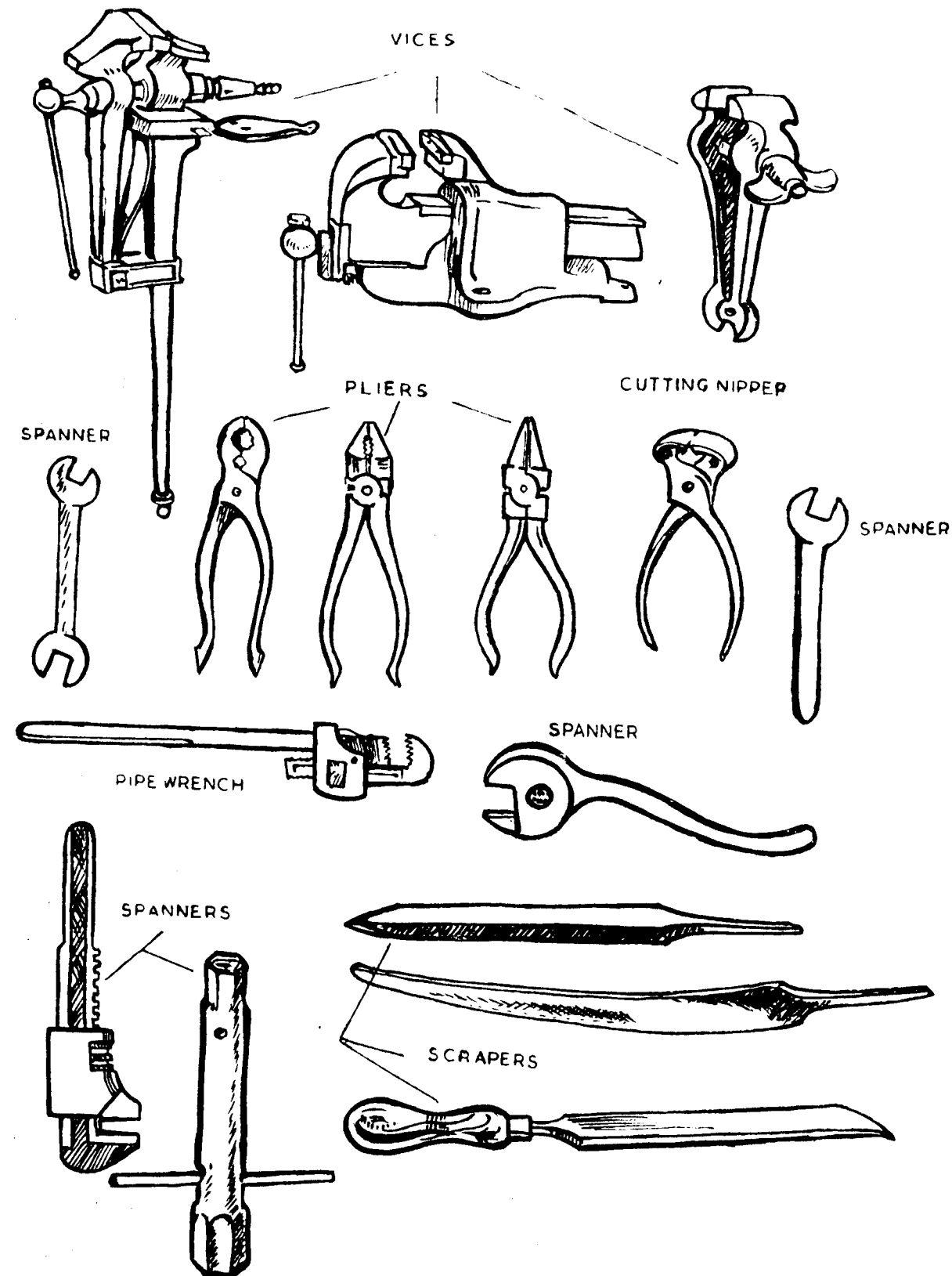
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Some Tools used in Manufacture of Brass and Copperwares

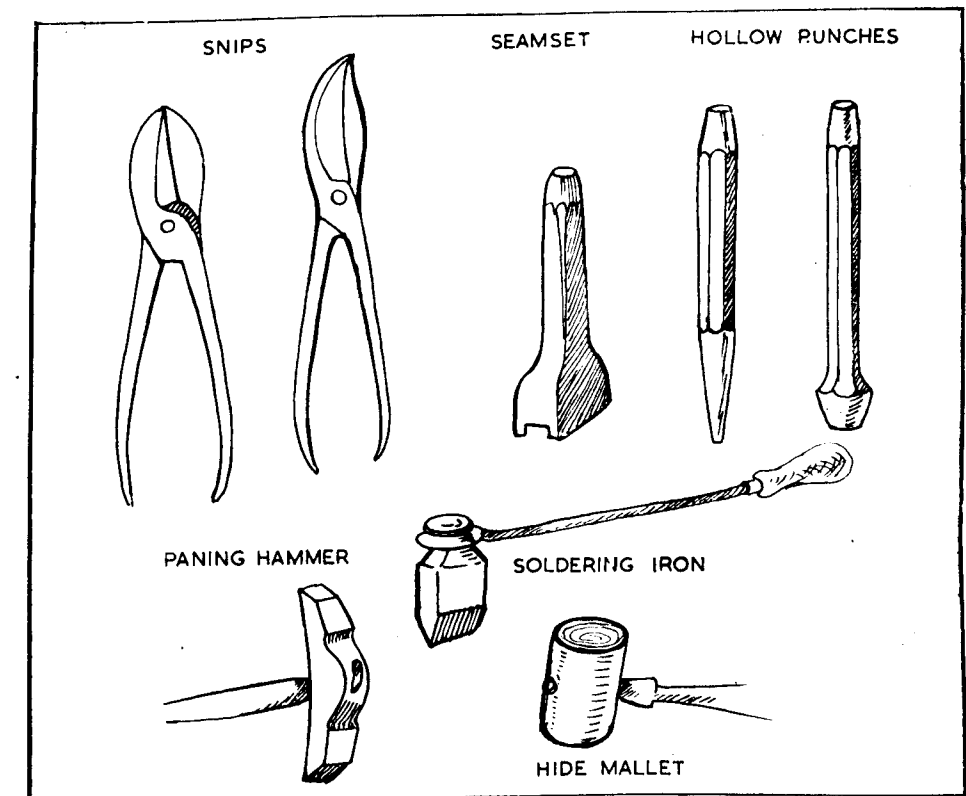
Plate No. 2



Some Tools used in Manufacture of Brass and Copperwares

Plate No. 3

SHEET METALWORK TOOLS



STAKES

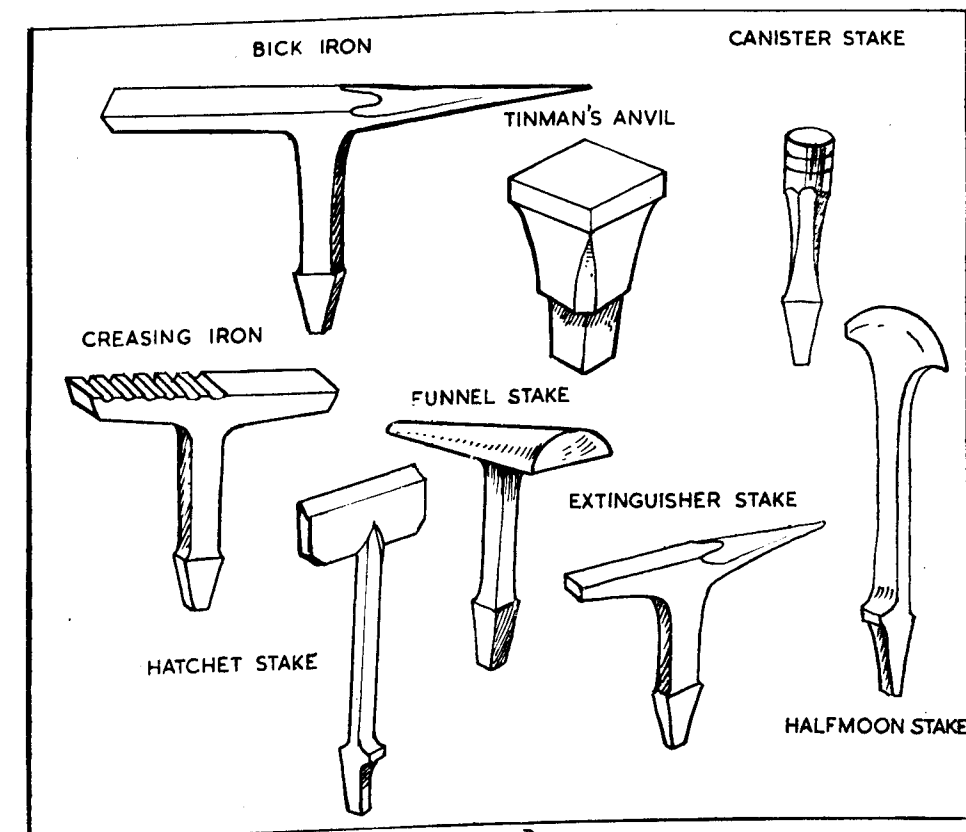
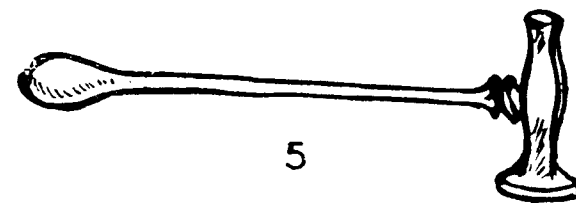
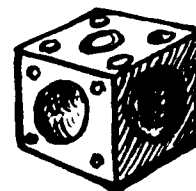
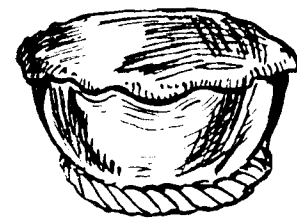
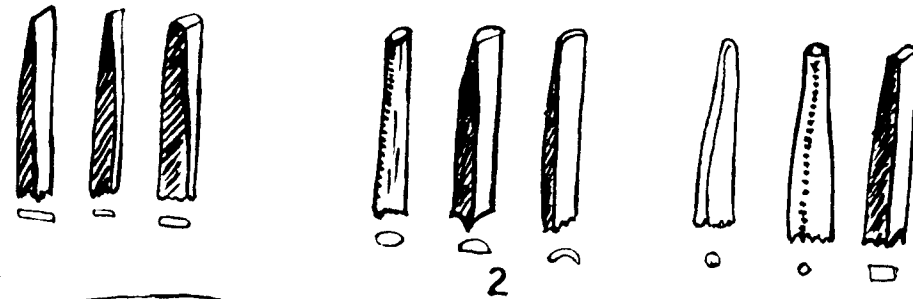
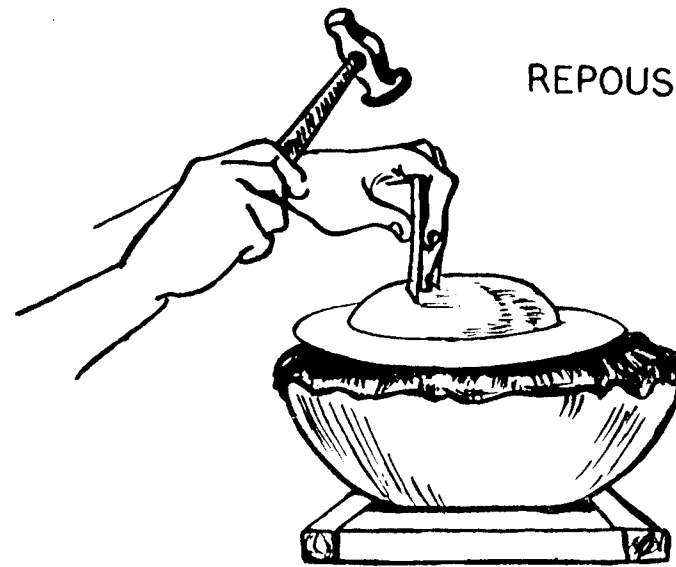


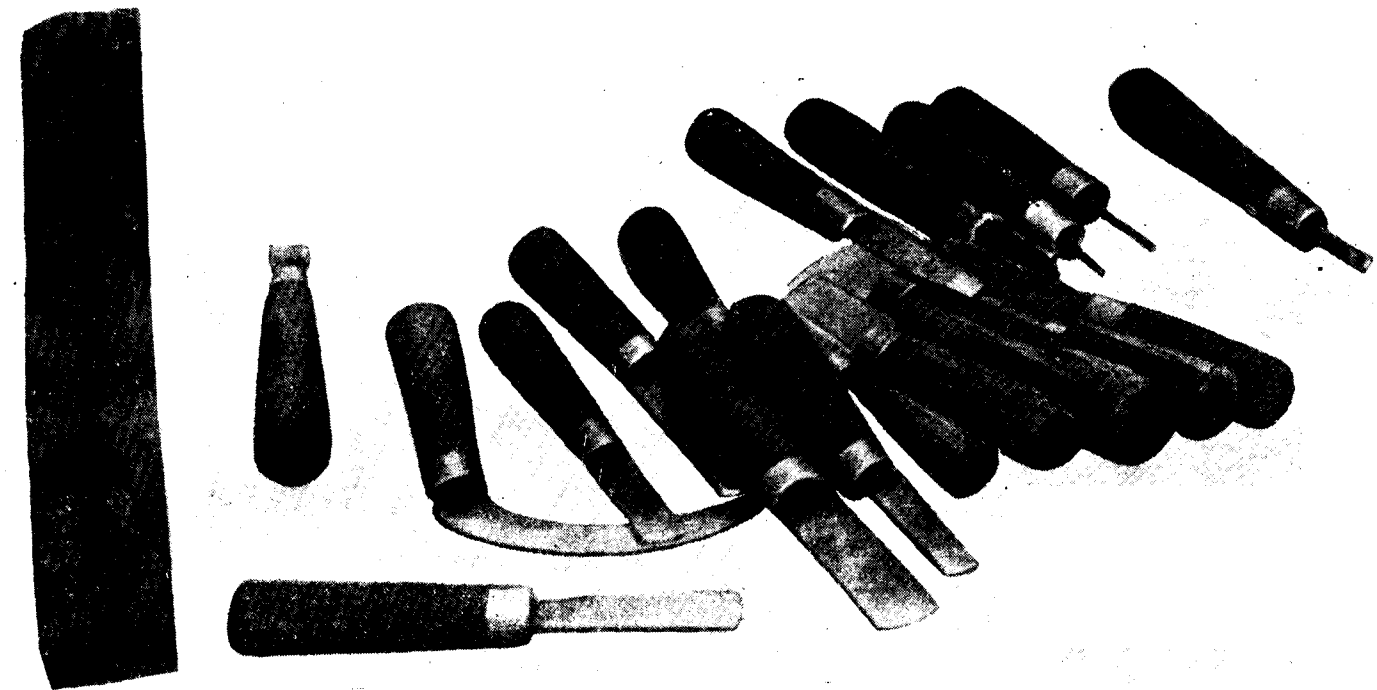
Plate No. 4

REPOUSSE WORK



1. Repousse' work in progress, over a plaque fixed in *ral* over the *adda*.
2. Tools used in repousse' work—*bulia*, *tilia*, *lorhata*, *summi*, *moti*, etc.
3. *Adda*, *thia* or *kunda* over which the plaque is fixed as in figure no. 1.
4. *Dari*, a brass stand, with depressions of different sizes on its six faces, for making necessary hollows or depressions in the ware.
5. *Hathawa*, a hammer.

Plate No. 5



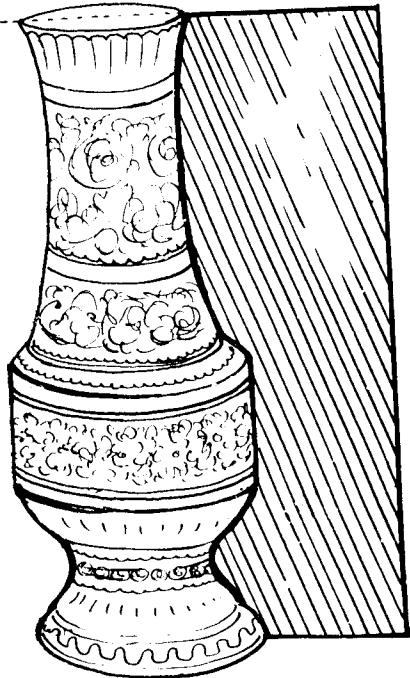
Tools used in smoothening and polishing Artware

—Photo by courtesy, B. C. Industries

The big steel bar lying by the side of the tools is used for smoothening the edges of the tools. The tools are got especially prepared locally by the craftsmen to suit their individual needs.

Plate No. 6

VASE



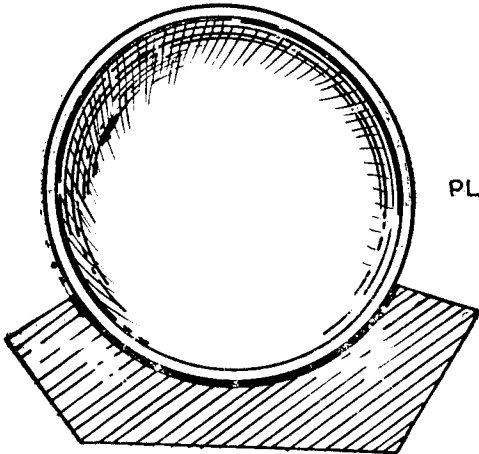
TEMPLATE

BOWL



TEMPLATE

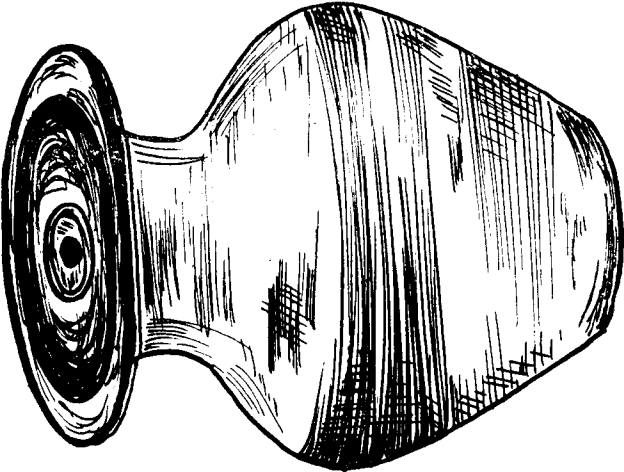
PLATE



TEMPLATE

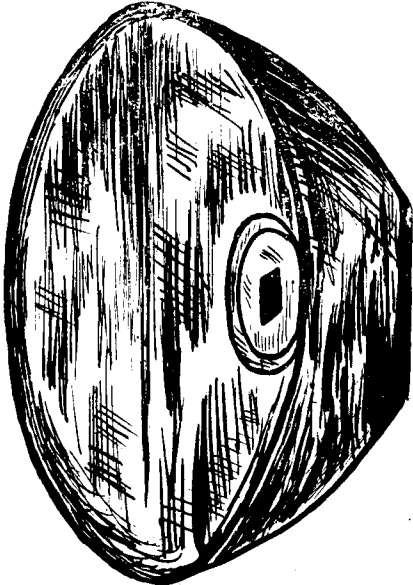
Testing with Templates

Plate No. 8



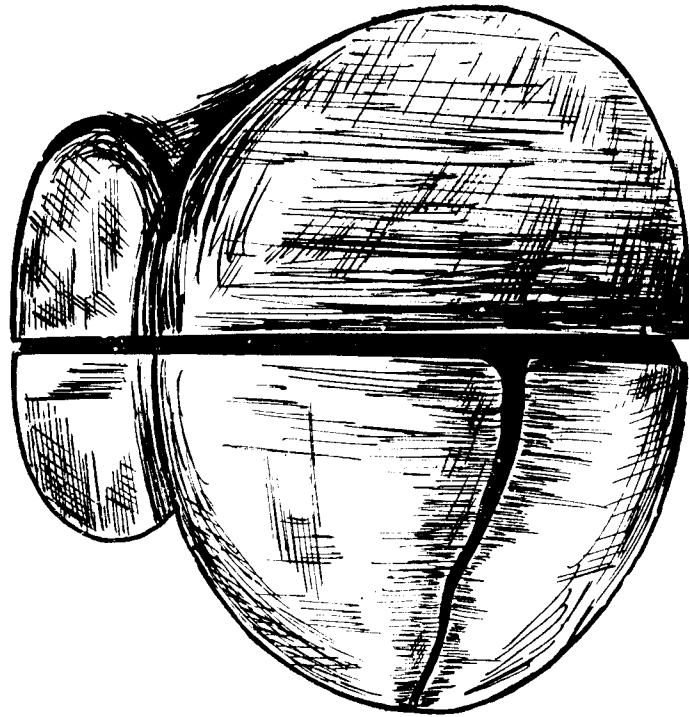
The inner core (*bhitalla*) with the cap of clay, called *tikit* or *topahi*, fixed on it.

Plate No. 7



The base of the mould, locally called *dhibri*.

Plate No. 9



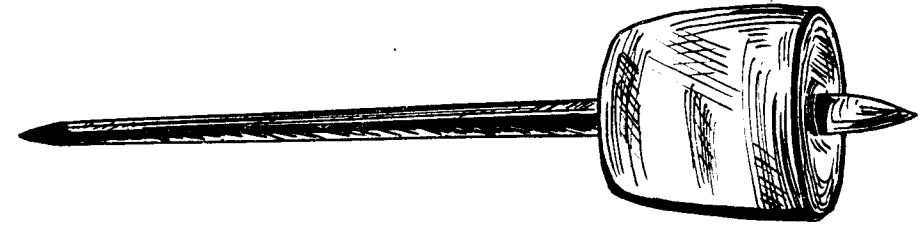
For preparing the outer shell (*upalla*), clay is plastered on to the inner core and smoothed. When almost dry, the outer shell is cut into two pieces vertically. Each of the two parts of the shell is called a *palla*.

Plate No. 10



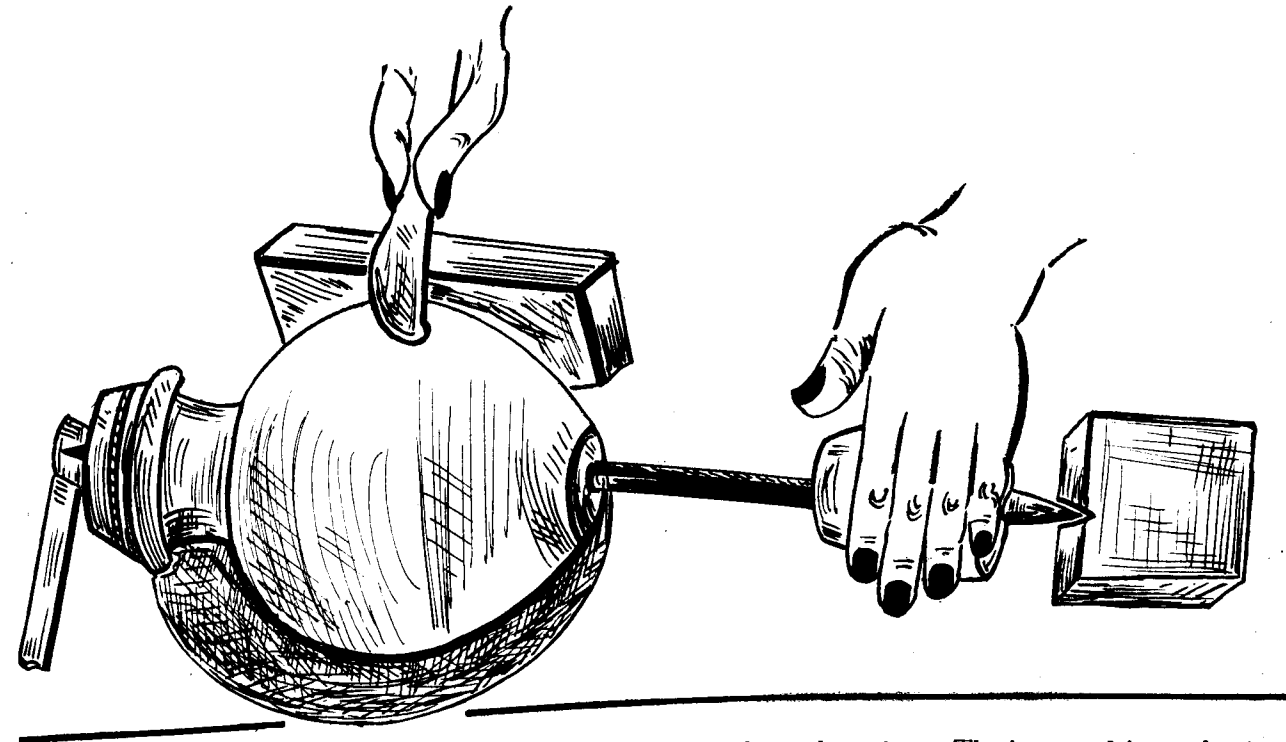
The *para*, consisting of the inner core (*bhitalla*) and the outer shell (*upalla*).

Plate No. 11



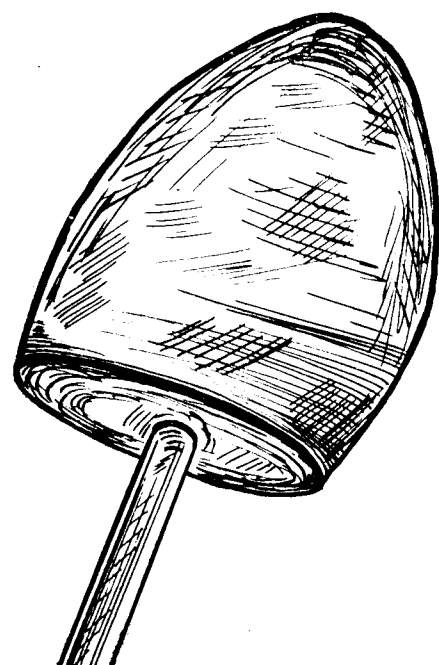
Salnga, a rough lathe used for smoothing the outer surface of the inner core (*bhitalla*) of the mould.

Plate No. 12



The inner core (*bhitalla*) of the mould being smoothed on the *salnga*. The iron rod is revolved with the left hand and the smoothing is done by applying the scraper (*kharadni*) to the core with the right hand. Portion of the earth, where the *bhitalla* is to revolve on the *salnga*, is hollowed out so that it could be turned freely without striking against the ground.

Plate No. 13



The mould (*sancha*) on which the crucible (*gharia*) is prepared.

Plate No. 14



A U-shaped crucible (*gharia*) generally used in *para* casting method. It has three legs for being rested upon, so that it might not fall on one side.

Plate No. 15



Melting of Metals
The graphite crucible containing metal, borax etc. is being placed in the furnace. The heat would be worked up by operating the furnace by hand.

—Photo by courtesy, B. C. Industries

Plate No. 16



Moulding of German Silver Wares
Sand-casting method is being used. The two workers in the foreground prepare the moulds by filling in sand and pass these on to the craftsman who pours the molten metal in the mould through the runner-igate. No risers have been provided in the mould. The two pieces of the mould are pressed and held together by the craftsman with his feet when the molten metal is poured in. The metal sets in the mould within a minute and the excess molten metal is poured back from the runner into the crucible. The part of the ware that has been cast is taken out and the sand again mixed with the pile of sand.

—Photo by courtesy, B. C. Industries

Plate No. 17



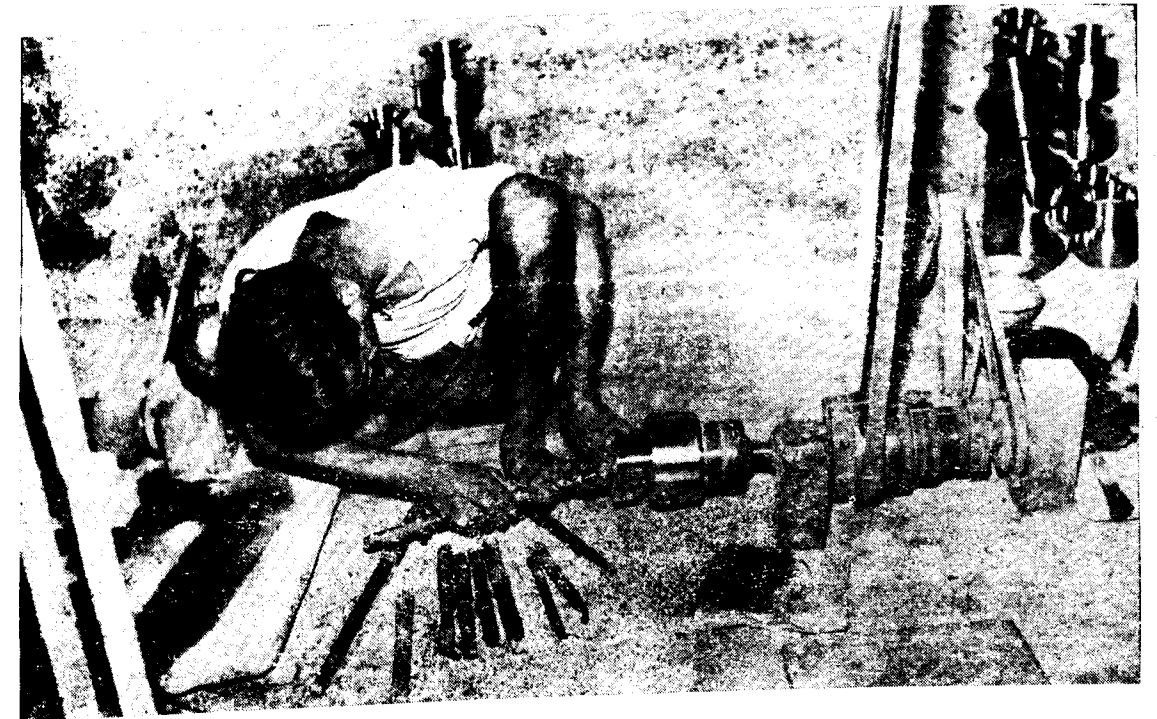
Soldering of various moulded parts of wares.
—Photo by courtesy, B. C. Industries

Plate No. 18



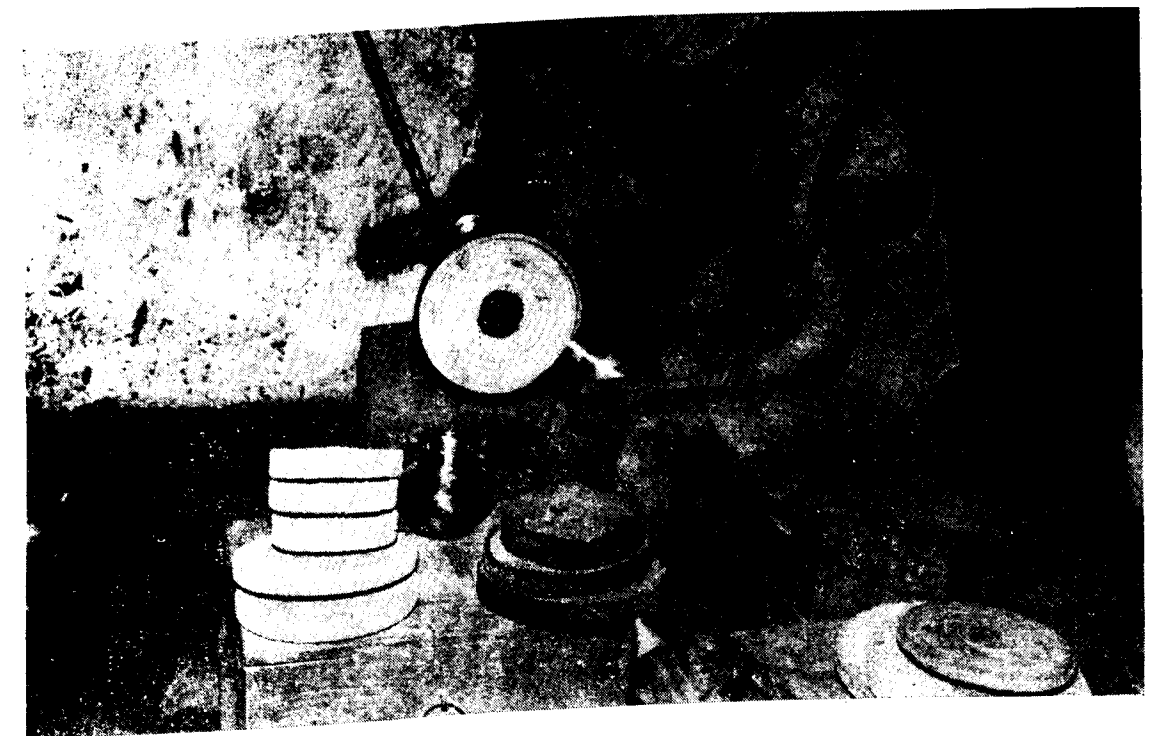
Filing is usually done after the various moulded parts of a utensil have been soldered. Sometimes a little filing is necessary before soldering, too.
—Photo by courtesy, B. C. Industries

Plate No. 19

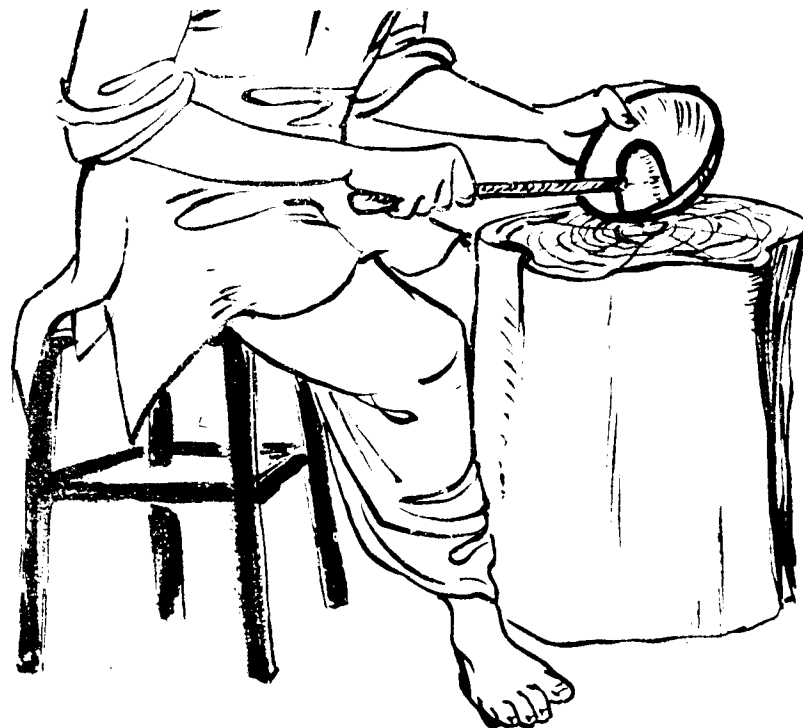


Scraping of a Moulded Brass *Lota*
The back of the ware is heated and fixed up with the lac lump on the lathe, which revolves by electric power. Scraping is done by the craftsman with the help of a chisel curved at the sharp end. On the right side of the craftsman a stone slab for sharpening the chisel from time to time is kept handy.
—Photo by courtesy, B. C. Industries

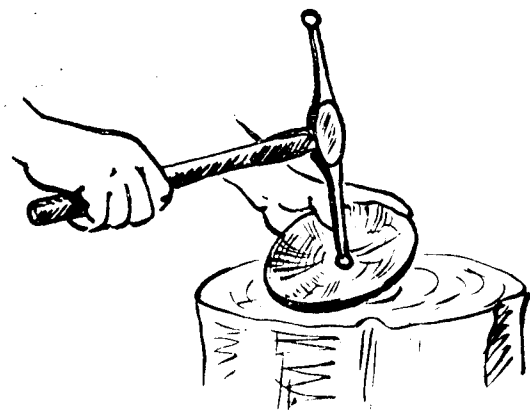
Plate No. 20



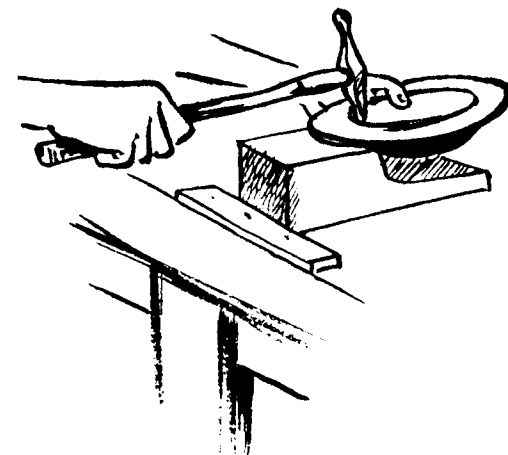
Buff Polishing of *Lota*
—Photo by courtesy, B. C. Industries



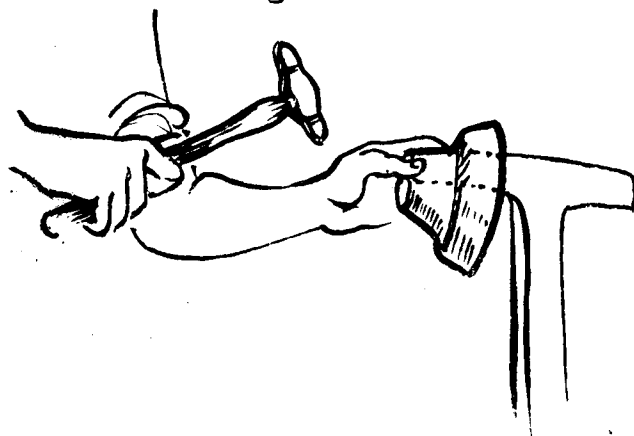
1. Hollowing with Mallet



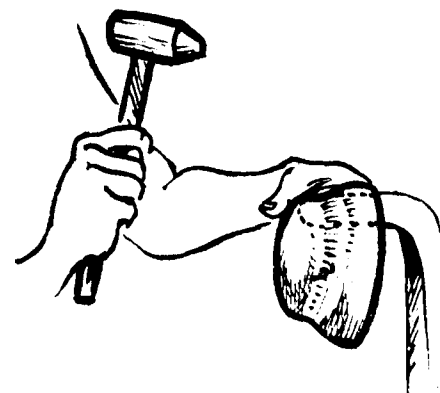
2. Hollowing with Hammer



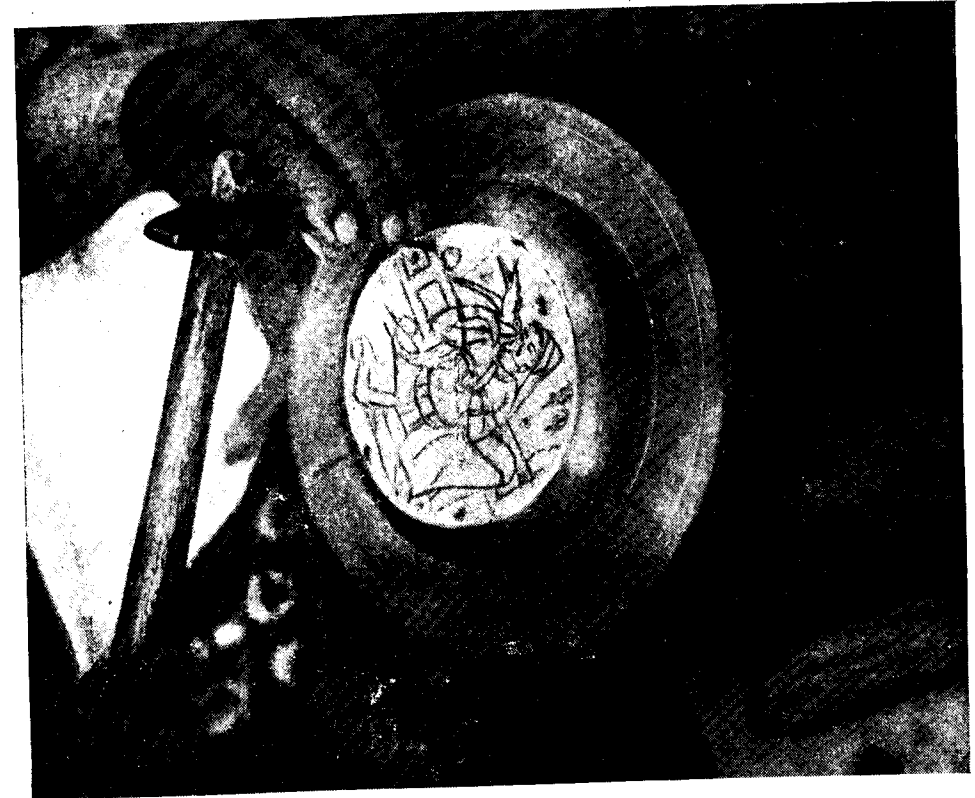
3. Sinking with Hammer



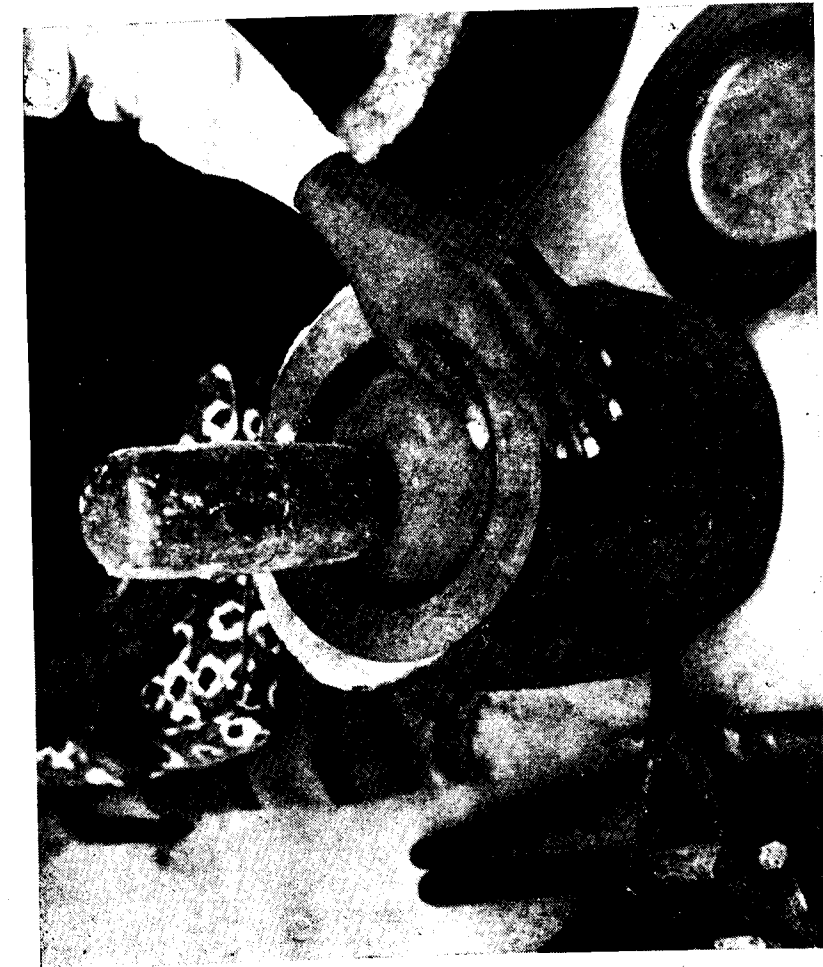
4. Raising with Hammer



5. Raising with Mallet



The paper on which the design has been drawn is lightly gummed on the surface of the plate so that it may not budge. Then the craftsman traces the design on to the surface of the copper plaque by hammering a series of dots following the pencilled lines of the drawing with a pin-pointed chisel called a *summi*.



The copper plaque is placed on a wood stand (*hia* or *kunda*) having a big depression and then hammered with a wooden hammer called *moongri* for making a depression in the ware.

Plate No. 24



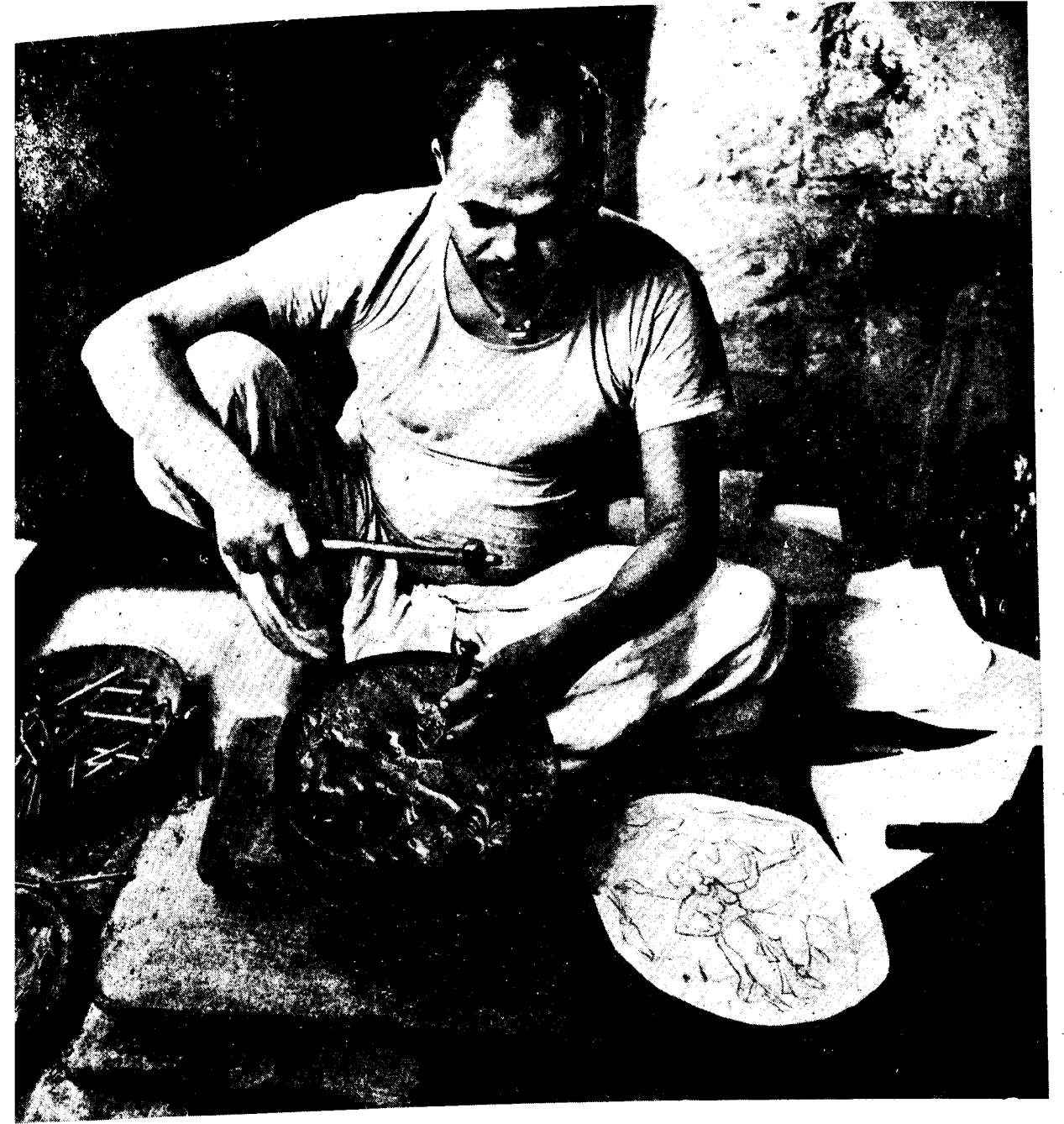
The copper plaque is affixed in an inverted position in a warmed bed of *rad* that has been heated over a fire for about an hour and then laid on a wood plate. The craftsman is elaborating the design with a blunt-nosed chisel.

Plate No. 25



The plaque is fixed in the *rad* bed face side up. The outlines of the figures are being sharpened with a tool called *gal qalam*, the process being called chasing.

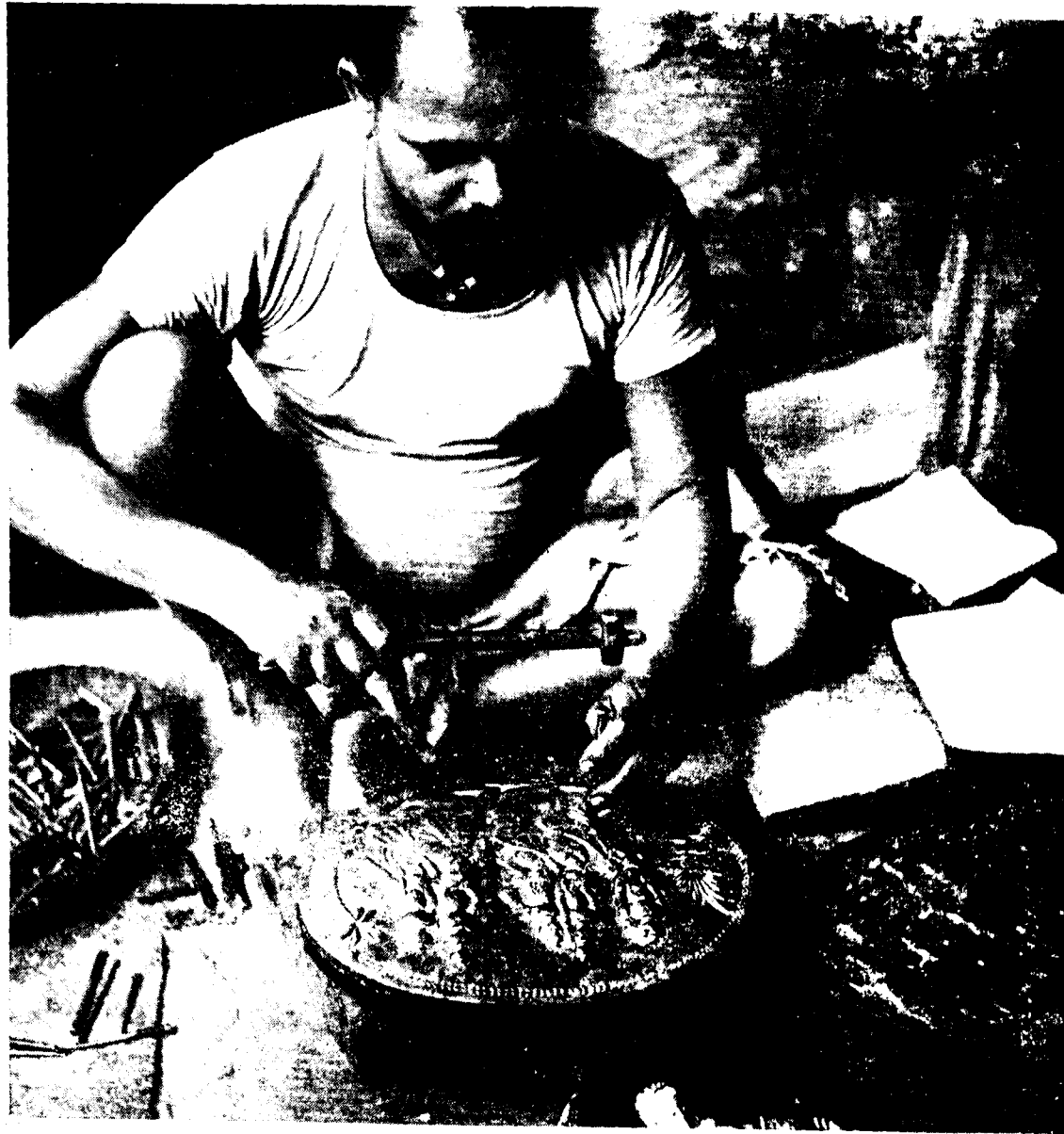
Plate No. 26



A Highly Skilled Craftsman doing Repousse' Work
—Photo by courtesy, B. C. Industries

The craftsman first outlines the figure on a sheet of paper. The outline figure on white paper is placed on his left side. The outline of the design is marked on the surface of the metal sheet with a pointed steel needle. The sheet is fixed on a pitch block, visible below the copper sheet. Repousse' work is being done from the back. The numerous tools kept in the steel casket are punches and tracers, locally called *tilia*, *lorhati*, *bullia*, etc., which are prepared locally.

Plate No. 27



A Highly Skilled Craftsman doing Repousse' Work

—Photo by courtesy, B. C. Industries

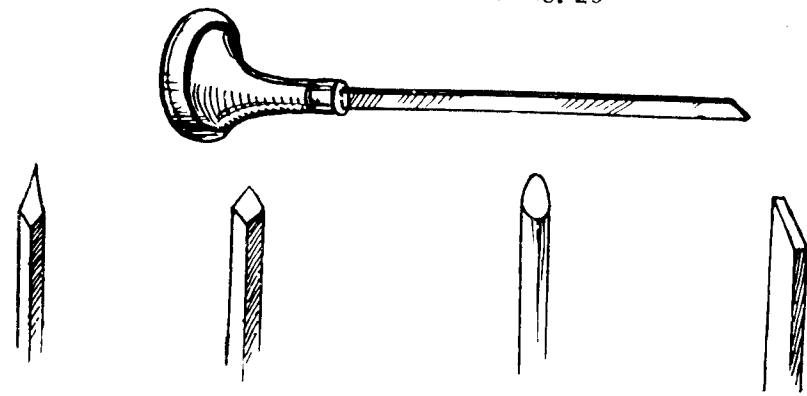
The plaque shown in the previous picture has been turned up. The process of repoussing on the front side is called 'chasing' which brings into relief the idea or scene to be depicted. Another plaque which is to be 'chased' is kept on the left side of the craftsman. The process requires a high skill and concentration.

Plate No. 28

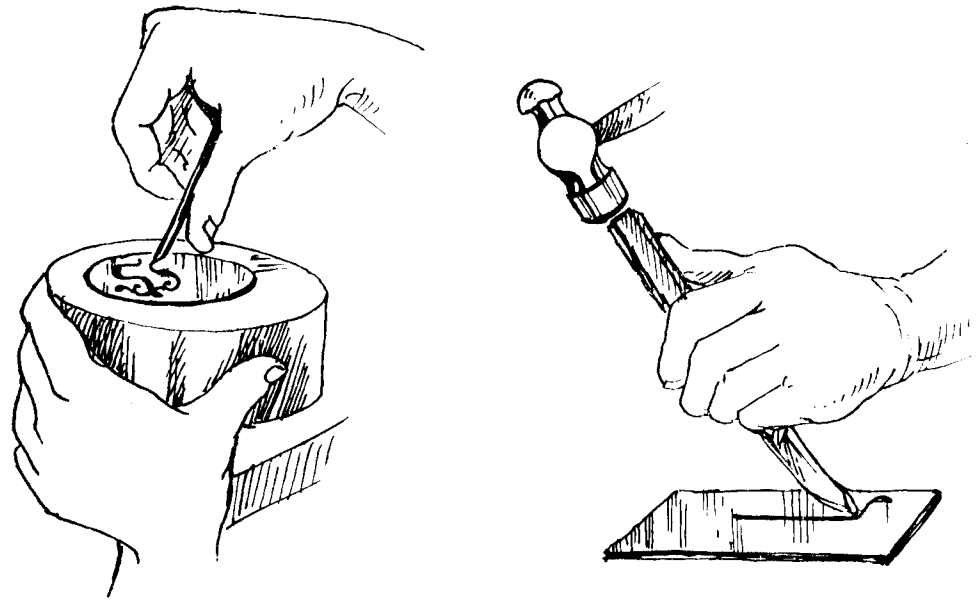


A Highly Skilled Craftsman smoothening the Plaque
—Photo by courtesy, of B. C. Industries

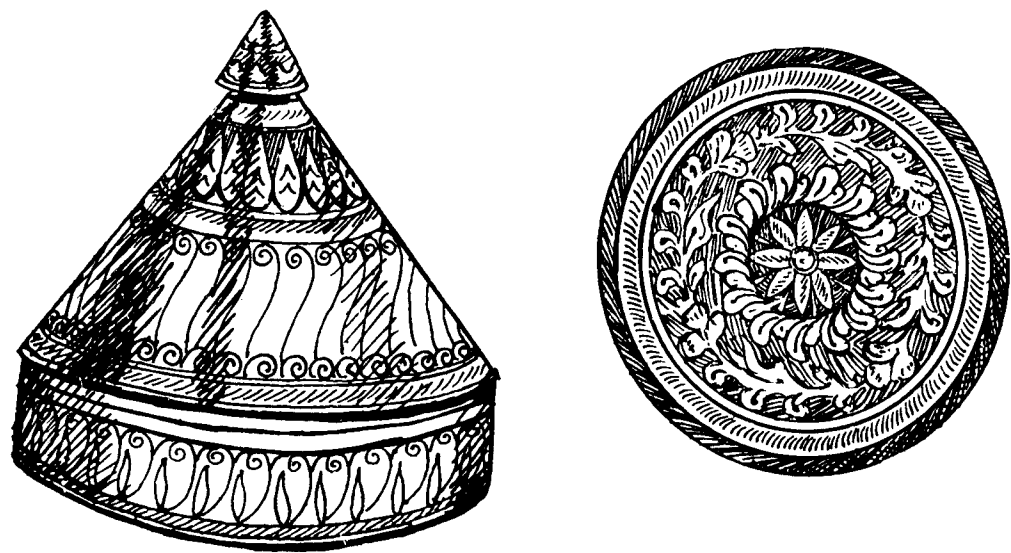
The plaque, having been removed from the pitch block, is being smoothened by the craftsman. The tools used are locally called *parwari*, *chaursi* and *badami*. The index finger of the left hand of the craftsman and the hand holding the tool (*badami*) move closely together. With a view to obviating the possibility of the implement causing scratches or injury in the process, the index finger of his left hand has been covered with a rubber tube.



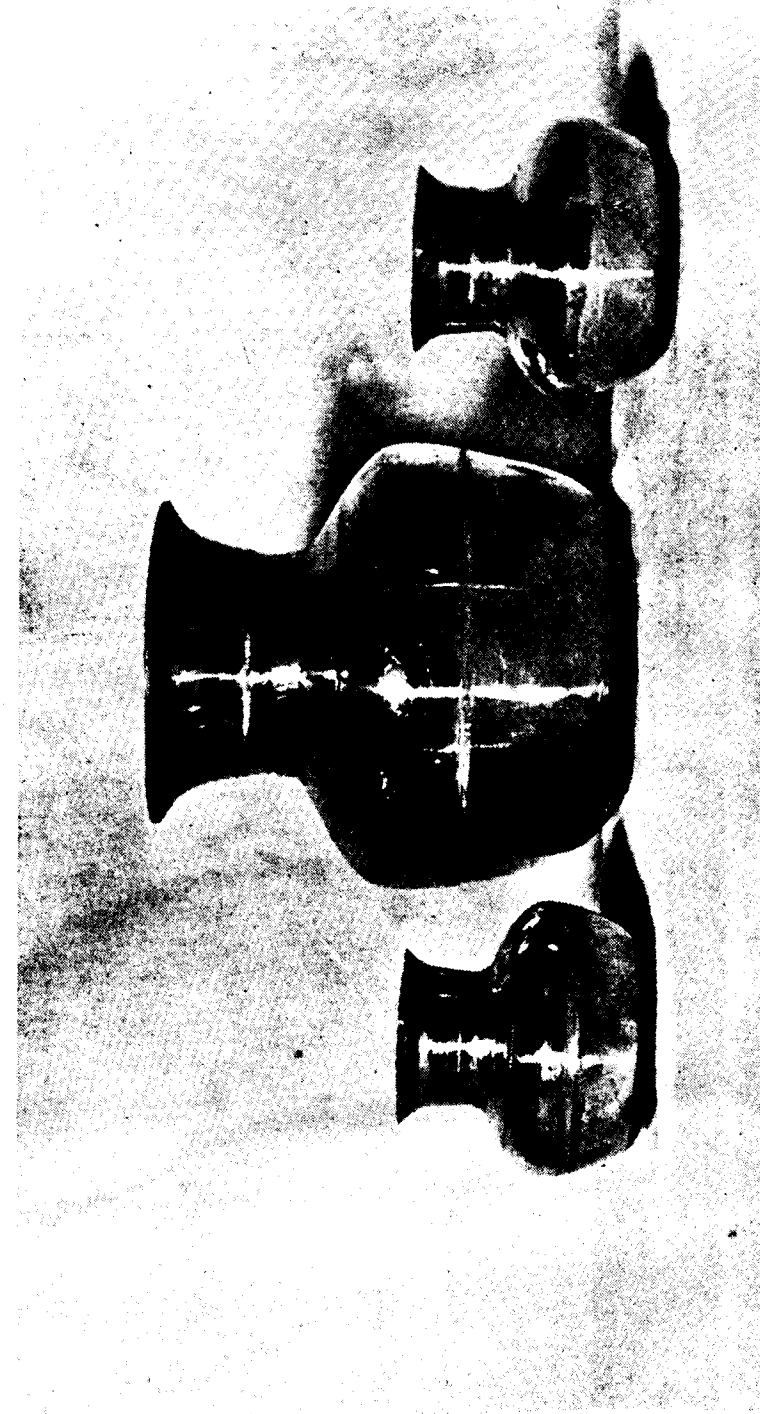
1. Engraving Tools



2. Engraving in Progress



3. The Finished Products—a Pin Tray and a Powder Pot.



Lotos of Surti Design

These are non-moulded pots (height : 7" and 4½") made of copper sheet. Brass is rarely used as a metal of these wares. These are meant for religious purposes, i. e., keeping Ganga water for puja and hence these are very popular in holy places. Copper is used because it is a purer metal, generally used for religious purposes. *Surti lotos* are mostly manufactured at Varanasi and are sold all over India, the main cities using these being Hardwar, Madras, Allahabad, Patna, Jaipur etc.

Plate No. 31



A Champa Gagra

—Photo by courtesy, B. C. Industries

The upper and the lower portions of the *gagra* are moulded and soldered together, putting a broad stripe of beaten copper around between the two moulded pieces. Copper has a religious significance in addition to its purifying quality as a metal. The lower moulded portion is not chiselled. The ware is used for storing or carrying water. Even though manufactured at Varanasi and Mirzapur only, it commands an all-India market. It varies in size and weight from 1½ seers to 10 seers.

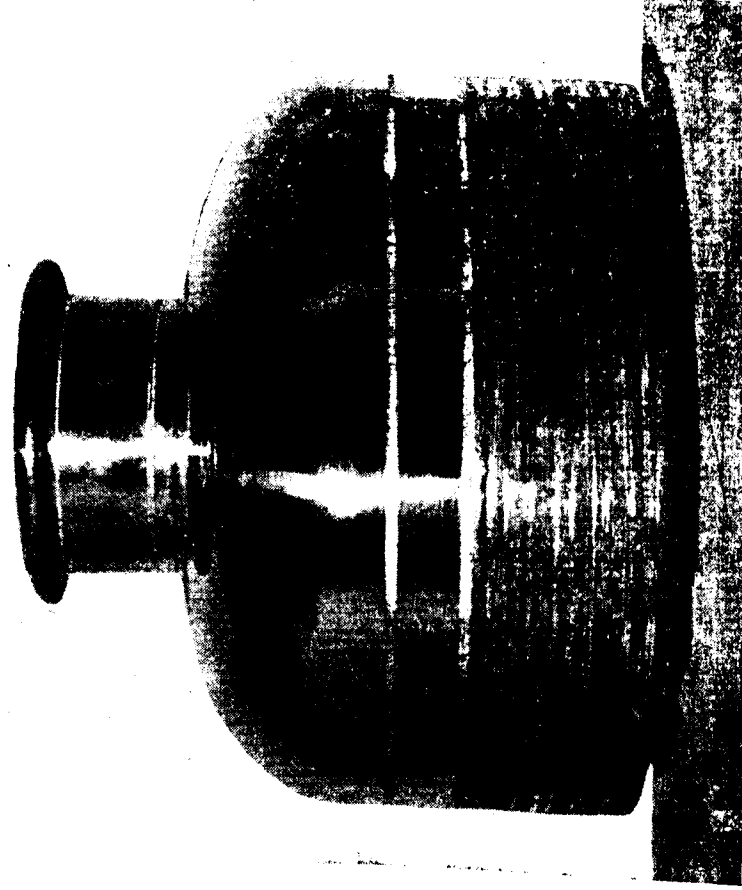
Plate No. 32



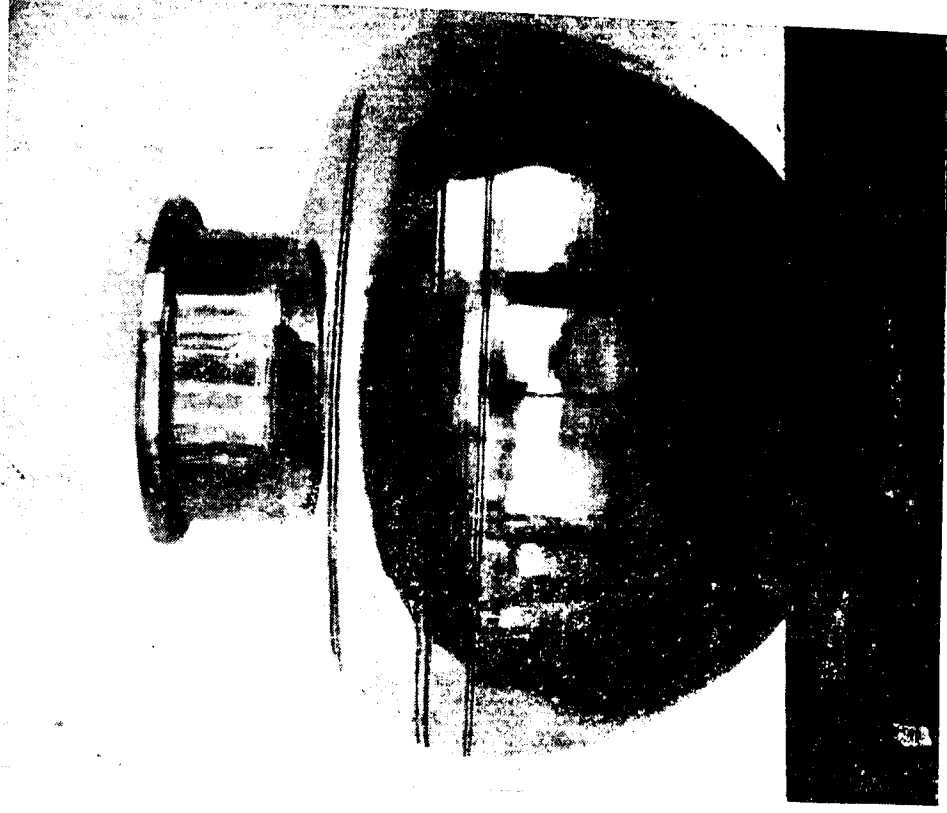
Benarsi Gagra

—Photo by courtesy, B. C. Industries

It is designed and manufactured at Varanasi and hence the name. It is prepared by beating brass sheet metal. It is of different sizes according to weight, ranging from 1½ kg. to 10 kg. The one shown in the photo is of 4 kg. The upper portion of the utensil is fully chiselled and hence the bright appearance. The lower portion is only filed. This *gagra* is used for storing water mainly for drinking purpose.

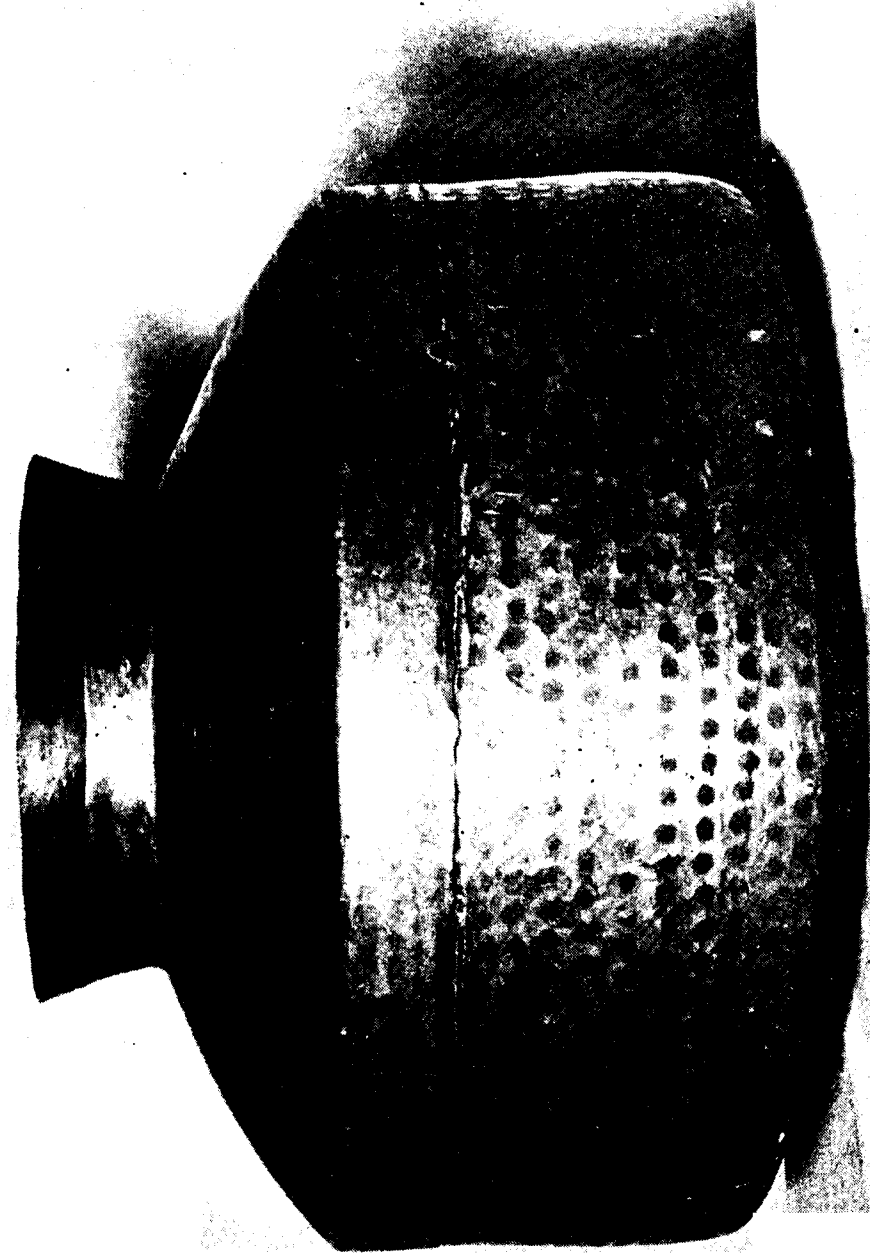


A Mirzapuri *gagra*—hand-beaten water pot made out of sheet brass



A Mirzapuri *gagra* moulded as one piece by *lost wax* casting method. The lower portion has only been filed and the upper portion has been chiselled and polished. Concentric circles have been made with a chisel during the process of scraping.

—*Photography courtesy, Central Directorate, Lucknow.*



A Brass *Handa*

The design originated in Mirzapur and hence it is called Mirzapuri *handa*. It is prepared by beating brass sheet in two parts and then soldering these to prepare a composite whole. It is manufactured in various sizes according to weight—ranging from 2½ seers to 10 seers—the one shown in the photograph being of 5 seers. The lower portion is hammered with an iron hammer and the upper portion chiselled.

The vessel is used for carrying and storing water. At the time of marriages, big *handas* are utilised for boiling rice. The vessel is manufactured both at Varanasi and Mirzapur. It is quite popular in Madhya Pradesh, Bihar and Uttar Pradesh.

Plate No. 36



A Batua of Kansa

—Photo by courtesy, B. C. Industries

It is a moulded utensil meant for cooking rice and *dal*. Its design originated in Mirzapur and hence it is called Mirzapuri but at present Varanasi occupies the first place in the manufacture of this utensil. In Varanasi, too, it is almost exclusively manufactured in Aditya Nagar, a village forming the southern border of the Varanasi Corporation. To some extent, village Sunderpur also produces this utensil. Due to its heaviness and durability, it is quite popular in the households throughout the country.

The *batuas* are of various sizes, varying from two to five seers in weight. The one shown in the photo weighs $2\frac{1}{2}$ seers.

There is a difference of colour and texture between the upper portion and the lower portion of the pot—because the lower portion has been only filed while the upper portion is filed and then chiselled with concentric circles.

The brass used in the utensil has a mixture of two per cent lead and 0.5 per cent tin, thereby enabling the pot to endure chilly and tamarind products. Pure brass has a tendency to convert acidic products into poison.

This long-sized *batua* is not popular now-a-days. Instead, the round-shaped and flat-bottomed *batua* has become more popular.

Plate No. 37



Brass Bucket

Plate No. 38



Copper Jug

—Photo by courtesy, B. C. Industries

The design of this pot and its manufacture originated in Bengal some thirty years ago. At present it is manufactured in Varanasi and Moradabad. It is made either purely of brass or purely of copper, without any mixture. The upper portion of the jug is of beaten sheet, while the lower portion and the handle are moulded. This vessel is more popular in Bengal and Bihar. In Varanasi itself it is seldom used.

Plate No. 39



A Nepali Karva

—Photo by courtesy, B. C. Industries

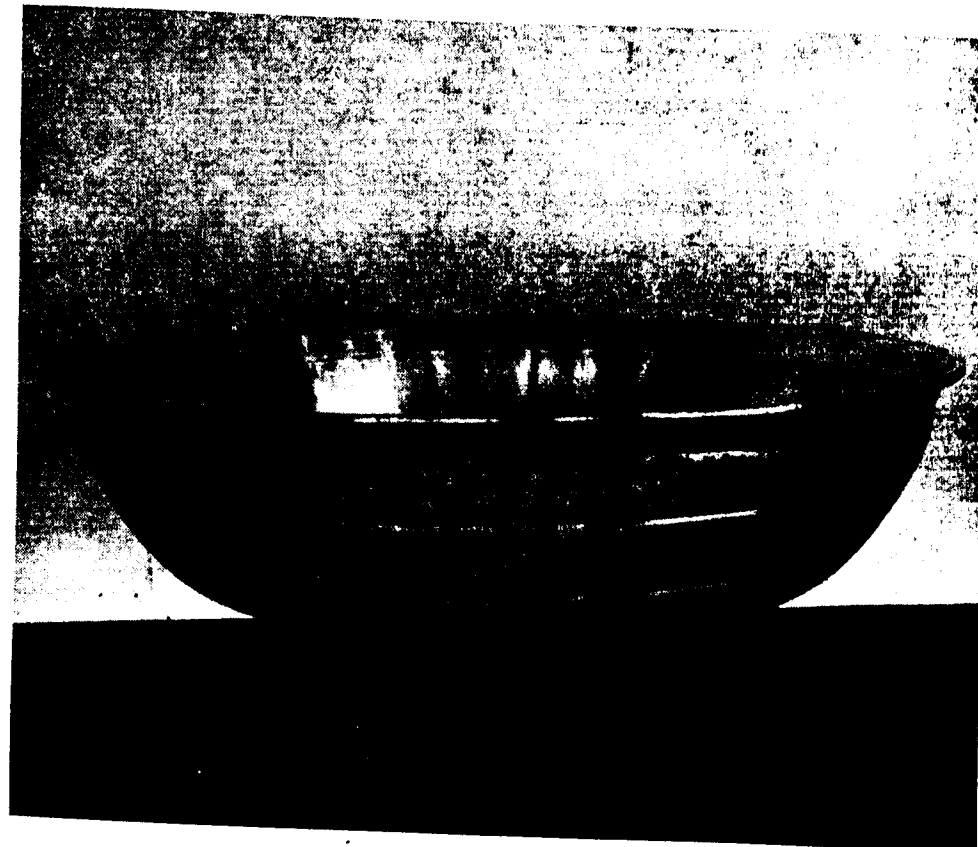
This pot used to be manufactured in Calcutta, the place of origin of the design. It is a moulded pot made of an alloy of copper and white lead fused in the ratio of 95:5. It is also made of silver and German silver. It is more popular in Bihar and Bengal than in Uttar Pradesh. Such wares form part of presents in marriages.

Plate No. 40



A set of gillet lota and tumblers
—Photo by courtesy, Central Design Centre, Lucknow.

Plate No. 41

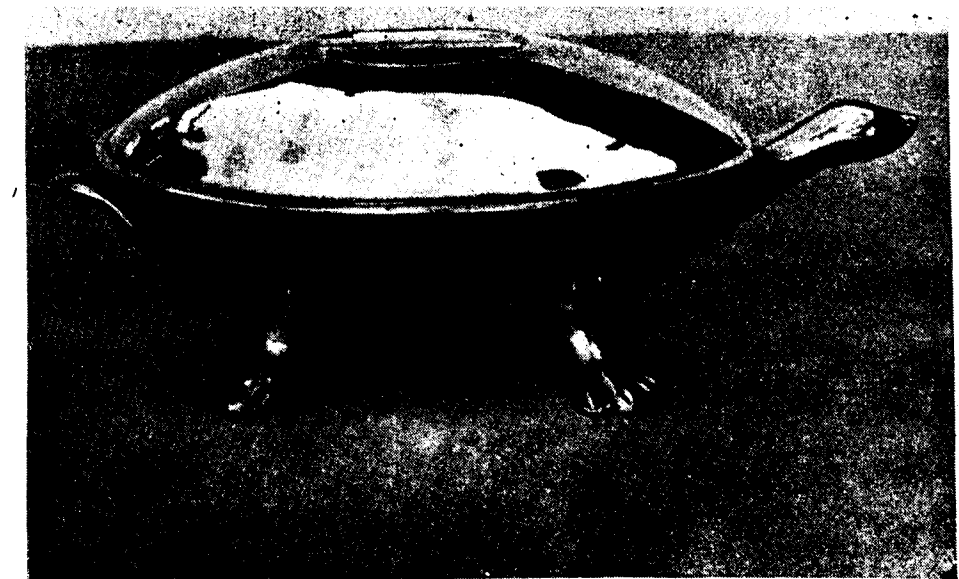


A hammered wash basin made of brass
—Photo by courtesy, Central Design Centre, Lucknow.

Plate No. 42

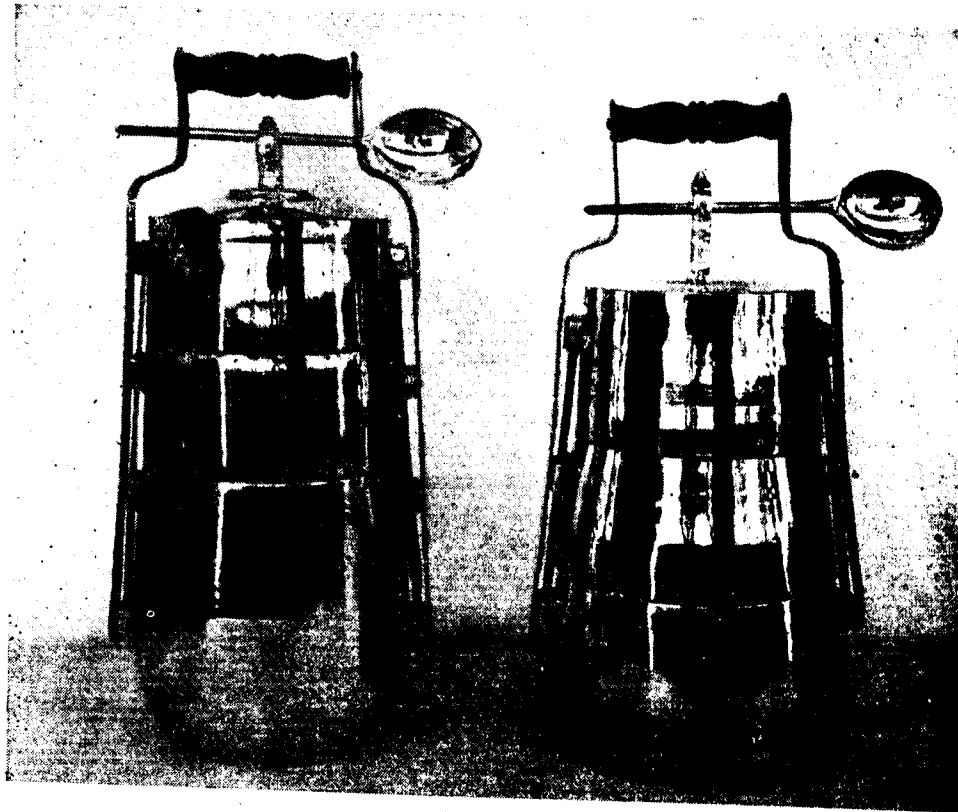


A set of electroplated brass *dongas* manufactured at Moradabad, partly
by casting and partly by pressing method.
—Photo by courtesy, Central Design Centre, Lucknow.
Plate No. 43



A tortoise-shaped electroplated *donga* manufactured at Moradabad.
—Photo by courtesy, Central Design Centre, Lucknow.

Plate No. 44



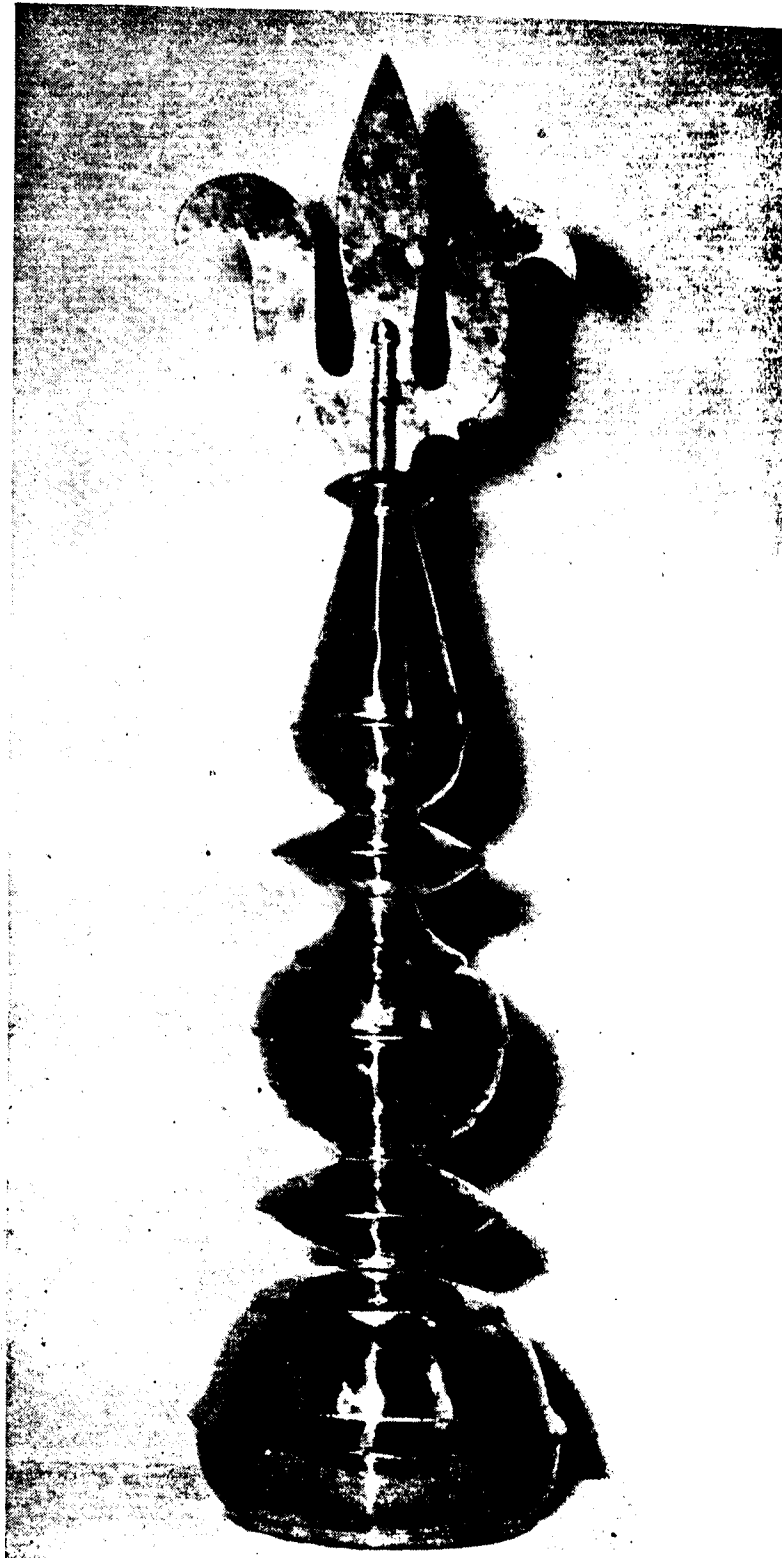
A set of electroplated brass tiffin carriers manufactured at Moradabad.
—Photo by courtesy, Central Design Centre, Lucknow.

Plate No. 45



A copper safri lota with a tumbler inside, manufactured at Moradabad.
—Photo by courtesy, Central Design Centre, Lucknow.

Plate No. 46

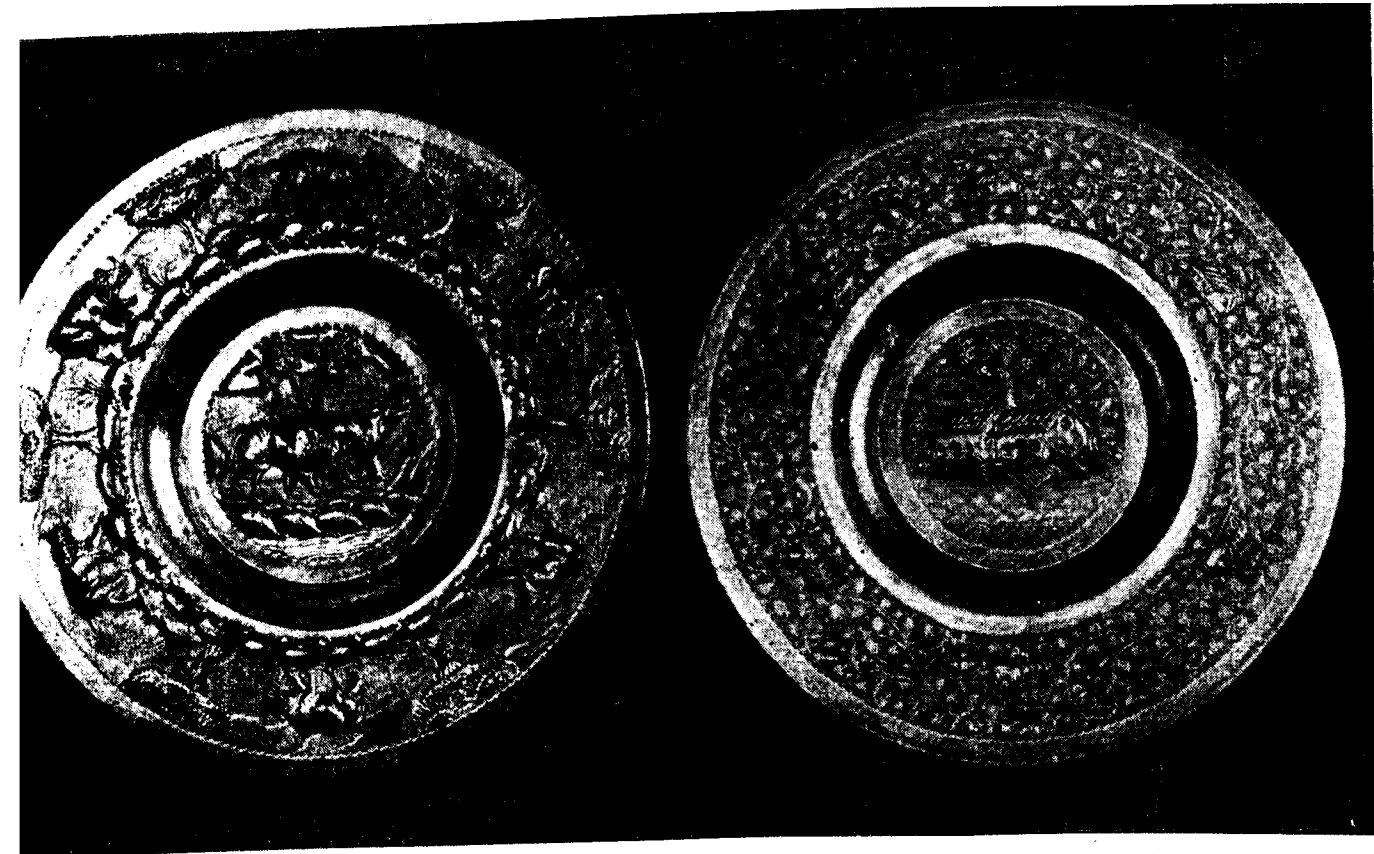


A Copper Kalash

—Photo by courtesy, B. C. Industries

The *kalash* (height: 32") has a *trishool* (triad) design, after the three-headed spear of Lord Shiva. It is for this reason that it is fixed on the top of a Shiva temple. Such a *kalash* on the top of a temple indicates that it is a Shiva temple. The *kalash* can be both of brass and copper but the brass one is more common. It is manufactured by beating copper or brass sheets. The copper *kalash* is further gilded to give it a golden look.

Plate No. 47



Brass salvers fitted with copper animal pattern and a village scene

Plate No. 48



A Jointless Copper Artware Bowl

The repousse', chased and frosted work is done after a copper sheet has been shaped by raising with a hammer on a blocking tool. It is purely a decorative ware. A rural folk dance scene of the Moghul period is engraved on the outer surface. Height: 4", diameter of opening: 6".

—Photo by courtesy, B. C. Industries

Plate No. 49



Copper plaque with artistic repousse' work, in the centre being a scene of Manipur dance

Plate No. 50



Copper Repousse' Plaque

The court scene of Indra *sabha* has been depicted on this plaque (size : 20" x 16"). Indra, the rain god according to Hindu mythology, is seated on the throne, attended by female courtiers and court dancers. It is purely an artistic work requiring an artistic skill and prolonged training. Such articles find an extensive market abroad, especially in U. S. A. and U. K.

Plate No 51



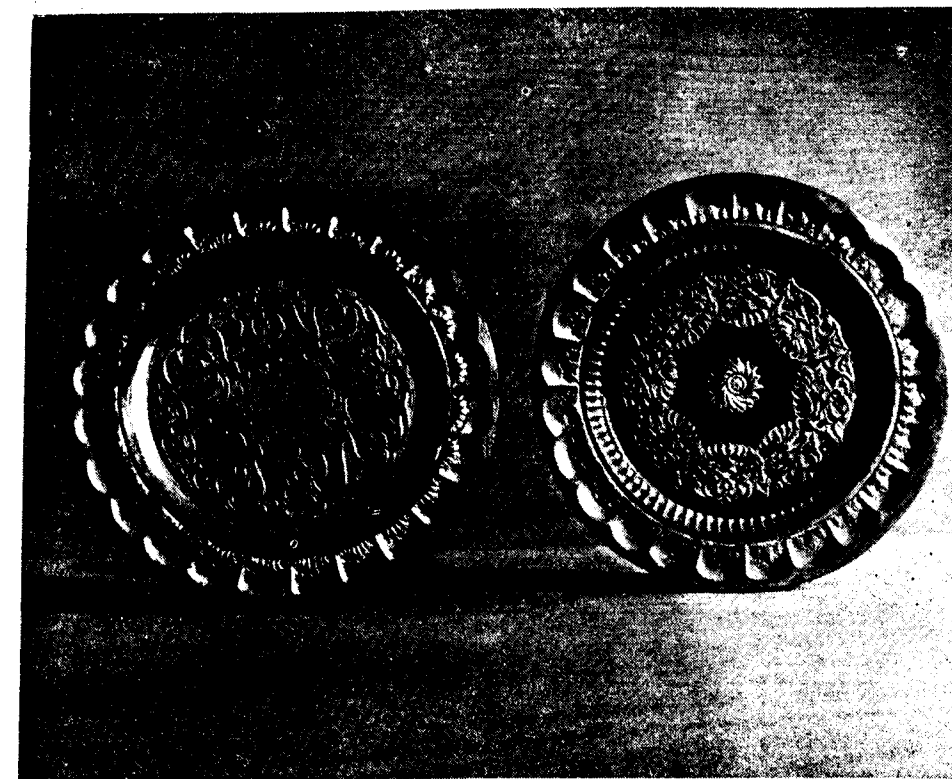
Copper wall decoration plaques showing (1) a scene from the life of the Buddha (2) Saraswati, goddess of learning in Hindu mythology, and (3) Lord Shiva dancing on a dwarf demon, surrounded by a halo of fires.

Plate No. 52



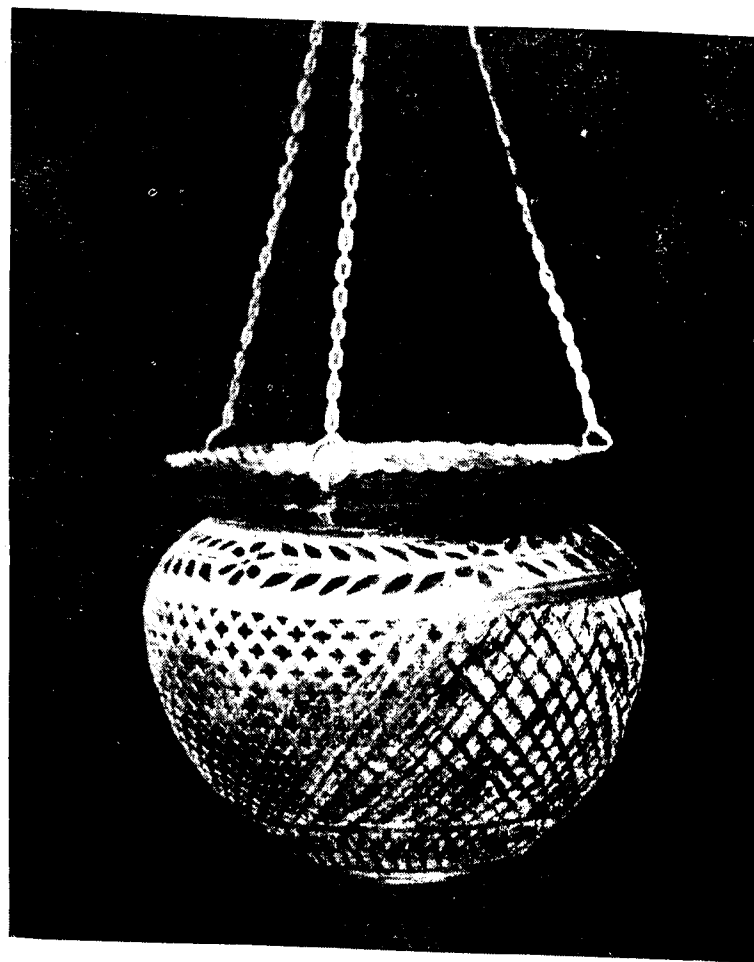
Copper Image of Nataraja
—Photo by courtesy, B. C. Industries
This artware (height : 10") is executed in repousse' and cut-work. The upper portion of copper metal sheet is riveted to the base.

Plate No. 53



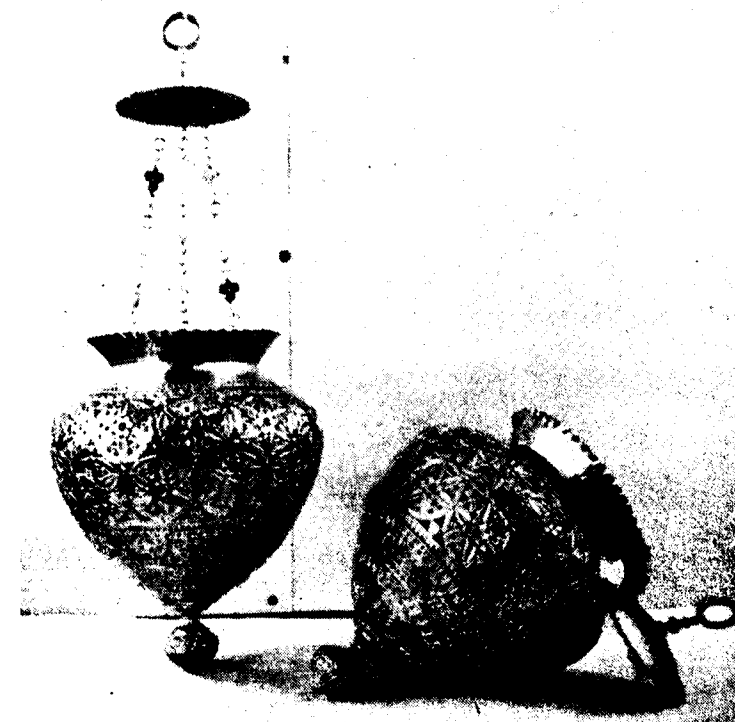
Brass salvers with repousse' work
—Photo by courtesy, Central Design Centre, Lucknow.

Plate No. 54



A perforated brass *gamla*-shaped chandelier

Plate No. 55



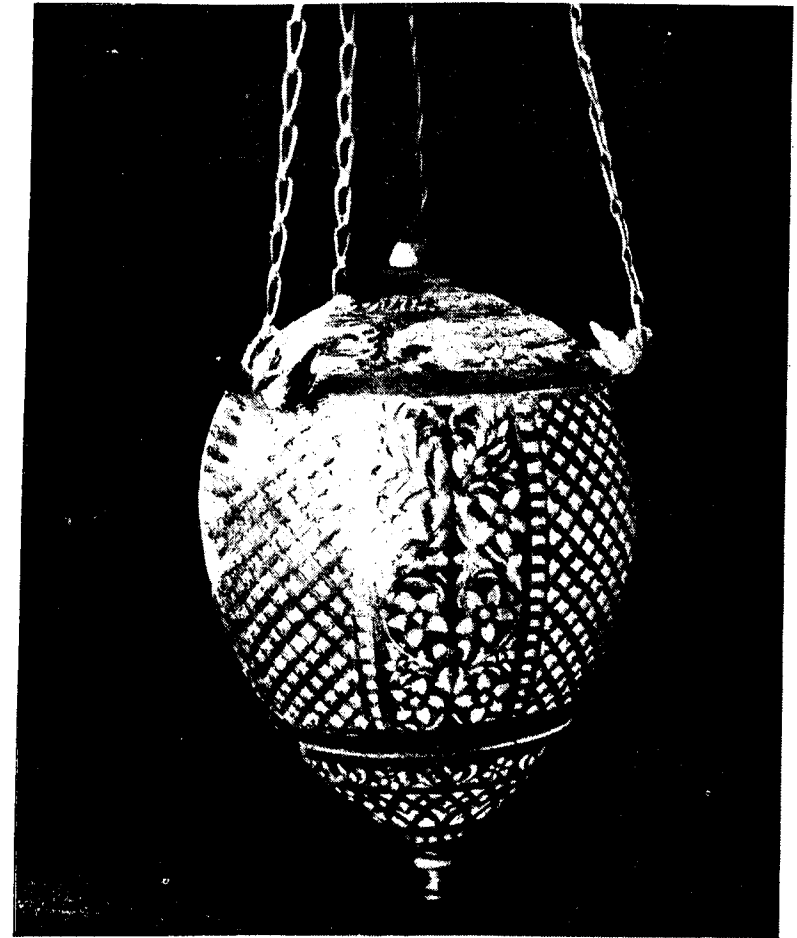
Hanging perforated *lota*-shaped chandelier made of copper

Plate No. 56



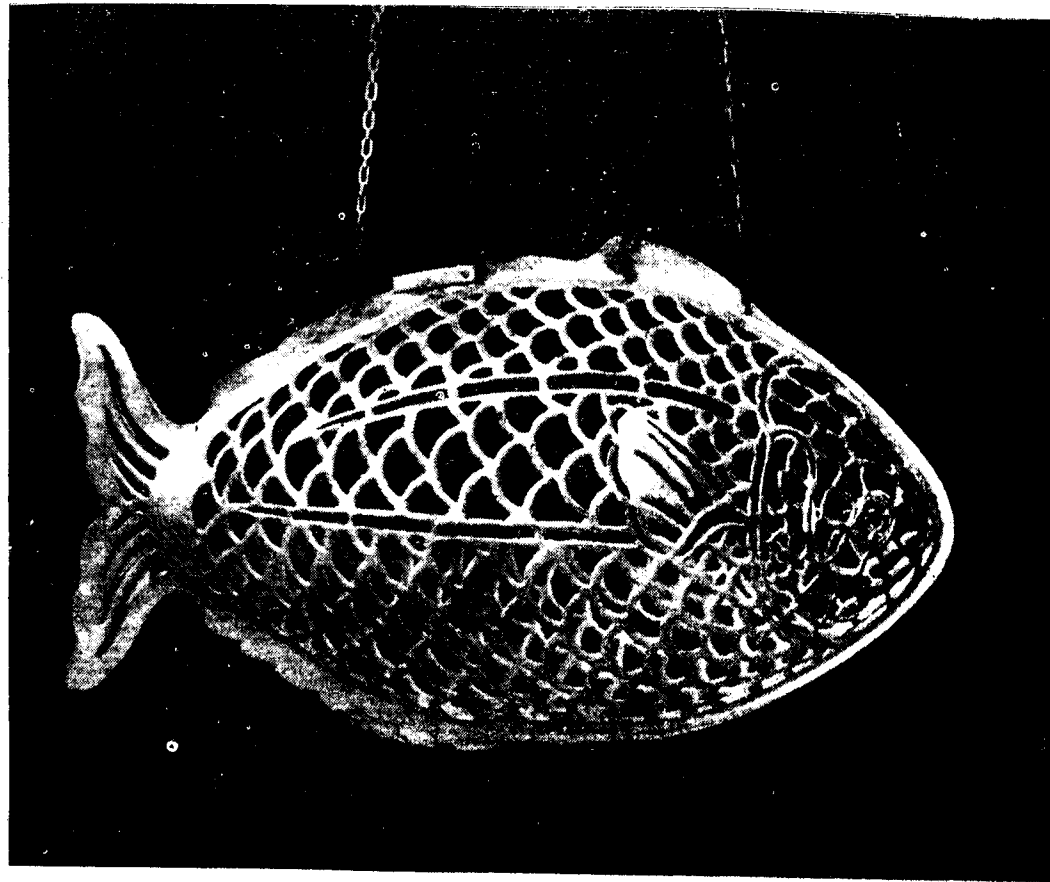
A perforated brass *lota*-typed chandelier
with an artistic scene

Plate No. 57



Hanging perforated coconut-shaped chandelier made of
copper

Plate No. 58



Hanging perforated fish-shaped chandelier made of brass

Plate No. 59



Perforated waste paper basket made of brass

Plate No. 60



An artistic copper flower *gamla* with stand

Plate No. 61

Small Bowls

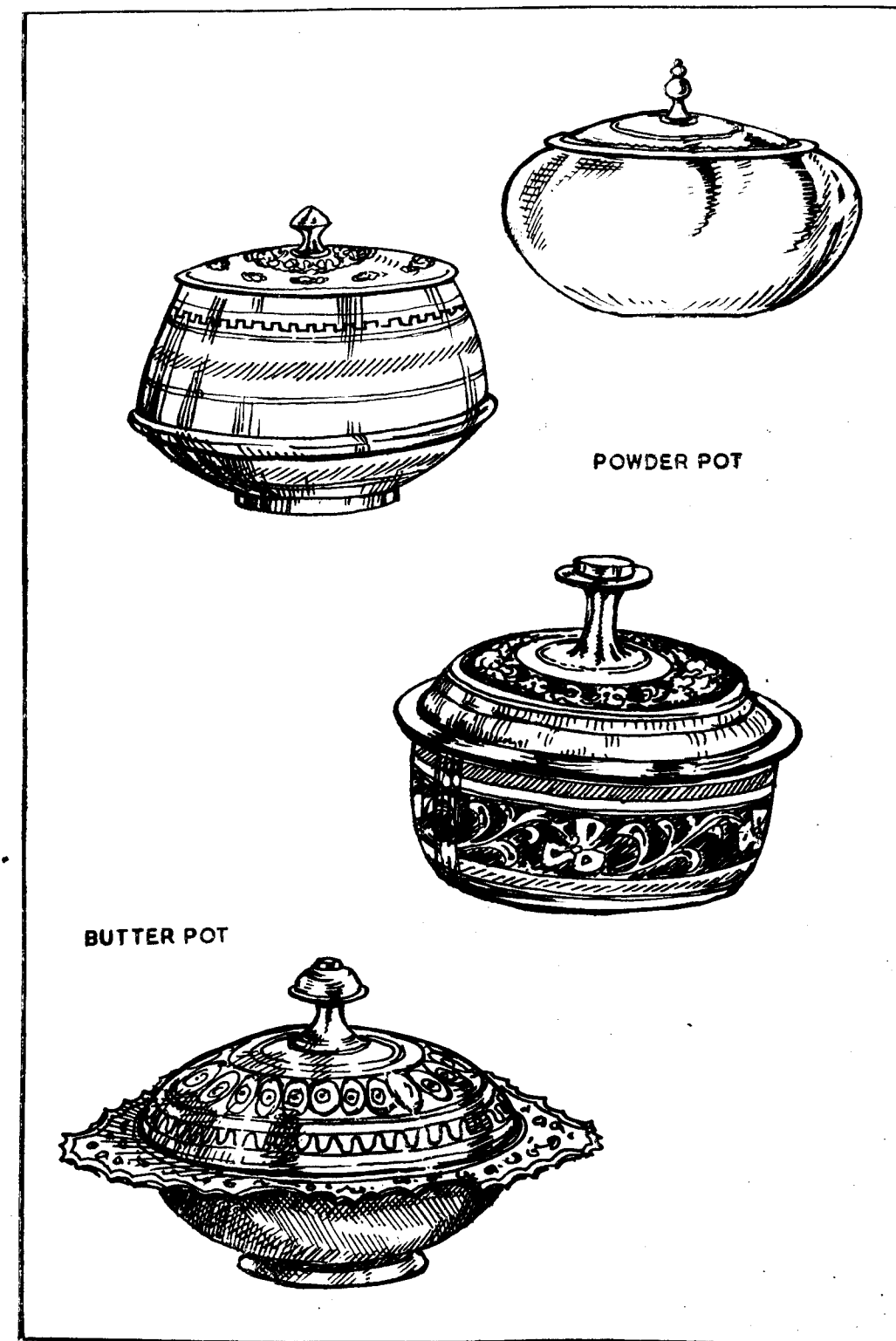
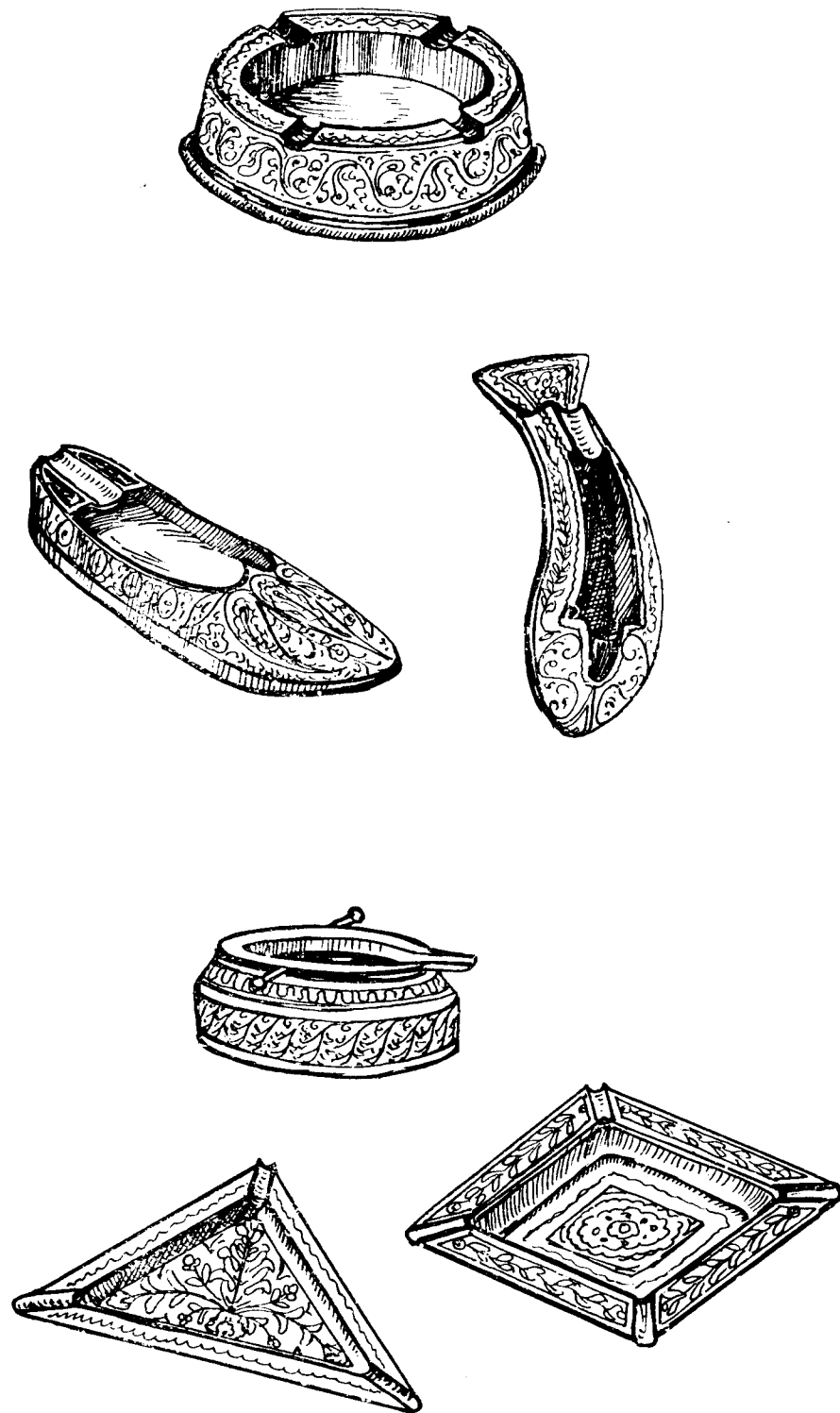


Plate No. 62



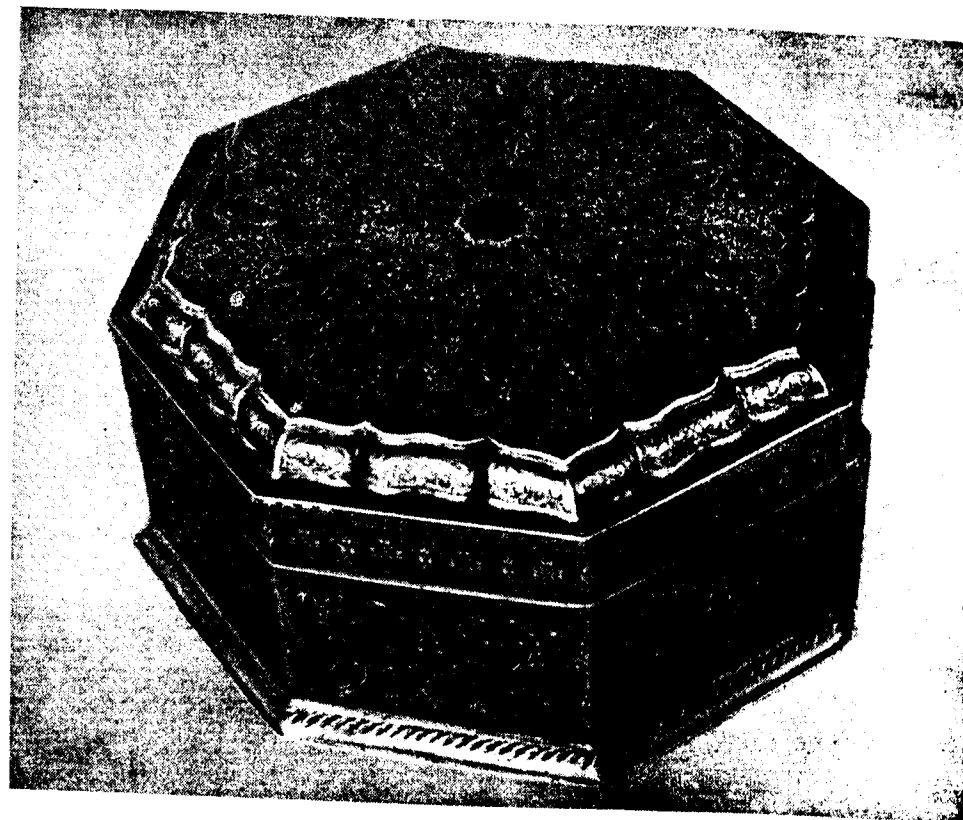
Engraved Ash Trays
of various designs—round, square, triangular and shoe and
fish-shaped.

Plate No. 63



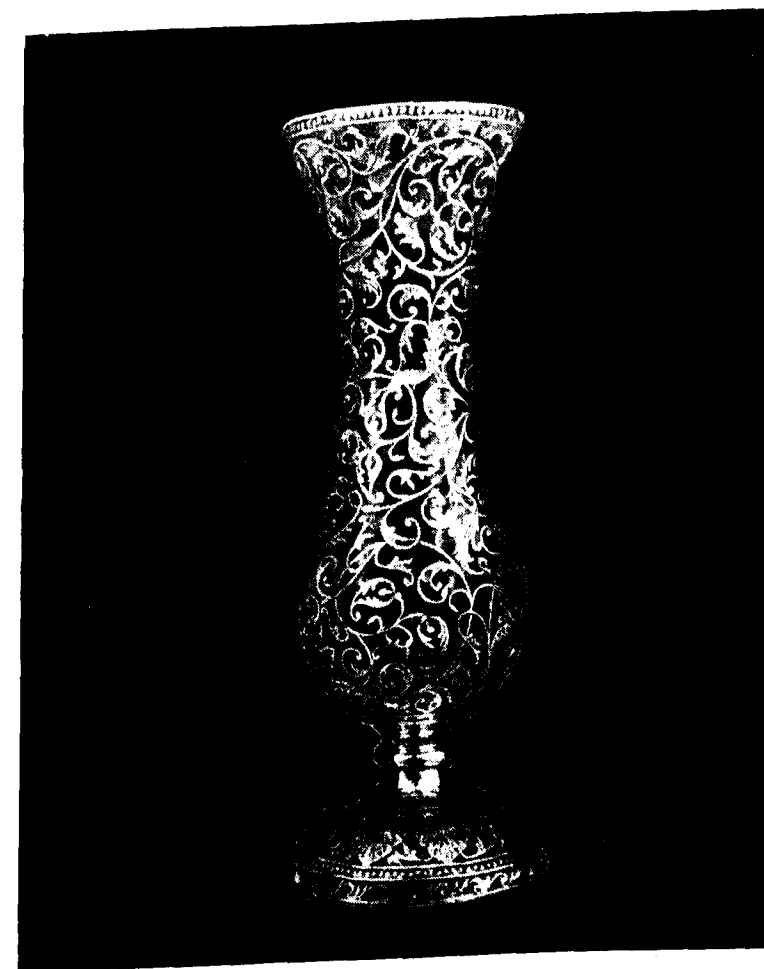
Brass moulded engraved flower vases

Plate No. 64



A *pandan* (betel box) of *siah kalam* work, manufactured at Moradabad
—Photo by courtesy, Central Design Centre, Lucknow.

Plate No. 65



A flower vase of *siah kalam* work manufactured at Moradabad
—Photo by courtesy, Central Design Centre, Lucknow.

APPENDIX 1

TABLES

TABLE I

Number of Persons employed in Production of Brass and Copperware at Varanasi

Name of Process	Number of Units Surveyed	Number of Persons employed in Production			Number of Units		Names of Mohallas known for the Handicraft
		Persons	Males	Females	Using Power	Not using Power	
1. All processes							1. Bhuletan 2. Kashipura 3. Sarai Harha 4. Chhoti Piyari 5. Tbatheri Bazar 6. Nevada 7. Raja Darwaza 8. Haukartola 9. Dal Mandi 10. Dasashwamedh 11. Sahu Lane 12. Karanghanta
(a) Artware units	21	29	29	..	2	19	13. Senpura 14. Bhuwaneshwar 15. Bhutai Imli 16. Resham Katra 17. Man Mandir 18. Rajghat 19. Nai Sarak 20. Vishwanath Lane 21. Kojwan Bazar 22. Govindpura Khurd 23. Adityanagar 24. Sundernagar
(b) Units producing utilitarian articles	30	618	600	18	26	4	
2. Moulding	28	54	54	..	..	28	
3. Filing	8	35	35	..	5	3	
4. Chiselling	18	63	63	..	18	..	
5. Polishing	4	7	7	..	4	..	
Total	109	806	788	18	55	54	

TABLE II

Caste-wise Distribution of Workers employed in Production of Brass and Copperware at Varanasi

Name of Caste	Number of Units in which working	Total Number of Adult Workers			Number of Families working under Co-operation	Number of Workers working in	
		Persons	Males	Females		Own Houses	Employers' workshops
1. Kasera	51	275	275	..	No families are engaged in production on co-operative basis but 46 units carrying out one or all the processes of production are members of Co-operative Societies.	275	..
2. Kumhar	18	205	190	15		205	..
3. Kunbi	30	84	81	3		..	84
4. Kori	30	50	50	..		..	50
5. Kalvar	30	30	30	..		..	30
6. Muslim	7	7	7	..		..	7
7. Raidas	47	112	112	..		..	112
8. Lohar	30	30	30	..		..	30
9. Yadav	7	13	13	..		..	13
Total		806	788	18		480	328

Note: Some units of production have workers of more than one caste and hence the total of column No. 2 exceeds 109.

BRASS AND COPPERWARE INDUSTRY AT VARANASI

TABLE III

Distribution of Articles by Materials used in Production of Brass and Copperware at Varanasi

Name of Article	Number of Units engaged in its Manufacture	Main Material used	Subsidiary Material used	Source of Supply of Raw Material	
				Name of Place	Number of Units engaged in its Manufacture
1. Gagra	30	Copper, zinc, or brass	Borax, Sulphuric acid	1. Subsidiary raw materials are available locally.	No unit at Varanasi engaged in the manufacture of raw materials.
2. Lota	84	"	"	2. Copper, zinc, brass and scrap metal are available at Varanasi on permit from the District Industries Officer every quarter.	
3. Patili	84	"	"	3. About 28 units obtain the main raw materials from the open market at Bombay and Calcutta in addition to their purchase under the quota system.	
4. Batua	84	"	"		
5. Balti	33	"	"		
6. Kalash	8	Copper	Sulphuric acid		
7. Panchpatra	7	Brass	Borax, sulphuric acid		
8. Arti	7	"	"		
9. Flower basket	14	"	"		
10. Ash trays	8	Copper	Lacquer acid		
11. Wall decoration plaques	25	"	"		
12. Images of deities	6	"	"		

Note : Some units are engaged in the manufacture of more than one article and hence the total of column 2 exceeds 109.

TABLE IV

Design

Name of Article	Number of Units engaged in Manufacture indicating the Source from which they obtain Designs					Design
	Traditional	Self-designed	Order of Middlemen who undertake marketing	Design Centres	Co-operative Sales Societies	
1. Gagra	30	..	..	The Design Centres at Delhi and Lucknow sometimes supply designs or samples of artware to the Benares Brass Merchants' and Manufacturers' Association, and other producers.	..	1. (a) Ganga Jamuni gagra (b) Champa gagra (c) Benarsi gagra (d) Jaipuri gagra, and (e) Handa
2. Lota	84	..	54	..	54	2. (a) Jaipuri lota (b) Poorbi lota (c) Patnahi lota (d) Ganga Jamuni lota (e) Gol lota (f) Surti lota (g) Godedar lota
3. Patili	84	..	54	..	54	3. Benarsipatili of brass and gillet
4. Batua	84	..	54	..	54	4. (a) Mirzapuri batua (b) Poorbi batua (c) Gol batua
5. Balti	33	..	..	..	..	..
6. Kalash	8	..	..	..	..	6. (a) Kalash (copper) (b) Kalash (brass)
7. Panchpatra	7	..	..	..	..	7. (a) Panchpatra (copper) (b) Panchpatra (brass)
8. Arti	7	..	..	..	..	8. (a) Arti (copper) (b) Arti (brass)
9. Flower Basket	14	..	..	..	..	9. (a) Flower basket (copper) (b) Flower basket (brass)

Note: 54 units which manufacture lota, patili and batua according to the designs supplied by middlemen and Co-operative Sales Societies also manufacture wares of traditional designs.

TABLES

10. Artwares
(i) Ash trays 17 .. 25

(ii) Wall decoration plaques

(iii) Images of deities

10. (i) Round, square, triangular, shot-shaped and fish-shaped, usually made of brass, but sometimes of gillet or copper.

Hindi Magazines, old models, paintings and mythological pictures

Models in old temples, modern paintings etc.

(ii) Round, square, triangular, oval, octagonal, hexagonal, with various designs in repousse' work—made of brass, copper or brass and copper both, some being silver-plated.

(iii) Images of deities in various sizes made of brass, copper and brass and copper or gillet, prepared by casting, pressing and engraving.

TABLE V

Consumption and Sale of Brass and Copperware manufactured at Varanasi

Name of Articles	Number of Units which produce entirely for		Number of Units which produce both for Personal Use and Sale	Number of Units which produce for Open Sale		Number of Units which are members of Co-operative Societies
	Domestic Use	Ceremonial Purposes		to order of Middlemen who advance Raw Materials	for Open Sale	
1. Gagra	..	..	30	..	..	1. 8 units engaged in moulding only are members of Peetal Udyog Sahkari Samiti, Sunderpur.
2. Lota	..	..	84	54	..	
3. Patili	..	..	84	54	..	
4. Batua	..	..	84	54	..	2. 10 units engaged in moulding only are members of Dhatu Kala Udyog Sahkari Samiti, Adityanagar.
5. Balti	..	..	33	..	..	
6. Kalash	..	8	..	..	8	
7. Panchpatra	..	7	..	..	7	3. All units (8 engaged in filing, 1 in chiselling and 2 in all processes of manufacture) are members of Bartan Udyog Sahkari Samiti, Bhuletan.
8. Arti	..	7	..	..	7	
9. Flower basket	..	..	..	..	14	
10. Ash trays	..	8	..	..	8	
11. Wall decoration plaques	..	..	..	..	25	4. 17 units engaged in chiselling only are members of the Hastkala Udyog Sahkari Samiti, Kashipura.
12. Images of deities	..	6	..	..	6	

Note—1. The articles produced can be put to domestic as well as ceremonial use. Production is not divided in water-tight compartments on separate lines.

2. Ordinarily production is for sale but the artisan can very well put it to personal use.

BRASS AND COPPERWARE INDUSTRY AT VARANASI

TABLE VI

Approximate Cost of Production, Sale Price of some Articles and Earnings

Name of Article	Number of Units engaged in Manufacture	Cost of Raw Material per Weight of the Articles listed	Approximate Cost of Conversion into Finished Products	Approximate Cost of Production	Average Sale Price of Finished Article paid by Consumer	Average Earning per Article		
						Karkhanedar	Wholesale dealer	Retailer
		Rs. nP.	Rs. nP.	Rs. nP.	Rs. nP.	Rs. nP.	Rs. nP.	Rs. nP.
1. Gagra (Brass) 4 kg.	30	25.22	5.36	30.58	36.50	1.50	1.50	2.92
2. Lota (Kansa) 2½ kg.	84	12.39	2.67	15.06	18.00	0.94	1.00	1.00
3. Patili (Brass) 4½ kg.	84	29.82	7.10	36.92	42.10	1.50	1.50	2.18
4. Batua (Kansa) 3¾ kg.	84	23.67	6.25	29.92	35.34	1.50	1.50	2.42
5. Balti (Brass) 5¾ kg.	33	32.10	7.70	39.80	44.00	1.00	1.20	2.00
6. Kolash (Brass) 2 kg.	8	12.60	2.40	15.00	18.00	0.75	1.00	1.25
7. Panchpatra (Brass) ½ kg.	7	3.20	1.44	4.64	5.00	0.10	0.10	0.16
8. Arti (Brass) ½ kg.	7	3.20	1.44	4.64	5.00	0.10	0.10	0.16
9. Flower Basket (Brass) ½ kg.	14	3.20	1.44	4.64	5.00	0.10	0.10	0.16

TABLE VII

List of Highly Skilled Craftsmen

Process	Names of Craftsmen		Mohalla	Unit
1. Moulding and Casting	1. Hori Lal	2. Ram Narain Lal	Sunderpur	Own shop
	3. Harihar Singh	4. Chhedi Ram	"	
	5. Lakshman Ram	6. Hamid Ahmed	Adityanagar	
	7. Punnu Bhai	8. Ram Sanehi	Sarai Harha	Azimullah Bux & Co.
	9. Ram Lal		Thatheri Bazar	
			"	
			"	Basant Lal & Bros.
			"	
			"	
2. Scraping	1. Ram Lakhan	2. Panna Ram	Kashipura	Own Shop
	3. Nasim	4. Ram Harra	"	
	5. Hari Nath	6. Shyam Nath	Bhuletan	
	7. Hanuman Singh	8. Ram Yadava	"	Nepal Ram & Co.
	9. Bachi Ram		Thatheri Bazar	
			"	
			"	U. P. Rastogi & Cc
			Raja Darwaza	
			"	
3. Polishing	1. Inan Ahmed	2. Chandan Singh	Thatheri Bazar	Basant Lal & Bros.
	3. Chandu	4. Ram Lal	"	
	5. Dulhajan Ram		"	
			"	Own Shop
			"	
4. Repousse'	1. Bhola Ram	2. Chhedi Ram	Sarai Harha	Own Shop
	3. Moti Lal	4. Ram Lal	"	
	5. Hira Lal	6. Laxmi Narain	Dal Mandi	
	7. Punna Lal		Thatheri Bazar	"
			"	
			"	
			"	"
5. Lacquering	1. Azimullah		Dal Mandi	
			"	

APPENDIX II

LIST OF UNITS SURVEYED

I. Members of Peetal Udyog Sahkari Samiti, Sunderpur

Name of Unit	Mohalla	Process carried out	Number of Workers
1. Ram Harakh	Sunderpur	Moulding	2
2. Baij Nath	Nevada	"	2
3. Saryu Ram	Sunderpur	"	3
4. Vishwa Nath Karandhi	"	"	3
5. Babu Nandan	"	"	3
6. Shri Ram	"	"	5
7. Shiv Nath	"	"	2
8. Ram Sewak	"	"	2
Total			22

II. Members of Dhatu Kala Udyog Sahkari Samiti, Adityanagar

	Adityanagar	Moulding	
1. Bhaggal	"	"	1
2. Lalmani	"	"	3
3. Mool Chand	"	"	2
4. Jhuru	"	"	2
5. Jomaru	"	"	2
6. Sita Ram	"	"	2
7. Vikram	"	"	2
8. Manna Lal	"	"	2
9. Ram Nihare	"	"	4
10. Harihar	"	"	2
Total			22

III. Members of Bartan Udyog Sangh Sahkari Samiti, Bhuletan

	Bhuletan	Chiselling	
1. Prabhu Ram	Raja Darwaza	Filing	3
2. Premlata Devi	Bhuletan	"	1
3. Ramji	"	"	7
4. Abdul Gaffar	"	"	3
5. Laxmi Narain	"	"	3
6. Suraj Prasad	Haukartola	"	3
7. Kakka Sau	Dal Mandi	"	4
8. Babu Lal	Bhuletan	"	8
9. Yasin	Sarai Harha	"	6
10. Bhola Nath	Haukartola	All processes	14
11. Azimullah	Sarai Harha	"	23
Total			75

BRASS AND COPPERWARE INDUSTRY AT VARANASI

IV. Members of Hastkala Peetal Udyog Sahkari Samiti, Kashipura

Name of Unit	Mohalla	Process carried out	Number of Workers
1. Ganesh	Bhuletan	Chiselling	2
2. Raja Ram	Kashipura	"	2
3. Narain Das	Dasashwamedh	"	3
4. Satya Narain	"	"	2
5. Musal	"	"	2
6. Kanhaiya Lal	Kashipura	"	2
7. Kesari Chand	Thatheri Bazar	"	12
8. Madan Lal	Bhuletan	"	3
9. Ram Charan	Kashipura	"	3
10. Hori Lal	"	"	2
11. Mani Ram	"	"	5
12. Ram Saran Lal	"	"	4
13. Jagan Nath	"	"	3
14. Mannu Lal	Dasashwamedh	"	3
15. Shiv Shanker	Bhuletan	"	4
16. Ganesh Ram	Kashipura	"	3
17. Ram Ratan	Kashipura	"	5
Total			60

V. Members of Benares Brass Merchants' and Manufacturers' Association

1. Basant Lal & Bros.	Thatheri Bazar	All Processes	22
2. Bachcha Lal Daya Shanker	Raja Darwaja	"	21
3. Bhola Nath Shanker Lal	Chhoti Piyari	"	13
4. Bishram Tiwari	Thatheri Bazar	"	18
5. Banshidhar Abdul Rasul	Sarai Harha	"	23
6. Durga Prasad Ram Charan (P) Ltd.	Man Mandir	"	18
7. Ganesh Ram Mangal Prasad	Sarai Harha	"	22
8. Haji Imami Mohammed Suleman	"	"	21
9. Hindustan Metal Works	"	"	13
10. Hindustan Metal Industries	Rajghat	"	17
11. Kashi Dhatu Udyog	Piyari Kanan	"	15
12. Mahabir Prasad Ram Saran Lal	Thatheri Bazar	"	20
13. M. Serajuddin & Co.	Sarai Harha	"	14
14. Mahabir Prasad Gopi Nath	Nai Sarak	"	18
15. Mahesh Prasad Batuk Prasad	Bhuletan	"	19
16. Minuan Ram Lachhman Das	Sarai Harha	"	22
17. Mohan Lal Kishan Chand	Vishwa Nath Lane	"	32
18. Mahabir Prasad Mukund Lal	Thatheri Bazar	"	14
19. Nepal Ram Sagar Nath Prasad	"	"	28
20. Nepal Ram Bishwnath Prasad	Kojwan Bazar	"	

LIST OF UNITS SURVEYED

Name of Unit	Mohalla	Process carried out	Number of Workers
21. Nawal Ram Gaya Prasad	Chhoti Piyari	All Processes	12
22. Ranji Sau Satyanarain Prasad	Govindpura Khurd	"	19
23. Raja Ram Durga Prasad	Raja Darawaza	"	27
24. Sarju Prasad Munni Lal	"	"	22
25. Sita Ram Hanuman Das	"	"	24
26. Suraj Prasad Satya Narain Prasad	Sarai Harha	"	21
27. Vibhuti Prasad Ram Saran Lal	Raja Darwaza	"	42
28. Haji Maula Bux	Sarai Haraha	"	18
Total			581

VI. Artware Units

1. Ram Chandra Prasad	Sahu Lane	All Processes	4
2. Raghunath Das	Thatheri Bazar	"	3
3. Anant Ram	"	"	1
4. Shyam Sunder	"	"	1
5. Ram Saran Lal	"	"	1
6. Laxmi Chand	Karanghanta	"	1
7. Ram Das	Dasashwamedh	"	1
8. Cheddi Lal	Senpura	"	1
9. Munni Lal	"	"	1
10. Punnu Lal	Bhuvaneswar	"	1
11. Moti Lal	Sarai Harha	"	1
12. Laxmi Narain	Karanghanta	"	1
13. Mithai Lal	Kashipura	"	1
14. Babu Lal	Bhutai Imli	"	2
15. Lallan	"	"	1
16. Vrindaban	Dasashwamedh	"	1
17. Gopi Nath	Bhuletan	"	1
18. Shri Chand	Bhutai Imli	"	1
19. Satya Narain	Thatheri Bazar	"	1
20. Hari Ram	Bhutai Imli	"	3
21. Indian Kala Kendra	Bhutai Imli	"	1
22. Bismillah Mian	Resham Katra	Polishing	2
23. Azimullah	Dal Mandi	"	1
24. Imam Bux	"	"	2
25. Hamid Ahmed	Katra	"	2
Total			36

BRASS AND COPPERWARE INDUSTRY AT VARANASI

Name of Unit	Mohalla	Process carried out	Number of Workers
VII. Other Units			
1. Sarvajeet	Adityanagar	Moulding	1
2. Ram Rup	"	"	1
3. Pratap	"	"	1
4. Lalta	"	"	1
5. Surkhur	"	"	1
6. Siya Ram	"	"	1
7. Harnam	"	"	1
8. Laxmi Narain	Sunderpur	"	1
9. Durga Pra sad	"	"	1
10. Sita Ram	"	"	1
Total			10

APPENDIX III

Village Schedule of Industries and Crafts

District	Sub-division
Tahsil	N. E. S. Block (if any)
Village	No.

Part A. General Description of Village

Describe briefly	(iv) Various sections in the village corresponding to communities and their names
(i) Area of village (in acres)	(v) Distance from nearest railway station
(ii) Population	(vi) Distance from nearest main road
(iii) Approximate number of families	(vii) Distance from headquarters

Part B. Artisan Communities in the Village (Tribal & Non-Tribal)

1. Name of caste or community	2. Approximate number of families	3. Total number of adult workers		4. Number of families working under co-operation	5. Number of families working in	
		Males	Females		own houses	employers' workshops
1.						
2.						
3.						
4.						
5.						
6. Names of articles prepared. Describe the articles and mention approximate sizes and height.		7. Main material used	8. Subsidiary material used	9. Whether raw materials imported and if so, from where? What are the main ingredients?		
1.						
2.						
3.						
4.						
5.						
10. Who gives the designs?		11. Give the names of designs.	12. Describe colours used. How are the colours obtained? Give value of colours/chemicals used as percentage of cost of production.			
1.						
2.						
3.						
4.						
5.						
13. Describe the tools used. Give pencil sketches and photographs separately.		14. Who makes these tools and from where are they imported?	15. General description of workshop			
1.						
2.						
3.						
4.						
5.						

BRASS AND COPPERWARE INDUSTRY AT VARANASI

16. When did the community come to this village? Who are the patrons? How old is this craft in this village?
17. Describe legends or myths current on the origin of the community.
1.
2.
3.
4.
5.
18. Are there any villages in the neighbourhood where branches of these communities live? If so, give name of village(s) and community.
19. Do the communities produce for their own use entirely? Describe whether for domestic or ceremonial purposes.
20. Whether they produce entirely for others in exchange for money or kind. If so, who are the customers and to which communities do they belong?
- (i) Are they for domestic use?
- (ii) Are they for ceremonial or ritualistic purposes? If so, for which ceremony or ritual?
21. Whether the communities produce for themselves or for sale?
- (i) Describe types of objects for own domestic or ceremonial use. Mention heights of objects.
- (ii) Describe types of objects for sale. Mention heights of objects.
22. Do the communities produce for sale in open markets, *hats* and *melas*?
- (i) Do they make to the order of middlemen who advance money and undertake marketing facilities?
23. If there is a co-operative society, are there members in it who belong to different castes?
24. Give the names of the designs and myths or stories behind the names, i.e., explanation of what the design stands for and the shape or decoration of objects.
25. Describe various stages of production.
(Please describe stage by stage and take photographs wherever possible. Photographs should be supplemented by pencil sketches of surface forms, designs, shapes, colours and processes on paper if necessary for sketches of stages).
- (i) First stage
- (ii) Second stage
- (iii) Third stage
- (iv) Final and finishing stage
- 25.—A
1. Price at which raw material is available
2. Cost of conversion into finished products
3. The usual sale price of finished goods, and
4. Wage earned
26. Give a list of very skilled crafts men of each community.

Part C. For Tribal Communities Specially

27. Is this a tribe where every household produces things for its own use or the use of the community?
28. Is this a tribe of which only particular sections produce particular things? If so, which sections produce which things? Mention names.
29. Is this a semi-tribal community and does it produce articles for neighbouring tribes? If so, mention the names of the tribes for which they produce and the names of articles.
30. Does this tribe produce articles for non-tribal or advanced communities? If so, mention names of these communities and the names of articles.
- | | |
|---|------------------------------------|
| Name of section of Tribe | Name of article produced |
| Name of neighbouring Tribes | Name of articles produced for them |
| Names of non-tribal or advanced communities | Name of articles produced for them |