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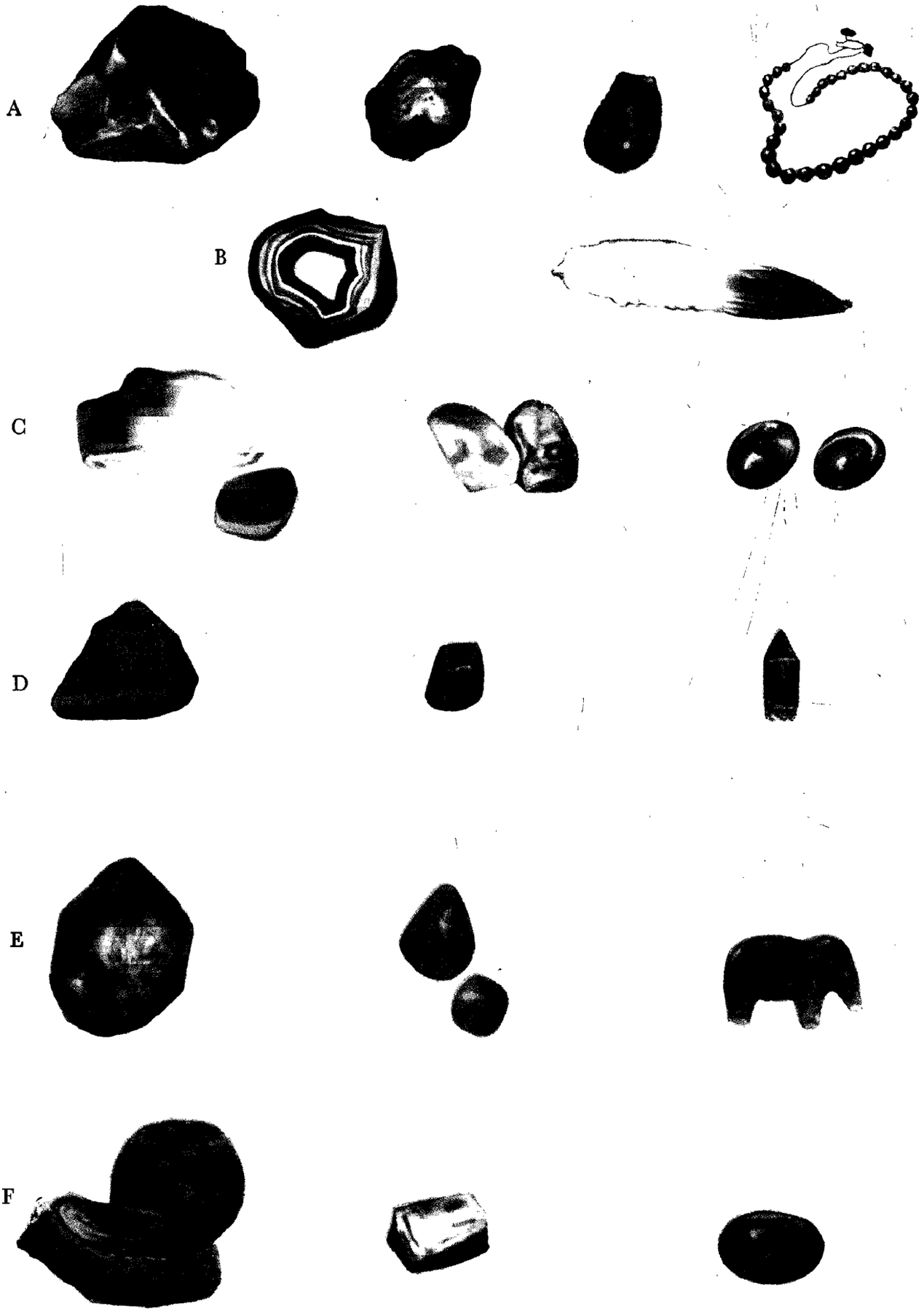
GUJARAT

AGATE INDUSTRY OF CAMBAY

R. K. TRIVEDI
Superintendent of Census Operations, Gujarat

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AGATES—FROM RAW TO FINISHED



A-Carnelian; B-Veined agate; C-Sphatik; D-Blood-stone; E-Lasaniyo; F-Sardonyx.

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FOREWORD

One of the major steps by means of which a developing economy seeks to sustain its growth is a rapid expansion of the internal market to absorb increases in production. A second step is to diversify the range of products that will yet restrain within manipulable limits the spiralling of rising expectations.One of the fields which demands immediate attention is traditional handicrafts. The glow of local and national pride, of interest in one's own traditions and a variety of emotional attitudes and preferences are invoked in aid of these basic aims. Nor are the aids themselves, even though they make a virtue of necessity, to be scorned as adventitious. The products, mostly handmade and rooted in the traditions of a nation's culture and economy, are often sources of the deepest satisfaction in everyday life. Apart from the question of its value as a social or ethical investment, opinion on which may differ, the resuscitation of these aids becomes all the more imperative in the preparatory stages of a developing economy (though not perhaps when these stages are traversed) on account of the fact that the tools employed are often timeworn and rudimentary, the pools of skill narrow, highly specialized and hereditary, being limited to certain communities or castes and not infrequently to a few families, and the capital labour ratio associated with these products is favourable to a large population base experiencing large absolute increments which build up large reservoirs of underemployed and therefore cheap labour. Further, the transformation of traditional skill to modern skill either encounters a series of insurmountable difficulties or demands a degree of capital outlay quite beyond the means of a developing nation which has to concentrate more on goods that will produce goods rather than produce the goods themselves.

There are other objective imperatives, which demand a sustained programme of support and expansion of the handicraft sector in a developing economy. Agriculture is still the mainstay and labour far from the desirable degree of mobility. The inadequate transport and communication network discourages exchange of goods and imposes a pattern of self-sufficiency upon village communities. The pattern of capital-labour ratio obtaining in traditional agriculture imposes itself automatically upon the complementary world of handicrafts and by effectively shutting out rapid improvements in technique ensures the products against disastrous slumps or extinction. In such a situation and on account of the fact that the sector itself is labour intensive, contributes substantially to the national income and causes minimum problems of dislocation, the promotion of handicrafts and expansion of their markets acquires an important place in development plans.

One of the first steps to be taken by the First 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 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 Offices 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.

This and a review of the work of village surveys set the signal for the setting up of a Social Studies Division in September 1961 at the Registrar General's Office, manned by qualified research and investigating officers, technical persons, photographers, artists, draughtsmen and other trained personnel, headed by Dr. B. K. Roy Burman, Officer on Special Duty and assisted in an honorary capacity by Mrs. Ruth Reeves

who had come by invitation from the All India Handicrafts Board as early as 1960. Simultaneously State Census Superintendents were permitted to augment their staff according to their requirement.

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. In the meantime the Social Studies Division was able to organise and conduct a large number of central inquiries with the help of elaborately designed schedules, collect a considerable amount of research and library material with many thousands of cross classified index cards, a classified photographic library of about 15,000 accessions which grows daily, with similar complementary material in all State offices.

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 contact 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' purse strings. 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, mutually stimulated the Social Studies Division and 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 qnestions 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 judgment 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 many States 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 orientalists. Full statisties will be available in each district handbook by each village of units of Traditional and Modern Crafts and the number of workers engaged in each arranged according to the minor groups of the Standard Industrial Classification. A full and complete 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 building 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.

NEW DELHI,
January 20, 1964.

ASOK MITRA,
Registrar General, India.

PREFACE

Handicrafts play a very important role in the economy of regions which are yet under-developed and are on their way to industrialisation. Their importance is still greater in a country like India where agriculture and handicrafts go hand in hand. It was this consideration which led the Registrar General to introduce special questions on household industry in the Household Schedule and on establishments and workshops in the House List in order to obtain a frame for all types of industries in the country. Since the data thus obtained are purely statistical, it was thought that the picture presented would be incomplete without a proper description of what they produce and how they produce. A comprehensive survey of a descriptive nature was, therefore, proposed to be undertaken in connection with the Census of 1961. A draft questionnaire in the form of Village Schedule reproduced as Annexure I was framed by the Registrar General, India, and circulated to all the Superintendents of Census Operations for the purpose of obtaining information on the handicrafts of the State, village by village and area by area.

Gujarat has a rich heritage of household industries and crafts which have thrived since ages. The proposed survey offered a unique opportunity of collecting detailed and useful information on the various handicrafts worked in the State, an opportunity too tempting to be ignored. Preliminary discussions were, therefore, held with the Registrar, Cooperative Societies, who was also the Director, Small Industries, and the Director, Social Welfare, with a view to chalk out a definite line of action, agency to be utilised and the Schedule to be canvassed for the purpose. Discussion on the various items of the questionnaire of the Village Schedule revealed that the organisation of a familywise survey of all handicrafts and household industries conducted in every village, would be rather unwieldy, as the requisite personnel well-trained to undertake this task would not be available. The matter was, therefore, referred to the Registrar General for advice. He suggested that while the villagewise inquiry might be confined to collecting information regarding the number of artisans and the articles produced, the familywise inquiry in the prescribed schedule was to be conducted only in respect of the main household industries and handicrafts and at selected centres where they were plied. The familywise schedule (Annexure II) was then devised in consultation with the Registrar, Cooperative Societies, and the Director, Social Welfare, and the more important handicrafts and centres, to which the survey was to be extended listed out. The agency for the survey was to be drawn from the staff of the Block Level Extension Officers and the staff of the Registrar, Cooperative Societies, working in the district. This plan was finally discussed in a meeting held with the then Minister for Rural Development Department, Shri Ratubhai Adani, who was kind enough to arrange for the issue of necessary instructions to all concerned to give the fullest cooperation in this and other special studies conducted by the Census. Training classes were then organised at suitable centres and necessary training imparted to the workers by the Research Officer of the Census Organisation and the Assistant Director, Small Industries. Detailed instructions for filling up the Village and Household Schedules were also drawn and circulated.

During the course of further exploratory studies made at the various Conferences and Seminars of Superintendents of Census Operations, the work done was reviewed from time to time and ways and means to perfect the survey were examined. It may not be necessary to repeat here what the Registrar General has already stated in the Foreword as to how this survey gradually unfolded itself till the final shape was given to it at the Study Camp held at New Delhi between 20th and 23rd December 1961. Revised schedules (Annexure III) were framed to cover various aspects of the investigation which it was decided should be carried out by investigators and research assistants specially appointed for this work.

As already seen above, the survey was ultimately decided to be tackled into two parts, viz., (1) a villagewise statistical survey of all household industries with special emphasis on rural arts and crafts, and (2) a detailed survey of selected industries important for their artistic or special appeal. As for the first Part, the Registrar General suggested as an alternative that this part of the survey might be replaced by tabulating the information on household industries, arts and crafts obtainable in columns 4 to 8 of the House List, according to a codified list of common household industries as laid down in the National Standard Industrial Classification. This special tabulation has already been carried out from the House Lists and the tables giving data by village, taluka and district, have been compiled for reproduction in the District Census Handbook for each district. The second part of the work relates to the survey of selected industries to be carried out at selected centres by trained investigators by canvassing the village and household schedules specially devised for the purpose, so as to cover not only the techno-economic aspect of the craft but the social and cultural aspect as well. It was emphasised that the crafts selected need not be those only which had artistic appeal but some of the basic handicrafts should also find a place in the survey along with those known for their artistic value. Thirty-one handicrafts as listed in Appendix I have thus been surveyed at as many as 103 selected centres in the State. Of these crafts, the following are proposed to be undertaken for special study by the Superintendent of Census Operations himself:-

1. Agate industry of Cambay
2. *Jari* industry of Surat
3. Silk-weaving of Surat
4. Tied and Dyed *Bandhani* of Jamnagar
5. Lacquer work at Sankheda
6. Block printing at Jetpur
7. *Patara* making at Bhavnagar
8. Embroidery and bead work
9. Wood carving
10. Pottery

Since the field work according to the original household schedule had already commenced long before the revised schedules were received from the Officer on Special Duty, it was decided that in view of the important nature of the investigation a supplementary questionnaire should be framed and such of the particular as well as general information as could be collected by on-the-spot study should also be gathered to make the survey as comprehensive as possible.

The present monograph, viz., the Agate Industry of Cambay, is one of the handicrafts which has been earmarked for special study by the Superintendent. It attempts to give an idea of the various aspects of this handicraft, which has thrived in India since ages, known to Gujarat since ancient times and prospered at Cambay for over five centuries. Maps, photographs, line-drawings and coloured plates, given in this monograph will, it is hoped, prove useful in giving a realistic idea of the various processes involved in this industry at different stages of production, location of raw material, finished products, etc. A map illustrating the important handicrafts of Gujarat and the notable centres where they are worked has also been prepared for inclusion in the volume on handicrafts. In the preparation of this map, we have been fortunate in having the expert guidance of Mrs. Ruth Reeves and the services of Shri Somalal Shah, the celebrated artist of Gujarat now working with the Census organisation.

The survey itself has been of such a nature that all the material that it has been possible to gather would not have been collected, had it not been for the willing cooperation of all those connected with the industry-the Karkhanedars, the artisans and others, who had to be contacted personally more than once, so that the data obtained were authentic. My grateful thanks are due to Shri J.G. Shah, Secretary to Govt., Health and Industries Department and Shri V. R. Mehta, Registrar, Cooperative Societies, for the sincere help and cooperation

given by them from time to time in the conduct of the Handicrafts Survey. I must also express my thanks to Dr. Roy Burman, Officer on Special Duty, for going through the Monograph and making some useful suggestions.

Discussions and consultations with Shri Asok Mitra, Registrar General, India, have always been illuminating giving fresh line of approach, treatment and presentation of the material of special studies. This monograph has also had the benefit of his advice, for which I am deeply grateful.

AHMEDABAD,
March 5, 1964

R. K. TRIVEDI,
Superintendent of Census Operations,
Gujarat.

AGATE INDUSTRY OF CAMBAY

CHAPTER I

INTRODUCTORY

1.1 Stone has been the greatest benefactor of mankind in all ages—pre-historic and historic. It has furnished a more stable and permanent building material for shelter and protection against adverse climatic conditions and the commonest and handiest of means to adorn human body. The uses to which it has been put are diverse. The rich and the poor alike have made use of it according to their purse. The primitive as well as the modern, all have had equal fancy for stone and used it either as building material, implements of hunting, articles of domestic use or ornaments. While ordinary stones besmeared with turmeric were bestowed with divinity and worshipped as Gods by the primitive man, the civilised man transformed them into idols of exquisite beauty, grace, and expression and installed them into massive and extensive temples, the abode of Gods, perfect in design and construction. Some of these have given to the world great masterpieces of art which any nation would be proud to possess. While the primitive man found his first dwelling in cave not infrequently adorned by paintings in the crudest form, the skill and wealth of the civilised man transformed them into cave temples like Ellora and Ajanta embellished with sculptures and wall paintings of unsurpassing beauty of outline, colour and composition. This is the story of ordinary stones. But there are other varieties of stones as well, precious and semi-precious, for which mankind has had unique fascination all the world over. It has in all ages devised means to embellish itself by material easily available from its immediate surroundings. Next to leaves and flowers, the handiest and the cheapest material available to adorn human body has been stone turned into beads of various sizes, shapes, and designs. The high and the low, the rich or poor, the primitive or the most civilised of man and even the Gods he adores and worships have had equal glamour for this material to adorn their body. Some of the precious stones rank as rare and valuable pieces of gems which would cost a fortune. Some of them prized and sought for even by emperors have become a fruitful source of many a plunder and invasion known to history.

1.2 Stones, man has used not only for their ornamental value but also for their medicinal properties and supernatural powers with which they are credited. Effect of stones on health, relief they are believed to give against certain diseases and poisonous bites, their powers as talisman for good or evil, and their influence over the destiny of an individual according to the planets they symbolise, have made different kinds of stones favourite with mankind for different reasons. Man's attraction for various kinds of stones has thus varied from time to time according to the stages of development of human culture, and civilisation and economic condition of society as revealed by the use of ordinary, semi-precious and precious stones. But it is semi-precious stones which alone have satisfied man's fancy for ornaments at all times and of all strata of society, high or low, tribal or civilised. It is one of such stones which forms the subject matter of this Monograph, the Agates of Cambay.

1.3 Akik or agate is the general term applied to different varieties of carnelians, and includes different forms of chalcedonic silica found either underground in mines, in beds of rivers or on hill slopes. Different varieties of agates are known by different names differing in colour and lusture. But it is the particular variety of carnelian known as Akik deep red or brownish red in colour which is greatly prized and highly popular. In India, the Akik industry has been in existence since antiquity. In Gujarat, it finds mention from the beginning of the Christian era by a number of

foreign travellers who came to India at different periods. Evidence is also not wanting to show that agate was known and in use in Gujarat even in pre-historic times, as has been conclusively proved by the finds of agate beads during the excavations at Lothal, some 46 miles from Ahmedabad, where civilisation akin to that at Mohanjodaro and Harappa prospered some 4,000 years back.

1.4 The fortunes of Akik industry in India seem to have been linked with the rise and fall of different places that grew into importance as seaports or centres of maritime trade at different periods of history. For, waterways were the principal routes of communications and trade within and outside the country before the present rail routes came into being. In Gujarat various places came into prominence as centres of trade and commerce at one time or another according to their importance as seaport. At one time it was Broach, at another time it was Vallabhi and at still another time Surat or Cambay. It was again at Cambay that Akik industry reached the pinnacle of prosperity and survived till present times despite depression and competition to which it was later subjected.

Cambay[1]

Population 51, 291. 22° 19' N., 72° 37' E.

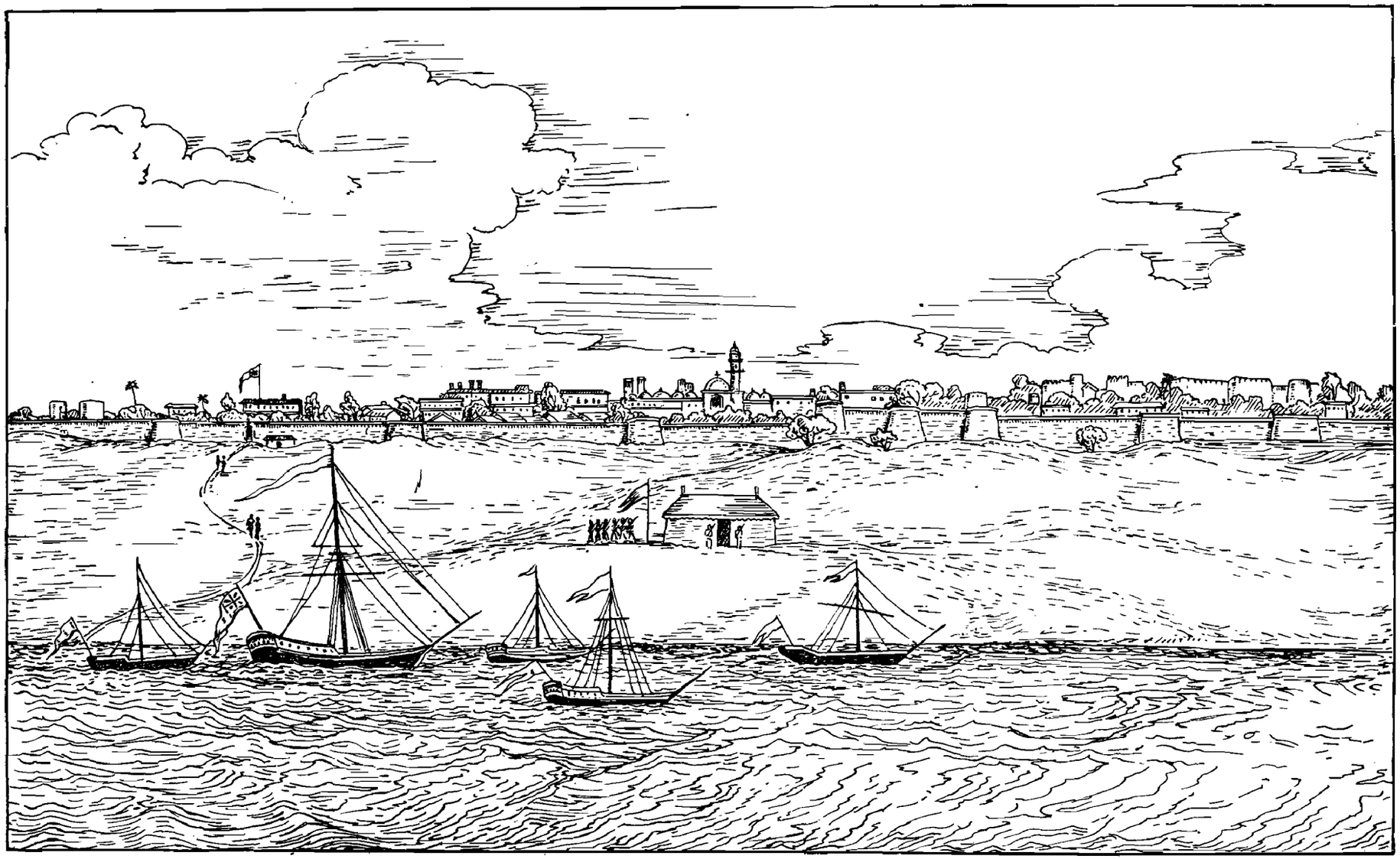
1.5 Popularly called Khambhat, Cambay is a seaport situated at the head of the gulf named after it. Its population according to the Census of 1961 is 51,291. At present it is the head-quarters of a taluka, and the terminus of the Anand-Cambay broad guage section of the Western Railway, 32 miles from Anand. It is also connected by State Transport buses with large towns like Baroda, Ahmedabad, Nadiad, etc.

1.6 Various travellers, geographers and merchants, who visited this country in the past have described Cambay as one of the greatest and richest cities of India, a position which it retained till the beginning of the 17th century. As an important centre of maritime activity on the Western Coast of India, it enjoyed the same position that Bombay and/or Calcutta now do. It was also at Cambay that literature, art, architecture and various industries of the time developed and flourished. Dr. Balkrishna in his " Commercial Relations between India and England (1601 to 1775)" pages 30 to 40, refers to Cambay in the following terms:—

" CAMBAY has been called the 'Indian Cairo'. In modern terminology, it can appropriately be styled the 'Indian Manchester' being the commercial centre of Gujarat, the Lancashire of India. From Ptolemy onward all travellers have attested its great wealth, magnificence, and flourishing trade. This port being one of the greatest and richest of all the coast towns of India, merchants resorted to it from all quarters of the world. It was the home and nursery of all that was best in India. The workmanship of its inhabitants in weaving and dyeing, in embroidery as well as curious works of art, made of wood, metal, ivory, amber, horns of sea-horses, and various kinds of stones was the wonder of the world. There were found all kinds of cotton and silk manufactures, perfumes, innumerable things of ivory, beautiful woodwork of all kinds, bedsteads of all colours, works of art made of coral, as well as agates, carnelians, onyxes, and other precious stones, delicate cushions, quilted clothes, canopies of delicate workmanship, beautiful paintings, shields made of tortoise shells which were 'wrought and inlaid, very workmanlike,' fair signets, rings, buttons, handles of knives, and beads of white-as-milk stone which were sold in all parts of the world ".

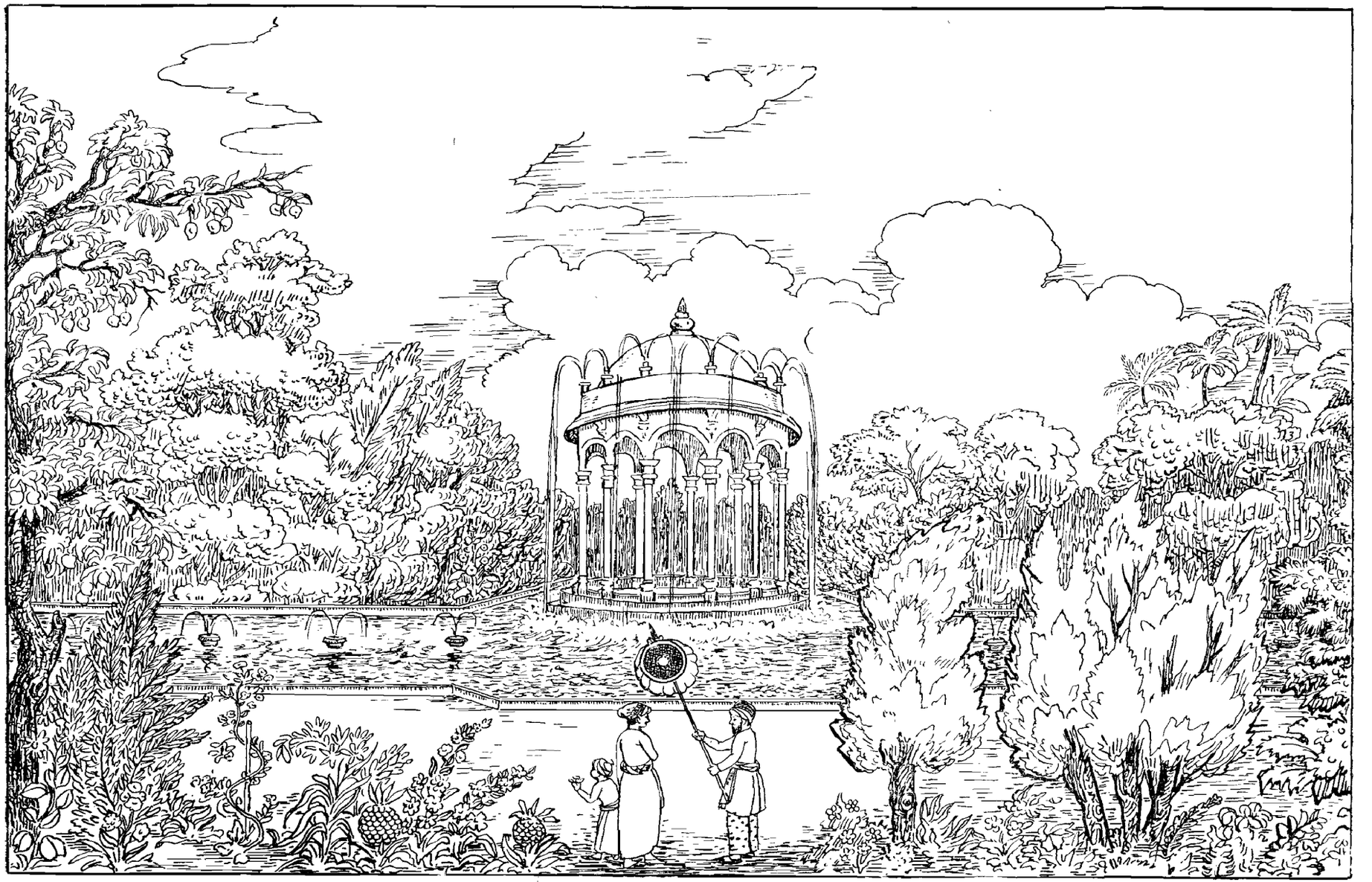
1.7 But Cambay began to decline in the early 17th century, when the only articles of export which remained out of a large variety of items of foreign trade was cotton and silk textiles. Causes for the decline of Cambay were many. Apart from the silting of the head of the gulf, noticed as early as the 16th century, the competition from European companies—Portuguese, Dutch, British and the weakness of the Muslim rulers as a naval power and European supremacy of the sea were to a great extent responsible for the downfall of Cambay and the diversion of its

1 Vide Appendix I for a detailed history of Cambay



Southern view of Cambay town in 1772
(Redrawn from the picture given in Forbes Oriental Memoirs, Vol. 2, P. 17)

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A view of Dilkhush Garden, Cambay, 1781
(Redrawn from the picture in Forbes Oriental Memoirs)

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maritime trade to places like Diu, Goa and Surat. The blow that further hit Cambay the hardest was the construction of B. B. & C. I. Railway in 1863 from Bombay to Ahmedabad. It sealed all sea and land trade that formerly passed through this town and seaport for over five to six centuries. At present Cambay port has lost all its former glory, because it is not possible for large vessels to reach the harbour which has been silted up. It is now a minor port handling only about 225 tons of goods annually. The only industries that now survive are the handicrafts of cutting and polishing of precious and semi-precious stones like rubies and sapphires, the unmatched art of working on Akik (Agate stones) and weaving on handlooms and power looms. But Cambay has come suddenly into prominence in present times when it was placed on the oil map of India by the recent find of petroleum and natural gas. It seems Cambay is still destined to play a role in the industrial development of the country and Gujarat not less important than what it did in the past.

CHAPTER II

HISTORICAL BACKGROUND, GROWTH AND DEVELOPMENT OF AGATE INDUSTRY IN THE PAST

2.1 The records of foreign travellers who visited India and references made by them to the agate industry furnish a very useful and valuable source of evidence about the existence and development of this craft in different parts of the country. Famous since the dawn of history and known even in pre-historic times, agate industry has existed in India and Gujarat since olden times and shifted its field of operation from one centre to another till it ultimately settled and flourished at Cambay.

2.2 It is said that the Akik Hill in Rajpipla is the same as that described in the Van Parva of the Mahabharat as 'Vaidurya Parvat'[1] or the mountain of agate, Vaidurya being the Sanskrit equivalent of Akik. The earliest recorded reference to agate deposits and agate industry in this country is by Herodotus[2] (484-B.C.) according to whom certain types of agates, viz., sard and onyx were popular with the Romans and brought by them from India for making finger rings. The existence of agate mines at Ratanpor in Rajpipla, a princely State of that name till Independence now in the Broach District of Gujarat was known to the historian Pliny[3] as early as 77 A. D. who recorded that Babylonians were very fond of rings of Indian agates which also possessed certain medicinal properties. Some believe that the Agate Hill referred to in his writings by Ptolemy,[4] the famous Greek astronomer in the second century was probably the Ratanpor Hill of Rajpipla. The statement gets further support from the fact that the existing mining area was known in olden times also as Pathar Kshetra or Akik Kshetra, i.e., land of agates. Before the emergence of Cambay the places which find mention as centres of agate industry are Plithan or Paithan, Jubbulpore and Ujjain in Malwa. In the sixth century, as stated in the Bombay Gazetteer (Part I p. 78) Vallabhi which later came to be known as Vala near Bhavnagar and now renamed Vallabhipur, was one of the important seaports and capital of Gujarat, also famous those days for agate as Cambay was later. But with the fall and destruction of Vallabhi in the ninth century, no details about the agate industry of Gujarat are available during the period that followed till the beginning of the 15th century.

10TH TO 15TH CENTURY

2.3 After the fall of the Vallabhi dynasty in the ninth century, there is no mention of agate industry till the 15th century, when it got itself established in Cambay which had then come into prominence as a port of international trade. The Arabian travellers who visited this country in the 10th and 11th centuries while describing it as a good port make no mention about the agate industry of Cambay. Marco Polo[5] in the 13th century also does not record the existence of this industry at Cambay. A passing reference is, however, made to it by travellers in the 15th century who do not describe it even then as an important industry of that place. The absence of any reference to Cambay in the past was but natural, as Akik industry assumed importance in Cambay at a later stage during the rule of the Sultans of Gujarat when it reached the zenith of prosperity, and replaced Broach and Vallabhi where it prospered before the rise and growth of Cambay. For, the main market of agate being outside India, it was not only essential for the finished products to be brought to a convenient marketing centre on sea, but also for the development of the industry to be located near some port, to facilitate its export. It was equally necessary also that the raw material required was close to the place of its manufacture. Small wonder that the vicinity of

1 Gazetteer of Bombay Presidency, Vol. VI, (1880), p. 205 Ind. Alt. I. 180
2 Ibid., below p. 205, Lassen's Ind. Alt. II 562
3 Ibid., p. 205 Bostock's Pliny, VI, 440
4 Ibid., p. 198
5 Ibid., p. 206

port or the availability of raw material in the neighbourhood at Rajpipla made places like Vallabhi, Broach, Surat and Cambay important centres of trade in agate industry.

16TH CENTURY

2.4 Towards the end of the 15th and middle of the 16th century, Cambay occupied a very favourable and important position as an international port on the Gulf of Cambay because of its central location as regards the hinterland of India. It was the seaport where merchandise from different parts of the country were brought for export to the countries of the Middle East, Arabia, China, Europe and Africa. Apart from its importance as an emporium of trade, it was a very prosperous centre of industry where a variety of articles were manufactured and sold, patronised by its Hindu and Muslim nobles. During the Solanki period when it grew in political importance and power, a navy was stationed at Cambay to guard the sea frontiers of Gujarat. After the decline of the Mogul kingdom, even the Portuguese and British thought fit to have their factories and warehouses at Cambay which was then the principal seaport on the Western Coast. Being a flourishing and chief centre of trade and commerce all the goods that passed through the port of Cambay came to be popularly known as Cambay goods. This prosperity of the town naturally gave impetus to the growth of a number of industries which also included working in Akik and other semi-precious and precious stones. Varthema[1] in 1503–8 A. D. refers to Albik or Akik Hill about seventy miles away from Cambay. In the beginning of the seventeenth century (1611) many Akik craftsmen of Cambay were staying at Goa, where they had their own locality and shops. Forty years later (1651), Tavernier[2] also writes of Cambay as a place where agate cups were hollowed. The real clue however to the firm establishment of the industry at Cambay is had from the reference made to an Abyssinian merchant by the name of Bawa Ghor who started an Akik factory at Nimodra (Limodra) near Rajpipla where raw material was available in plenty. But for the export of finished products to the African Coast he had to resort to a seaport which could be none other than Cambay, where the Abyssinian merchant seems to have started lucrative business in agates under the supervision of his brother Bawa Abbas. The next and the most natural step was the opening of a branch or shifting the establishment from Nimodra to Cambay where the artisans got a ready welcome and encouragement. This inference finds support from the Portuguese traveller Barbosa[3] in 1514 who wrote that at the ports of Arabia and Africa, there was a prosperous trade of Akik articles of Cambay and Ghors were one of the chief articles of import. It is because of this that some varieties of agates are even today styled 'Bawa Ghori' as they were popularised by Bawa Ghor. Export trade in Akik got a further fillip from the fact that Cambay had then become a principal port of embarkation by Haj pilgrims to Mecca.

2.5 The Meccai gate which exists even today facing the sea-shore in the south of Cambay town, with the well-known Jumma Masjid in the background was so named because the Muslims going on pilgrimage to Mecca by sea passed through this gate.[4] They carried with them agate beads which were highly valued as articles of sanctity. It is said that the Emperor of Delhi with his mother had passed through this gate while going to Mecca. Prior to his departure the ships carrying raw materials from Jhagadia were captured by the soldiers of the Emperor, but the Governor Vastupal with his talented and diplomatic approach retrieved the ships and paid homage to the Emperor of Delhi by presenting him an ornamental arch made of agate.

18TH CENTURY

2.6 During the eighteenth century agate trade

1 Gazetteer of Bombay Presidency, Vol. VI (1880), p. 206, Badger's Varthema, 107

2 Ibid., p. 207, Tavernier in Harris II, 353, Ind. Alt. I

3 Ibid., p. 206, Stanley's Barbosa 5, 27, 31, Ind. Alt. I

4 Today the sea-shore has shifted to a distance of about 4 miles from this gate, on account of constant silting by mud and sand from the Mahi and Sabarmati rivers.

has been referred to as one of the most important of Cambay industries. Hamilton[1] (1700–1720) mentions among articles made at Cambay, stones for signets and rings, some of them 'worth double their weight in gold', cabinets of agate in some cases fifteen inches long and eight or nine deep worth £30 to 40, bowls and spoons of several sizes, handles of swords, daggers and knives, buttons and stones set in snuff-boxes of great value. Tieffenthaler[2] (1750) and the author of Mirat-i-Ahmedi (1748-62) mention Ratanpor and Kapadvanj agates worked into vases, plates, saucers, rings, necklaces, cups, handles for knives and daggers and sold at Cambay and Surat and exported from Surat. Towards the close of the same century, Forbes[3] (1783) found agate manufactures a valuable part of Cambay trade. These references made by the various foreign travellers, go to show that the agate industry reached the pinnacle of prosperity during the 16th century and continued its importance till the 18th during which period the Cambay lapidary turned his artistic talent to the best advantage in the making of a large variety of agate articles of unsurpassing beauty.

19TH CENTURY AND AFTER

2.7 During the 19th century, the agate trade fluctuated but did not decline appreciably. Agate articles worth Rs. 70,000 were produced towards the end of this period. With the passage of time and change in consumer habits and competition from other countries, the industry seems to have suffered a set-back in the twentieth century due to the decline of Cambay as an important centre of trade and industry, diversion of trade channels with the opening of rail route from Bombay to Ahmedabad, and increasing competition from cheap synthetic stones manufactured by Germany.

1 Gazetteer of Bombay Presidency, Vol. VI (1880), p. 207, New account I. pp. 140, 145
2 Ibid., p. 207, Res. Hist. et Geog. De, 1, Inde, I, pp. 390-392
3 Ibid., p. 207, Or. Mem. II 20



Meccai Gate, Cambay

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CHAPTER III

OCCURRENCE AND SOURCES OF DIFFERENT VARIETIES OF AGATE STONES

3.1 The term agate seems to have derived its name from the river 'Achates' in Sicily now known as the Acate or Dirillo, well-known in early times for its agates. The word Achates is again a derivative of the Arabic Akik, meaning a river bed. It is thus Arabic in origin.

3.2 It is the commercial aspect of agate industry which has been mainly referred to in the writings of the foreign travellers and other records. Geological investigations bearing on the subject, however, commenced with Copland in 1819, followed by Lush in 1836 and Fulljames in 1852 when the occurrence of nummulities in Rajpipla was first made known. During 1862–63 W. T. Blandford carried out a detailed survey of Rajpipla State and neighbouring territories and published his classical memoirs on the geology of Western India. Thirty years later, P. N. Bose, carried out a survey of the geology and mineral resources of Rajpipla. In 1943 M. R. Sahni, who was deputed by the Geological Survey of India to investigate certain aspects of the agate industry had prepared a comprehensive note on "Agates and Other Forms of Chalcedonic Silica: Their Origin, Distribution and Economic Possibilities". All these sources have proved immensely useful in the study of the geology of agates.

(i) Occurrence

3.3 The agate and the carnelian generically belong to the Chalcedonic group of Quartzose minerals. Blandford defines agate as "a variegated form of silica, banded with different colours or with opaque and translucent layers alternating. It is commonly found lining cavities in basalt and other volcanic rocks."[1] Coveted for their ornamental value agates are a composite mineral which contains 70 to 96 per cent of silica with various proportions of alumina coloured by oxide of iron or manganese. It is a composite mineral consisting of chalcedony with subsidiary flint, carnelian, jasper, amethyst, onyx, etc., disseminated either in single or in multiple combination. These impurities often give rise to banded effects, the individual bands being due to different layers formed by the deposition of silica in cavities. Sometimes the impurities give rise to a cloudy appearance. A variety of agate which fetches high prices is the well-known moss agate in which the impurities are distributed in moss-like or dendritic forms. "The principal material of these semi-precious stones is obtained from the amygdaloidal basalts of the Deccan, where various kinds of chalcedonic silica have filled up, by infiltration, the steam-holes or cavities of the lavas. The chief place which supplied raw Akik is Ratanpor in the Rajpipla State, where rolled pebbles of these amygdules are contained in a tertiary conglomerate."[2]

3.4 About the geological formation, Blandford has noted that "secondary minerals of various kinds, which have been formed since the consolidation of the volcanic strata, are found in the greatest abundance in some of the flows, especially in the amygdaloidal, and in some of the more earthy and decomposed traps. These minerals not only form the nodules of the amygdaloid, but they are found lining cracks and hollows, the finest crystals being always in geodes or cavities, some of which are as much as two or three feet across, and even larger hollows lined with crystals are said to have been found. The commonest minerals are quartz (either crystalline or in the form of agate, blood-stone, jasper, etc.) and stilbite, next in abundance are apophyllite, heulandite, scolecite (Poonahlite), laumonite and calcite; thomsonite, epistilbite, prehnite and chabasite also occur, but they are rare.

The agates occur chiefly in geodes or nodules, large and small; many are finely banded, and, after being coloured by heating, are cut into ornaments. Jasper and heliotrope or blood-stone

1 Blandford: A Manual of the Geology of India, p. 737
2 Wadia: Geology of India: 3rd Edition p. 492

occur chiefly in flat plates, which appear to have been formed in cracks, and agate is sometimes met with of apparently similar origin."[1]

3.5 About the occurrence of agates, it is observed: "Agates occur as rolled pebbles in conglomerates and gravels of probable Miocene age. These occur not only in the Rajpipla area where the formation attains a considerable thickness, but also on a smaller scale in the area further to the west, between the mouths of the rivers Tapti and the Narmada. These agates are mostly derived from the trap in the cavities of which they were originally formed by secondary deposition of colloidal silica. The weathering of trap sets free the agates and other amygdales composed of cryptocrystalline silica, which subsequently became rounded by the action of water, and concentrated in the form of conglomerates and gravels. It must, however, be pointed out that while agate pebbles are common in the conglomerates, only the ferruginous portions yield stones of value. It is equally certain that it is the ferruginous character of the bed which imparts colour to the agates upon exposure to sun and subsequent heating. Pebbles from other horizons are not amenable to similar treatment. It is also said that the quality of stones improves with depth though there is no particular reason why this should be so.

3.6 While the agate pebbles normally occur as conglomerates and gravels, they can also be picked up in large quantities in the fields, in river beds and on the hill slopes; but they are in all these cases the results of disintegration of deposits of which originally they were components. Smaller pebbles in particular can be gathered in fairly large numbers from stream beds and from the cultivated fields, so that it is not always necessary to break up the hard conglomerates for separating the rolled agate pebbles, which can thus be collected at low cost."[2]

3.7 The various forms of cryptocrystalline silica which commonly go under the name of agate are described by Sahni as

Carnelian:—a clear, deep red or brownish red form of chalcedonic silica

Chalcedony:—a transparent or translucent stone with the lusture of wax

Chrysoprase:—chalcedony of apple green colour, the colour being due to nickel oxide

Plasma:—of emerald green colour, either translucent or semi-translucent

Blood-stone:—similar to above, but with jasper disseminated in spots, which look like drops of blood

Onyx:—an agate with straight, even banding

Sardonyx:—similar to onyx, but possesses layers of varying colours—red (sard)—white (onyx) rarely black

Jasper:—opaque chalcedonic silica

Agate:—same as above but with distinct bands

Flint:—grey, brown and usually dull coloured silica

Chert:—similar to flint, but more impure

Horn-stone:—a more brittle form of flint

Basanite or touchstone:—a dark jasper-like form of chalcedony[3]

(ii) Source of Supply

(*a*) *General*

3.8 Though Gujarat enjoys the pride of place as a centre of agate industry, it appears to have thrived at one time or another at various other places as well in this country. Places which find mention in foreign writings are either seaports or towns which were great centres of trade in the past. But all of them were not necessarily the places where agates were worked or found, though some of them did enjoy the reputation of being the places of agate manufacture. Sources of Indian agates have been many. Rajpipla, however, is the only place which has retained throughout its unique position as an important centre of agate supply despite the fact that it has long since ceased to be a centre of agate manufacture. Among the localities in the vicinity of which agate can be picked up from the cultivated fields are Ratanpor and a number of other villages in Jhagadia Taluka. Of the river beds where the agates occur in large numbers are the Karad

1 Blandford: A Manual of the Geology of India, p. 260

2 Sahni, Agates and Other Forms of Chalcedonic Silica, Their Origin, Distribution, etc., (with particular reference to Rajpipla State) Geological Survey of India II (4) October, 48

3 Ibid.

which runs almost north in this area, the Kaveri in the western part of Rajpipla and the Amravati south of Limet. Another stream which passes near Amod also yields agate pebbles in the course downstream of the agate area drained by it and the same is true of the banks of these streams, but there are no conglomerates. Besides Rajpipla, other places where agates are found in Gujarat are Ranpur, Mahedpur, Tankara in Saurashtra, Kutch and the river Majam, near Kapadvanj in Kaira District.

3.9 Outside Gujarat, while Kurula in Gulberg has been referred to by the Russian traveller Althanesius Nikolis (1468–74) along with Ujjain in Malwa, Plithana probably Paithan on the Godavari has been referred to by Neobold who has recorded that carnelian Mocha stone and moss agates are found in the Krishna, Godavari and Bhima. Other places which find mentioned are Jubbulpore in the Central Provinces now Madhya Pradesh and Banda in the United Provinces or Uttar Pradesh besides Rajmahal Hills in Bihar and Bamanghatu Sub-division of the former Mayurbhanj State. Its continued existence in Gujarat as an important industry has, however, been noted by numerous travellers from different parts of the world. Akik industry in Gujarat was first started at Limodra or Nimodra in Rajpipla and its finished products were exported outside India from Broach or Vallabhi according as one or the other assumed importance as a seaport and flourishing centre of trade. But Cambay came into the picture at a much later date, towards the end of the 15th and beginning of the 16th century when it was coming into prominence as an important trading centres of the world, a position which even the Portuguese and the East India Company had to recognise by opening factories and warehouses at Cambay. Of all the various places linked with Akik industry in Gujarat, Cambay alone has had the unique distinction of being associated with this industry for over five centuries, where it has preserved its importance even today inspite of competition of foreign markets and absence of encouragement which it used to have in former times.

3.10 Outside India, agate is found in Brazil, Uruguay, the Canal Zone, and in the Western United States where many new sources of supply have been discovered in Oregon, California, Washington and Montana which supplement the older known localities in the Lake Superior District.[1]

(b) Sources of Agates worked at Cambay

3.11 Agates worked at Cambay are of two kinds—(i) those found in different parts of Gujarat within a radius of about 120 miles and (ii) miscellaneous foreign stones. Within the first category come agate proper or carnelian which is dull brown or yellow in raw form but becomes fleshy red when worked upon.

3.12 Important varieties of agate stones, their distinguishing features, colour, quality, etc., worked at Cambay will now be examined in some detail.

Rajpipla Carnelians

3.13 Of various types of agates available from different trap beds, carnelian is the most common found within Rajpipla limits which is the principal and major source of raw material required for this industry at Cambay on the left bank of the Narmada about 29 miles from Broach. The best types of carnelian are available from Ratanpor or 'Bawa Ghori' Hill in Rajpipla, the place from where they are extracted being known as 'Ratankhadi' and the stones as 'Bawa Ghori'. In its natural state, carnelian is of a fleshy dull cloudy brown or yellow colour and is known as 'Gar' in Gujarati and 'Akik' when worked up. Rajpipla Akik has three main types, namely, (i) 'mora' or Bawa Ghori, (ii) cat's eye known as 'chashmedar' or Dola and (iii) yellow, half clear pebble known as Rori or Lasaniyo. All these stones are of different weights and seldom weigh more than one pound. Except these three varieties, all pebbles retain their natural colour and do not require any heat treatment. To Rajpipla agates numerous local names have been applied but those in common use in order of their quality are selan, madhyam, tukri, asli and malai.

3.14 Rajpipla, however, is not the only area where a plentiful supply of agate pebbles is found in Gujarat. Being derived from trap beds, agates and other allied forms are also found in many other places where trap flows occur, though perhaps on a smaller scale. They are:-

1 The Encyclopedia Americana, Vol. I, (1829), pp.232-33

Veined Agates

3.15 Agate bearing conglomerates are found in the stream course above Ranpur in Ahmedabad district and are known as 'Veined agate' or 'Doradar' and are found in pebbles in various shapes not more than half a pound in weight and when worked up take a high polish.

Common Agate

3.16 The 'Common' agate is of two kinds, namely, Dola or chashmedar and Jamo which come from north-east Kathiawar, near Mahedpur in Morvi three miles from Tankara. The most perfect of these stones do not exceed five pounds in weight and those of inferior quality, in many cases cracked, weigh as much as sixty pounds. When worked up, the common agate is a greyish white and being hard, brittle and massive, takes a high polish.

Moss Agate

3.17 The moss agate known as 'Suva Bhaji' comes from Bud Kotra, three miles from Tankara in Morvi. Found in plain about two feet under the surface in massive layers often cracked, weigh from half a pound to forty pounds and when worked up they take a fine polish, showing on a base of crystal sometimes clear, sometimes clouded, tracings as of dark green or red brown moss.

Kapadvanj Agate

3.18 'Kapadvanj agate' was chiefly found in the beds of the river Majam, between the villages of Amaliyara and Mandva, about fifteen miles from Kapadvanj. They were found on the banks and in the beds of rivers, in round, kidney and almond shaped balls from half a pound to ten pounds in weight. Picked up by Bhils, they were sold to Mandva Bohras who disposed them off to Cambay stone merchants. They are variegated in colour and pattern and in some cases they have forms of finely marked plants, animals and natural scenery. Local trade names of the chief varieties of Kapadvanj agate are Khariyu, Agiyu and Ratadiyu.

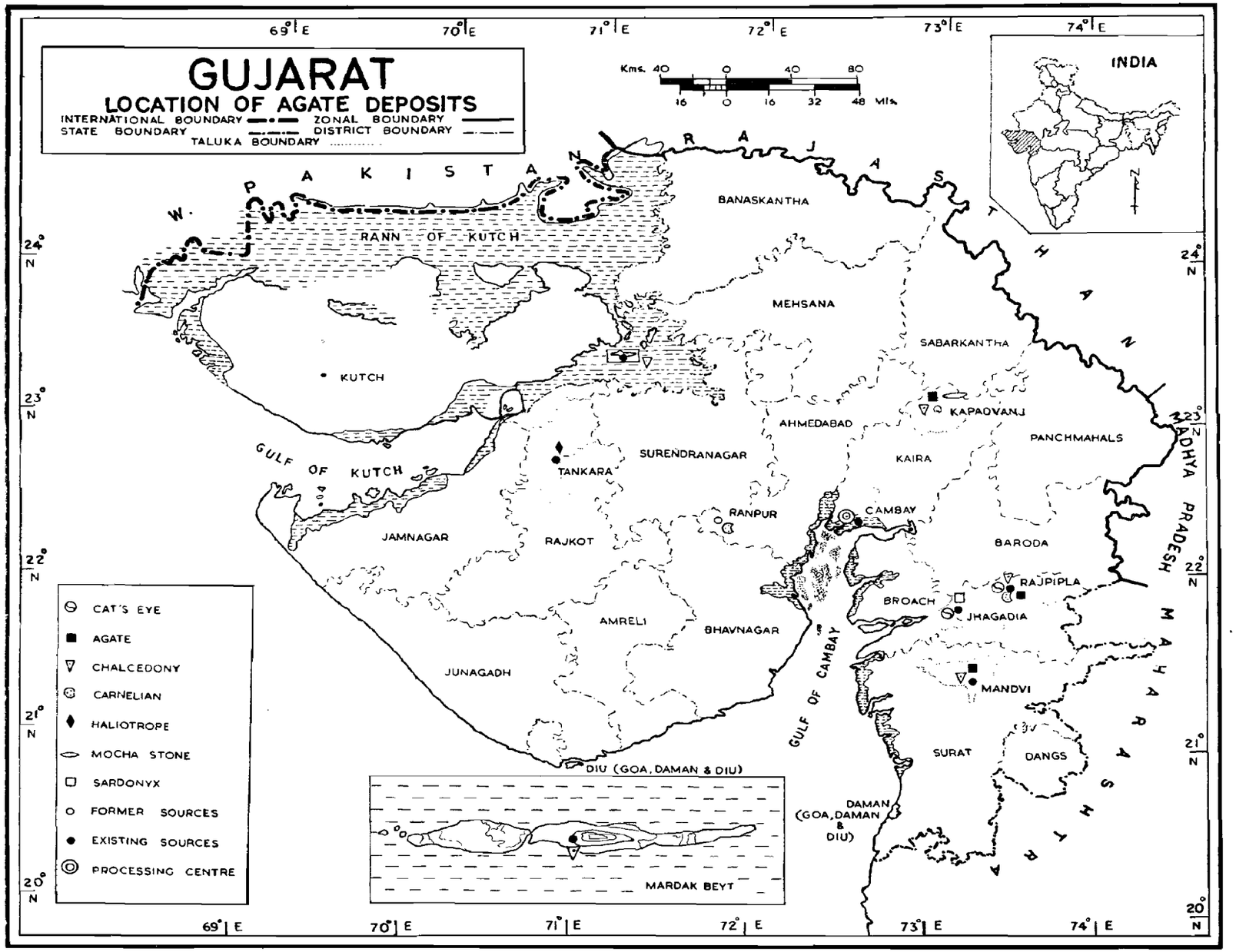
Miscellaneous

3.19 Other varieties are (i) Jasper or bloodstone, (ii) chocolate or rathia stone, (iii) crystal or sphatik stone and (iv) Maimariam. The last one is a liver brown stone dug in blocks of considerable size at Dhokovada on the Rann of Kutch about sixty miles north of Deesa and is too soft to take a polish. In recent times, in Mardak Beyt in the Little Rann of Kutch, agate stones of varying sizes have also been discovered. The location of the different varieties of stones found in different parts of the State are shown on the map opposite.

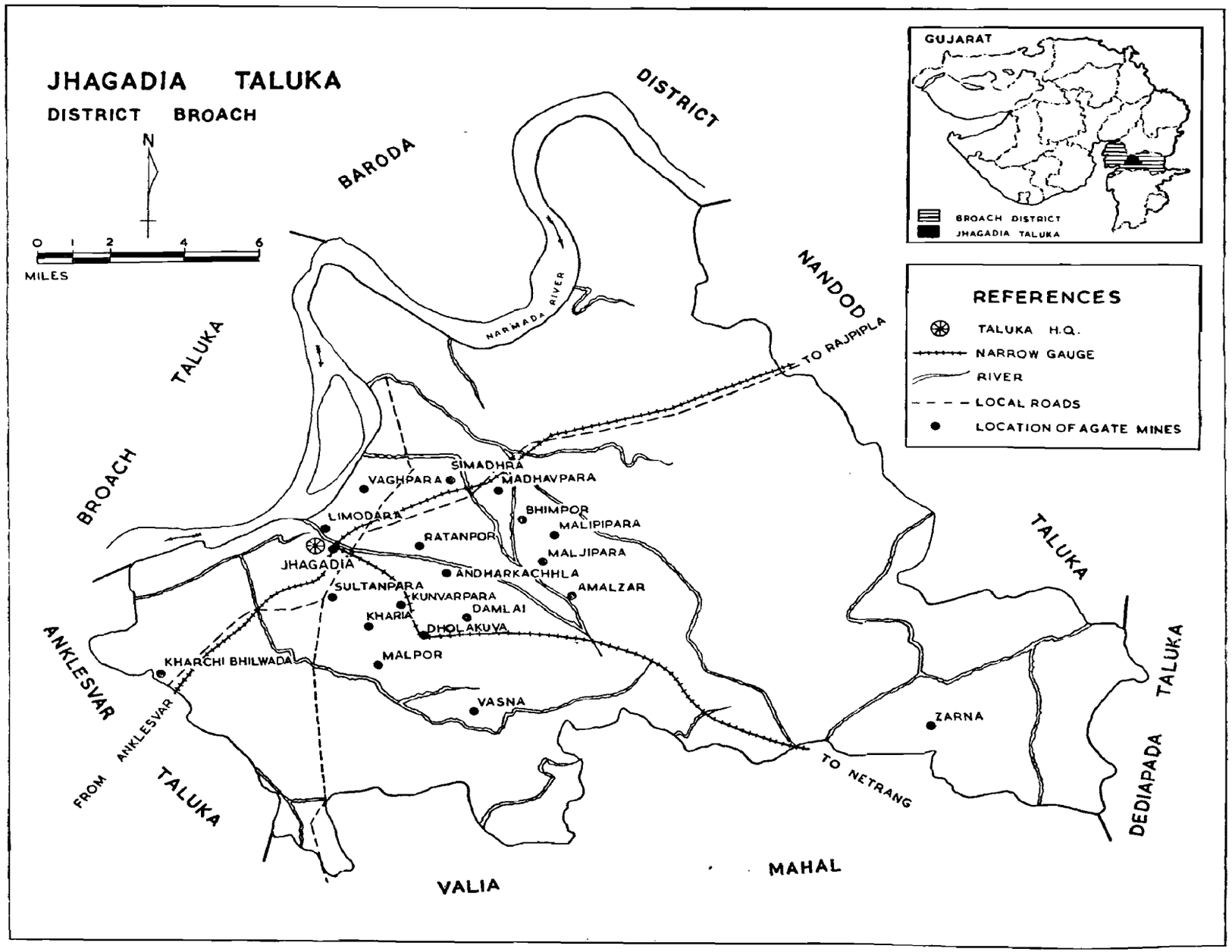
3.20 Of the various sources aforementioned which used to supply different varieties of carnelians to the Cambay lapidaries in the past, it is the Rajpipla carnelian which mostly caters to their needs at present. It would be worthwhile to notice that though the places of agate manufacture and export differed at different times, the main source of supply of raw material has been Ratanpor and other villages round about Jhagadia within Rajpipla territories. Ratanpor, however, has rightly earned its name as land of gems or *ratnas* in the form of Akik found there since olden times. It is a village in Jhagadia taluka of Broach district with an area of 6.2 square miles, situated at a distance of about 4 miles to the east of Jhagadia and 24 miles from Broach, the district headquarters, to both of which Jhagadia is linked by a clear weather pucca road. Ratanpor is also connected by road to Jhagadia-Avidha, a Railway Station on Anklesvar-Rajpipla narrow guage section. Besides Nimodra or Limodra, where the Abyssinian Bawa Ghor established a factory and had also a warehouse at Cambay for the export of finished products to Africa by sea, other villages where agate stone is found in Rajpipla are Limodara, Kharchi, Simadhra, Bhilwada, Kunvarpara, Malpor, Kharia, Andharkachhla, Vaghpara Sultanpara, and Zarna, all within a radius of 7 sq. miles. See map facing p. 11

Mardak Beyt

3.21 The recent find of Mardak Beyt, altogether a new source of agate supply discovered by M/s. Good Earth Industries of Jamnagar deserves special mention. These mines are situated in the Little Rann of Kutch in an isolated piece of land, known as the Mardak Beyt covering an area of 2,100 acres, for which a mining lease



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Location of Agate Mines

TO FACE PAGE 11

for a period of 20 years has been secured on payment of an yearly dead rent of Rs. 9,150/- to the State Government. On account of their isolated situation in desert areas, the tract surrounding the mining area is inundated with water after the rains set in and cut off from all means of communications which limit the mining operations to six months in a year. On an average 30 to 50 persons are engaged by the company for mining purposes to raise a quantity of 200 to 300 tons of stone. Agate, Chalcedony, and Jasper stones are available from these mines which are worked upto the depth 5 to 30 feet. Compared to Jhagadia stones weighing ½ to 2 lbs., Kutch stones are somewhat larger in size and weigh 4 to 6 lbs.

(c) Other Stones worked at Cambay

3.22 It is interesting to note that the agates or other varieties known under the name of Akik are not the only stones which the artisans of Cambay worked upon. There were many more varieties as well which were imported from various places inside and outside the country. The latter included Ceylon, China, Bassra, etc. Lapis-lazuli or azure stone, Rajavart, is deep blue or brown with sprinkling of silvery or golden spots which came to Cambay through Bombay, found in the river beds in Persia and Bukharo. Being soft and earthy it does not take very high polish. Another variety known as Kala phatak, i.e., jet or black in colour also came via Bombay from the hills of Bassra and Aden, which takes a very high polish, because it is not very heavy. Trade in jet stones at Cambay does not exist any more. The blue stone worked at Cambay is not real Piroja but a composition imported from China. Blue in appearance, it takes a good polish. In addition to these varieties of ordinary and semi-precious stones worked in Cambay, precious stones of different types such as panna (emerald), pokhraj (topaz), manek (ruby), etc., are brought to this place for cutting and polishing. These processes are also carried on at places like Bombay, Madras, Delhi and Jaipur but it is the Cambay artisans, who excel in this work because of the traditional skill they have acquired in giving certain angular effects in cutting and fine polish. Synthetic stones even though imported from foreign countries through Bombay are processed at Cambay on an appreciable scale. They are fashioned into various shapes in which agates are done, and set into necklaces, armlets, wristlets, earrings and rings which are more attractive than agates because of the large variety of choice they offer in the selection of shades and colours.

CHAPTER IV

TECHNIQUE OF PRODUCTION

4.1 Every craft be it the making of ordinary earthenware or a valuable piece of jewellery has to pass through various stages of production whereby the raw material is processed by the application of different techniques and tools. The various techniques and processes which have been so far evolved in the making of agate articles have undergone quite a few changes in spite of advance in scientific methods, as it is believed there is very little scope for mechanisation except in a few operations, viz., smoothing the surface and polishing which are recently undertaken with the help of electric motor. Even these operations have been mechanised only during the last 10 to 15 years.

4.2 Raw stones have to pass through six different stages of work before they are processed into finished products. The various processes which are in vogue since time immemorial are given below under the following heads :

(i) Mining (ii) Sun-heating and firing (iii) Cutting and shaping (iv) Roughing and smoothing (v) Polishing and (vi) Drilling

(i) Mining

4.3 The main source of supply of raw materials required for working this industry at Cambay is the agate mines comprised in the former Rajpipla State in Jhagadia taluka of Broach district. This area is situated on the left bank of the Narmada, about 14 miles above Broach. The mines are located on the slope of the hill known as Ratanpor Hill also known as Bawa Ghori or Bawa Abbas Hill.

4.4 Before the agate bearing stratum is reached, the bore holes pass through a bed of gravel, with red and yellow ochre below whereunder fuller's earth and red ochre occur; after a thin seam of iron-bearing rock comes the clay mixed with carnelian. The mine shafts are about four feet in diameter and about 13 to 15 feet deep. At the foot of each shaft, galleries branch off into different directions, and in many cases join the galleries of other mines. Labourers work in the mines with a small iron pickaxe, a few bamboo baskets and a thick rope. Every labourer works in turn. The number of baskets a person should fill was decided in advance. The basket from the mine was drawn up by a rude roller, or pulley supported by four uprights. But the mining now in vogue is different. Nowadays they work in small groups scattered over a large area. (Plates I and II) At the mine mouth, the stones are chipped and classified into three grades, the best one known as 'Tukdi', medium type known as 'Gar' and the lowest quality as 'Khadya'. The average daily output per day for a person working for 8 to 10 hours ranges from ten to forty pounds in weight. The stones thus sorted were in former times moved by country craft. These vessels were all coasting craft, chiefly 'batelas.' For, only small vessels or barks went up to Cambay, as navigation at the head of the Gulf was not only difficult but also dangerous. But stones are nowadays carried by truck or rail from Jhagadia or Rajpipla to Cambay. The Akikias or the agate dealers who are also the Karkhanedars purchase them from the mining contractor or from the cooperative society of which they are members and store them in godowns in gunny bags.

(ii) Sun Heating and Firing

4.5 After the stones and pebbles are bought from mines or river beds generally in the months of March and April, they are spread and exposed to the sun on the terrace or corrugated iron sheets on the house roof for a period of $1\frac{1}{2}$ to 2 months, as the stones dug out from the underground are damp and retain some portion of water in them. (Plate III) The direct heat of the sun dries out the internal

wetness of the stones. Without the actual heat treatment of the sun, the stones get cracked into pieces while working on them and the material gets wasted. If the stones are directly baked with the help of fire which is the next process, the watery vapours will come out and the stones will get cracked. This process of giving direct sun heat treatment cannot be undertaken during the monsoon when the outer atmosphere is damp. After the stones are dried and free from damp they are baked to bring out the natural colour and softness of the stones and prepare them for further processing. The process of firing is somewhat similar to that followed by potters for heating earthenwares. The two methods which are followed are locally known as 'Bhalsal' and 'Handla':

(*a*) *Bhalsal*

4.6 In this method, a trench two feet deep and three feet wide is dug in a dry ground or field. Some now have trenches built of bricks and cement. About an inch or one and a half of ash layer is spread at the bottom. The stones heated in the sun are placed on this layer of ash and covered with alternate layers of ash on which goat and cowdung cakes, pieces of charcoal and saw dust are spread. Three or four such layers are arranged one upon the other, so that the stones get evenly heated from all sides. The heating process is applied for three days continuously, whereafter the baked stones are taken out and those which are not properly baked are baked again till they take their natural colour.

(*b*) *Handla*

4.7 In this method, the cracked and holed earthen pots rejected by the potters are purchased and the pebbles placed therein, a hole being broken in the bottom which faces upward. These pots are then arranged in a row in a trench. (Plate IV. 1) Goat and cowdung cakes are piled around them and the fire is kept burning from sunset to sunrise. Bricks are kept in between the vacant space of rows of pots so that the cowdung cakes and other material may not drop out and the pots may get greater and even heat from all sides. After the stones are baked the pots are taken out. The stones are then examined, properly baked ones are sorted out, and those which have not attained natural colour and turned yellow or black are baked again. (Plate IV. 2)

4.8 In the first method the stones are baked gradually and quickly in the second. Proper heating of stones by sun is very essential in the latter method. In both the processes, heat is to be applied evenly. By greater heat in the first method, there is some wastage, whereas many stones get white by greater heat in the second. The stones change their colours gradually in the former method, while transformation of colour into red is very quick in the latter. On the whole, the Bhalsal or the trench method is preferred to Handla or pot trench method as the material is properly baked according to requirement, the wastage is less than in the second where heat is greater. Repeated baking is the key of bringing out the real colour of agate. This is resorted to even after polishing, if necessary. The temperature at which this change takes place is between 300° to 450° C. With too low a temperature, the stone becomes salmon coloured (pinkish orange) and in case the heat is excessive, the colour is lost entirely. Green stones contain iron oxide and yellow ones have iron hydrate. After baking, among brown stones, the light tint brightens into white, and the darker tint deepens into chestnut. While maize yellow takes a rosy tint, orange turns into red as iron oxide spreads evenly. Thus stones which in their raw form appeared cloudy brown or yellow now get distinctly marked by clear bands of white and red. Red carnelians vary from the palest red to deepest blood red, the most valuable among them being those having a deep, clear and uniformly red colour, free from cracks, flaws or veins. Such stones larger and thicker in size are greatly valued. The only method known to the agate workers of Cambay, whereby the colour of agate can be artificially changed, is that of firing in trenches described above and the only stones which are given this treatment before processing are Rajpipla carnelians. The rest are worked upon directly without any prior heating. In foreign countries, however, the stones are subjected to certain chemical processes, whereby the banded effect in the stone gets pronounced as the agate layers, although they appear compact to the eye, have varying degrees of porosity. Artificial colouring

of agates on a commercial scale is carried out in the Idar-Oberstein district of Western Germany, since the year 1820 " where, because of the occurrence of a fine grade of agate, an agate-cutting industry had developed since the 16th century. The original process consisted of drying the agate thoroughly and then immersing it in a honey solution for several days until the solution had penetrated the stone. The agate was then boiled in concentrated sulphuric acid, which charred the honey to carbon, the carbon, being precipitated in the interstices of the apparently solid agate. Some non-porous layers remained white, while others varied from a light brown to black, depending on the porosity of the agate. Most of the acid was then removed by washing, and the remainder by heating the agate for several days. Sugar solutions and sulphuric acid are now more commonly used.

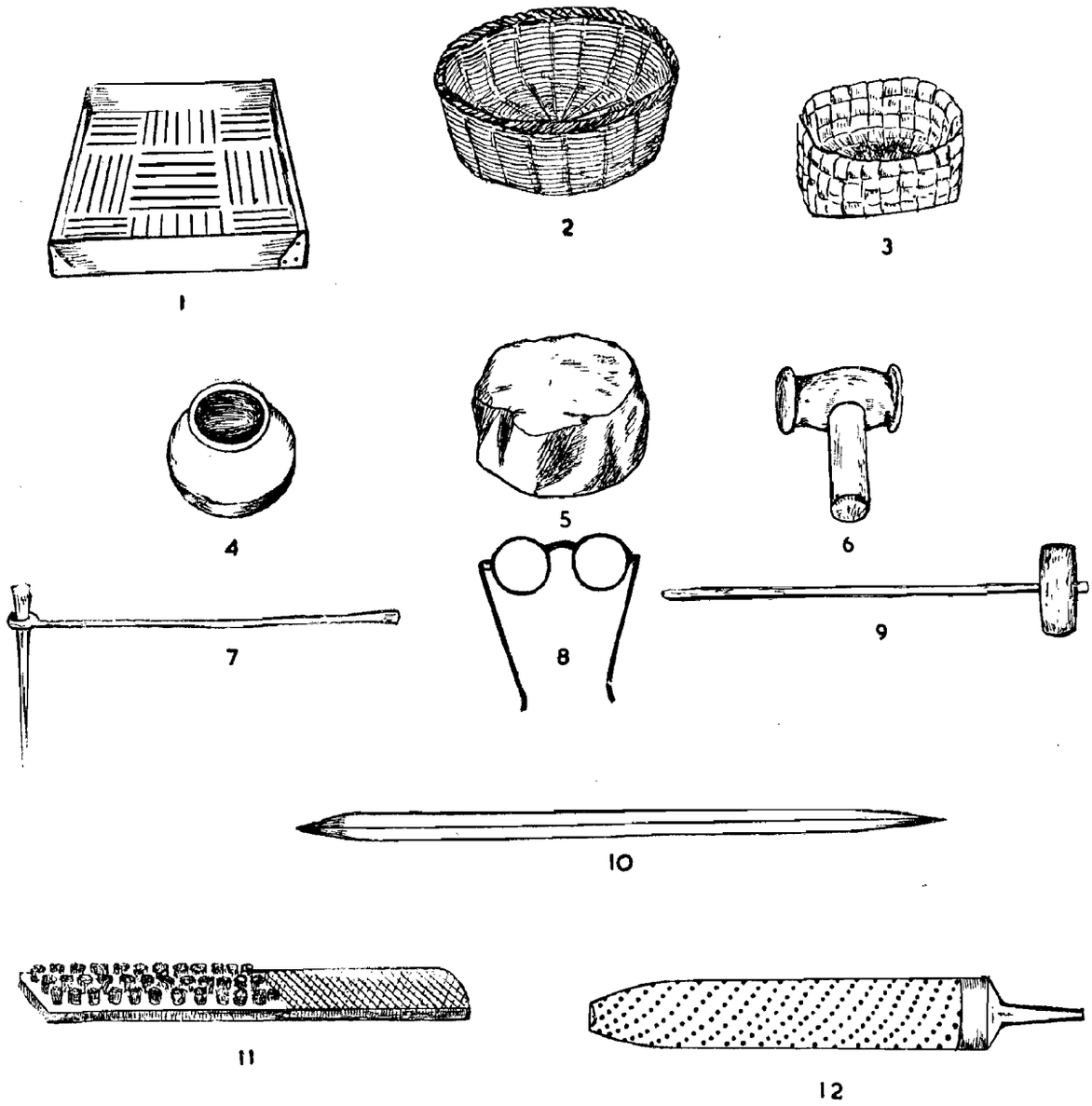
A wide range of color can be produced by immersing the dried agate in solutions of soluble salts or iron, chromium or cobalt, and then precipitating an " insoluble compound by immersing the saturated agate in a second solution. If first saturated by a ferric salt, ammonia will precipitate iron hydroxide, which is converted into a reddish or black iron oxide on heating; potassium thiocyanate will precipitate the red ferric thiocyanide; and potassium ferrocyanide will precipitate ferric ferrocyanide (Prussain blue). Aniline and other organic dyes have also been used. The depth of color produced varies with the porosity of the different layers of agate."*

(iii) Cutting and Shaping the Stone
(Plates V to VII)

4.9 Stones which are baked properly, are cut in the required shape on iron spike known as 'Sink' with 'Shingadi', a horn-headed hammer. Sawing is however, necessary in case of large-sized Tiger and Mardak stones which are cut into convenient pieces with a toothless saw. The workers engaged in cutting and shaping are known as 'Bhangiya' or 'Khondiya' and work in a group of four to six. In the workshop, where the agate stones are shaped, there is one raised platform of mud and cowdung mixture, locally known as *'otli'*, at a height of about one to one and half feet from the ground. The length and breadth of this platform depends upon the number of workers employed. The iron spike two or three feet in length is fixed slanting at an angle of 60° in the ground of the platform till only the head portion is left above the surface. Against the edge of this spike is kept the part of stone to be chiselled into the required shape. The workers squatting on pieces of gunny bags strike the stone with the horn-headed hammer very deftly and carefully till all the roughness is removed. This hammer is made from the horn of a goat or buffalo fixed on a thin handle made of bamboo 10" to 12" long. On account of constant striking, the hammer gets uneven and rough. To remove this roughness, files half round and flat are used. The iron spike also gets its edges blunt which are sharpened on Dhrangadhra or Porbandar stones. The striking with the hammer is known as 'tappa' and requires careful and constant hammering with proper grip of the stones. For getting the stones into desired shapes and removing the 'chal' or the outer skin of thin and rough layer of baked stones, the stone is held between the two fingers, smallest and middle and the thumb which are adjusted according to the shapes to be given. As for example, for *modan* the stones are to be gripped with the small finger which is kept upright, otherwise the amount of wastage would be greater. The position of wrist is also to be properly adjusted, as the movement of strokes by the hammer depends upon the angle of the wrist. As fingers get injured by sharp edges of flint, the workers rap them with cotton bandages known as 'anguthia' to save them from injury and also protect them against bleeding. Many a time while striking the stone, the 'chal' gets into the eyes of workers and causes pain. Some of the workers engaged in this operation, therefore, put on numberless spectacles to protect their eyes. The work of removing the outer surface of the stones requires some training and experience. The apprentice first tries his hand on useless stones, and becomes an adept when he masters the technique and is able to shape them into the smallest of beads. This has given rise to a proverb " जे खांडे तसबी ते थाय कसबी " i.e., *Je khande tasbi te thay kasbi,*

*The Encyclopedia Americana-Vol. I (1829) pp. 232-233.

Tools for baking and chiselling



1–4. TOOLS FOR BAKING

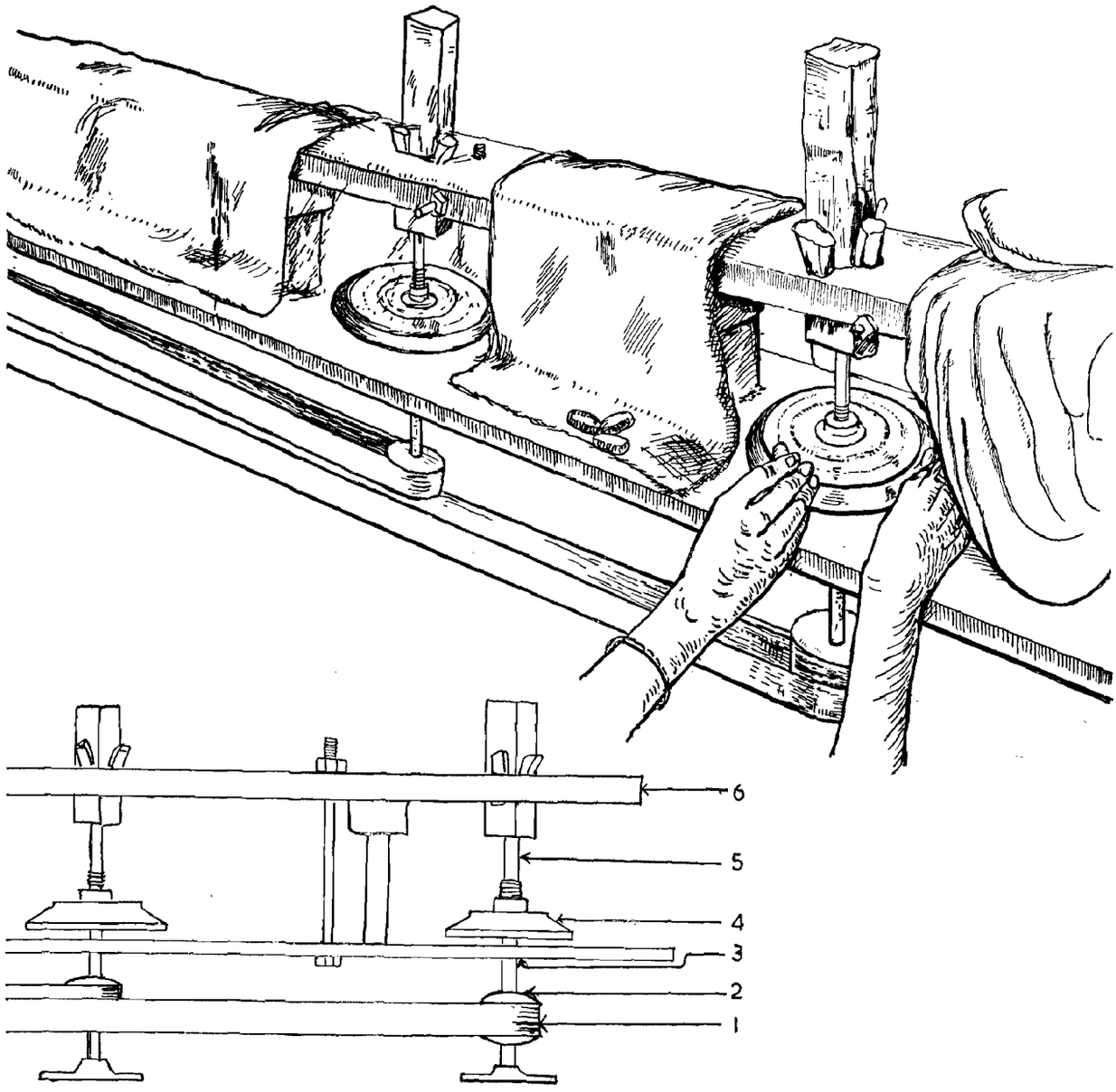
1. Sieve 2&3. Baskets 4. Earthen pot

5–12. TOOLS FOR CHISELLING

5. Porbandar stone 6. Iron hammer 7. Nail-shaped iron hammer 8. Numberless spectacles 9. Horn-headed hammer 10. Iron spike 11. Flat file 12. Half-round file

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Grinding and smoothing on electrically operated emery wheel



SECTION DRAWING

1. Belt 2. Pulley 3. Wooden plank 4. Emery wheel 5. Iron axle 6. Upward wooden support

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which says that the person who knows how to cut and shape stones properly into small beads required for a rosary becomes a really skilled craftsman.

(iv) ROUGHING AND SMOOTHING THE SURFACE (Plate VIII)

4.10 The stones after they are chiselled into desired shapes, flat, round, triangular, quadrangular, hexagonal, etc., are handed over to the 'Ghasiya' for smoothing their surface by grinding on the emery wheel. This work is done by two methods: (i) with the help of electricity and (ii) by hand. In the first method, the 'emery' or carborandum wheel working with the electric motor of ½ H. P. is rotated in circle. The roundness of this wheel is about 12" in diameter and 1½" thick. If the articles are rough and thick, the wheel is given greater momentum, and less if thin. The distance between the electric motor and emery wheel is about 10 to 15 feet. The wheel is fixed to a wooden plank 6' to 8' in length at a height of about 3" to 4". This wooden frame is known as 'Charak'. Two or three workers can operate at a time. The worker keeps one small earthen vessel filled with water by his side and the articles are dipped in water before they are put on the emery wheel to avoid the powder going into the breath of workers. If water is not used, the wheel moves more rapidly giving better 'wadh' or cut and greater output. But it releases tiny particles of dust which are detrimental to the health of workers. It is believed that while breathing, the stone powder goes inside the lungs and causes T. B. As the Ghasiyas are given wages on piece rate basis, they do not dip the stones in water and thereby get greater output of seven or eight pieces per minute. But by doing so they render themselves liable to this fatal disease which is reported to claim three to five deaths every year.

4.11 In the second method, the entire process is done by hand and is akin to 'saraniyas' or stone grinders who sharpen the knives, nut crackers, scissors, etc., on whet stone with the help of the bow-shaped stick with strong cotton string or leather belt known as 'vajar'. Before the introduction of electric motor, the work of grinding and polishing of agate articles was done entirely by hand operated emery. Now there are only three such establishments, of which one is in Gandharapwada and two in Pakhaliwad. The emery wheels required for the combined processes of grinding and polishing are four in number and are made by the craftsman himself from a mixture of emery and lac.

4.12 The emery stone or Corundum or Carborandum from which the emery wheel is made, is known as Kurund in Hindi and Samado in Gujarati. "The industrial form of the mineral is a granular alumina with which a small amount of magnetic iron is associated"[1]. The finest quality is available in the Pipra and Kadopani areas of the former Rewa State, where the supply Mr. Mallet considered to be practically inexhaustible. Emery stone is also reported to occur in Nongrynien, Khasia Hills, Travancore, Coimbatore, Selum, Mysore State, Pulyghee in the Belari District, North Arcot District, Krishna and Godavari and Hyderabad territory and the Central Provinces.* This stone greyish black in colour is consumed in large quantity by the cutters and polishers of stones, both precious and semi-precious. Formerly, the lapidaries at Cambay used to purchase this stone, powder it and prepare the polishing disc, by adding it to seed lac in required proportion. But in course of time, the prices of emery stone went so high, that it was cheaper to utilise ready made emery wheels instead. Polishing discs made from emery are comparatively cheaper than the one made from stone which they formerly used to purchase from the market. The proportions of lac and emery to which agate powder which falls off while grinding is also added vary according to the fineness of work to be done--the quantity of ground emery decreasing and that of lac increasing with the fineness to be attained. The mixture is heated and spread on a wooden board. A dish or a plate is then passed over this paste to make it circular in shape. After it is dried, the disc is fixed on an axle inserted in a round wooden roller. The leather string of the bow is wrapped to the roller to give rotation to the wheel. The bow is kept

1 Manual of Geology, Part III, p. 28

* Source : George Watt-A Dictionary of Economic Products of India, pp. 572-573

in the right hand and the bead dipped into water kept in the earthen pot is held in the left hand and rubbed against different discs till it gets desired polish. In addition to emery discs, copper or wooden plates were also used—the former for polishing very hard stones, while the latter for softer ones.

4.13 The four different types of lapidary wheels required for grinding and hand polishing, are described as (i) Ghat-ni-saran used for removing the uneveness of surface and giving a correct shape to the stone, (ii) *'Naram'* or soft saran used to make the surface smoother and the remaining two to give them appropriate glaze and polish.

4.14 In the past, 18 varieties of beads were shaped and polished on hand operated emery. But tasbi, modan, chopatia modan and loi are the most common varieties worked at present. Round, square and angular beads are mostly machine polished, but for decorative articles like birds, fish, tortoise and other artistic pieces, polishing by hand-operated discs is preferred.

(v) Polishing

4.15 The articles which are roughed and smoothed on emery wheel are polished to give them shine and lustre. The persons engaged in this activity are polishers known as 'opiya' derived from the word *'Op'* which in local parlance means shine or lustre.

4.16 Various methods of hand polishing were in vogue in the past, viz., (i) saran or lapidary's wheel, (ii) pattimar or polishing against a wooden board and (iii) leather bag method. All these processes have been for the most part replaced by mechanical method. Each of them used to serve a distinct purpose and was applied according to the article to be polished. The most common method, however, was the *saran* or hand operated lapidary wheel described above.

Pattimar (Plate IX)

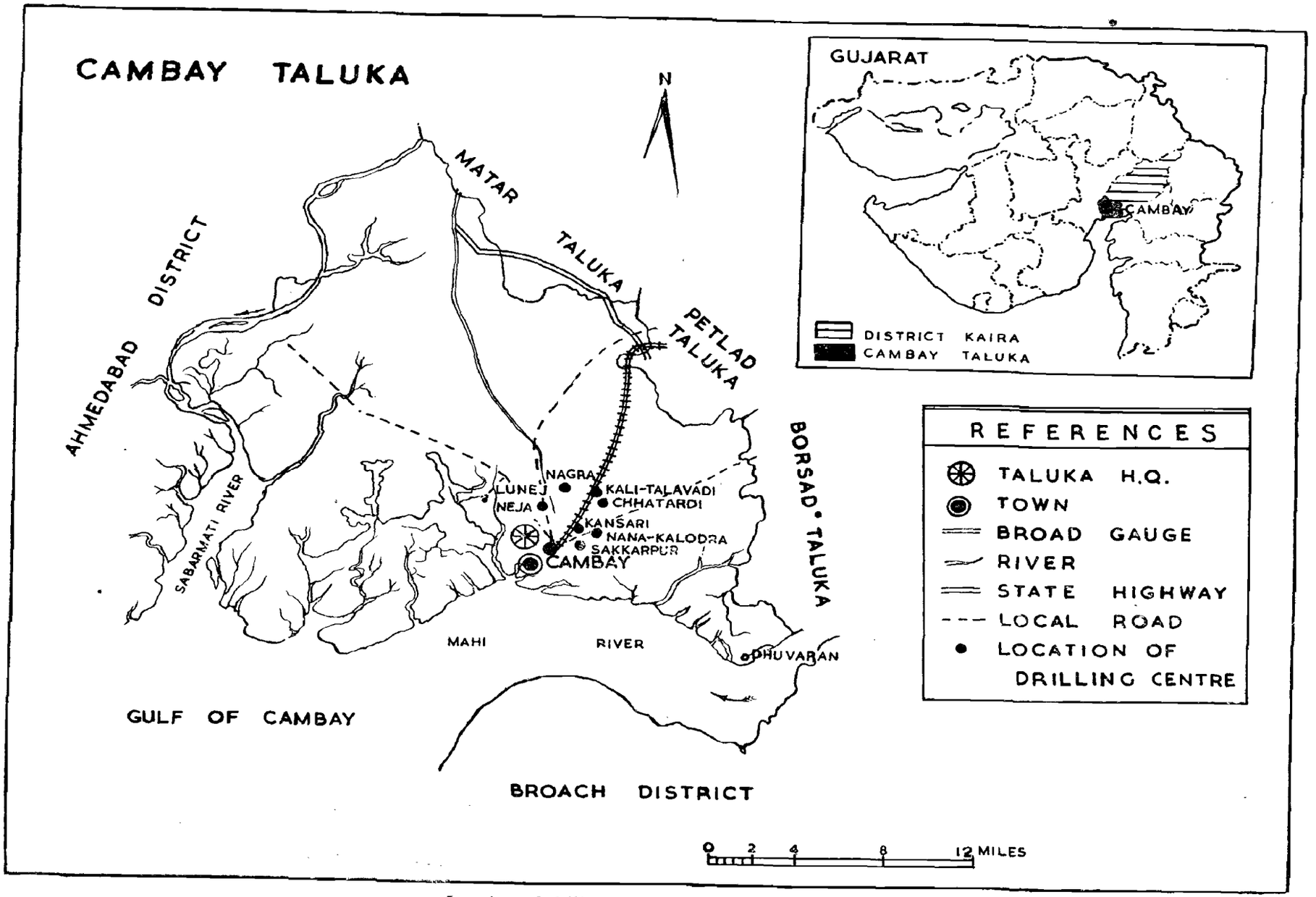
4.17 Pattimar method is specially resorted to in case of small round beads which are fixed in a wooden and bamboo clamp and rubbed against a special type of stone called Porbandari stone to give them a smooth surface and rough polish. They are then rubbed on a polishing board called *patti* having its surface cut into grooves. This method of polishing is not much in vogue now.

Leather bag method

4.18 Another method whereby beads can be polished by hundreds is the leather bag method. A number of beads are put into a strong leather bag about two feet long and from ten to twelve inches across. In this bag are put emery dust, fine carnelian powder and leather pieces. The mouth of the bag is then tied and a flat leather thong is passed round its centre. At the opposite ends of a room are seated two persons, each holding one end of this leather thong, dragging the bag backward and forward. This to and fro rolling lasts from ten to fifteen days. During this entire period, the bag is kept moistened with water. When the polishing is complete, the beads are taken out and handed over to the drillers for boring holes.

Mechanical method (Plate X)

4.19 There are two establishments where polishing has now been mechanised. The latest innovation is that the leather bag containing beads, emery dust, leather pieces and fine carnelian powder is placed in a barrel of crude oil or tar. The barrel is supported with axle on both ends or with an iron rod in between, with a pulley at one end. There is a pulley also on the electric motor of $\frac{1}{4}$ or $\frac{1}{2}$ H. P. connected with a leather belt about 20 ft. in length. The barrels are 3 to 4 in number. Three of them are made of tin and one of copper. The finished articles are rotated in these drums in turn and finally transferred to the copper drum in each of which the proportion of polishing material varies. The barrels are rotated mechanically and within two or three days, the beads get polished. There is no physical labour involved in this method. What is required is general supervision and examination of the glaze obtained. This method has replaced all the former processes as machine polishing is quicker and physical labour is totally eliminated. Polishing by leather bag method or mechanical method is a closely guarded secret which no one is allowed to see.

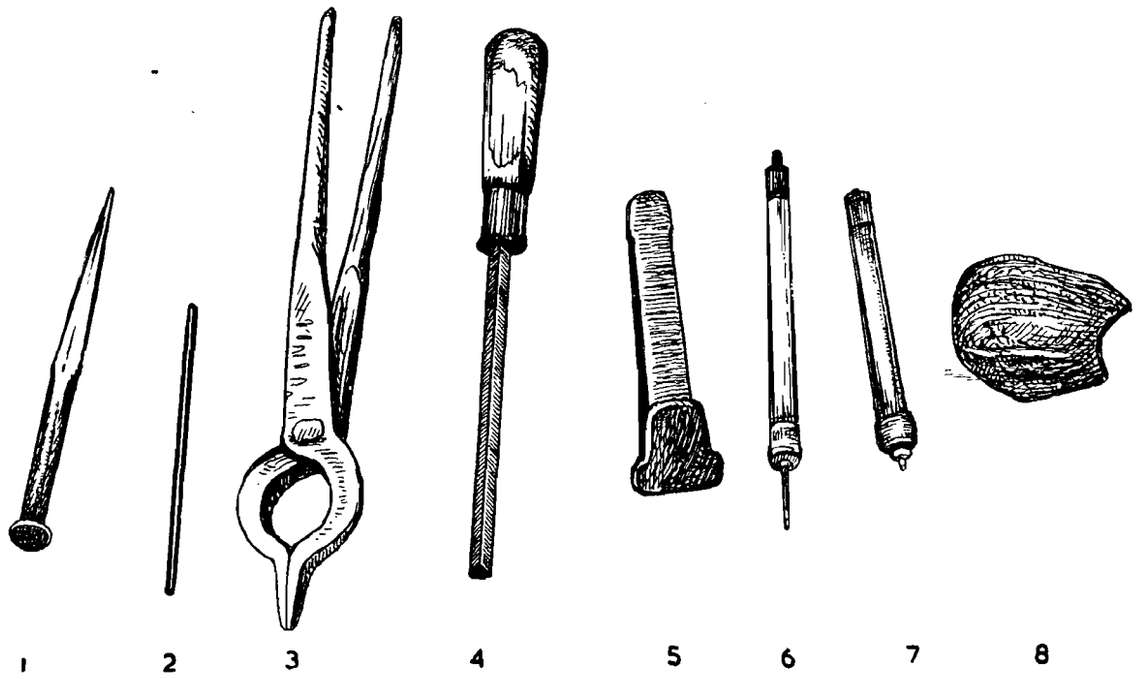


Location of drilling centres roundabout Cambay

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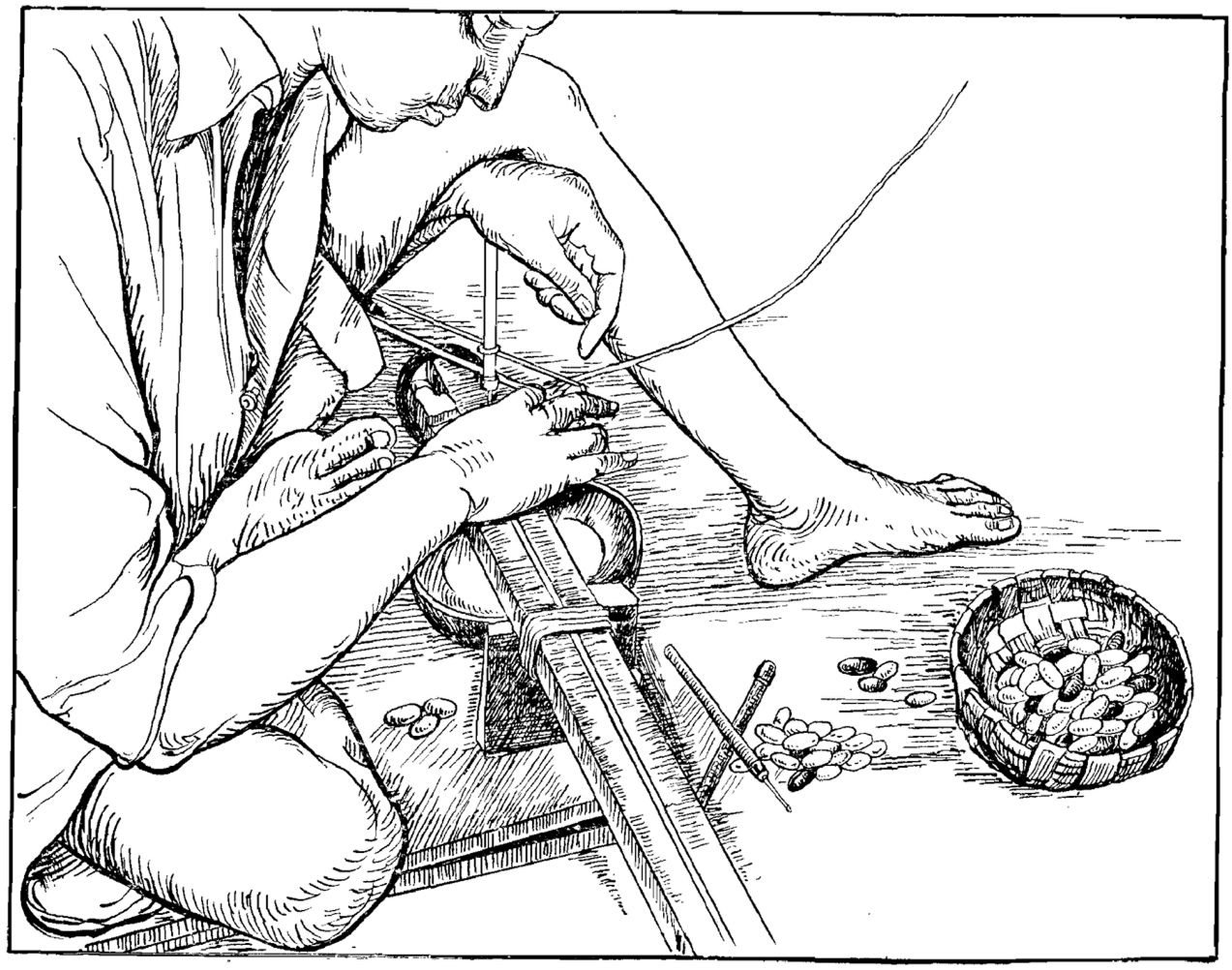


1. Setting diamond tip in the dent on steel top of the drill

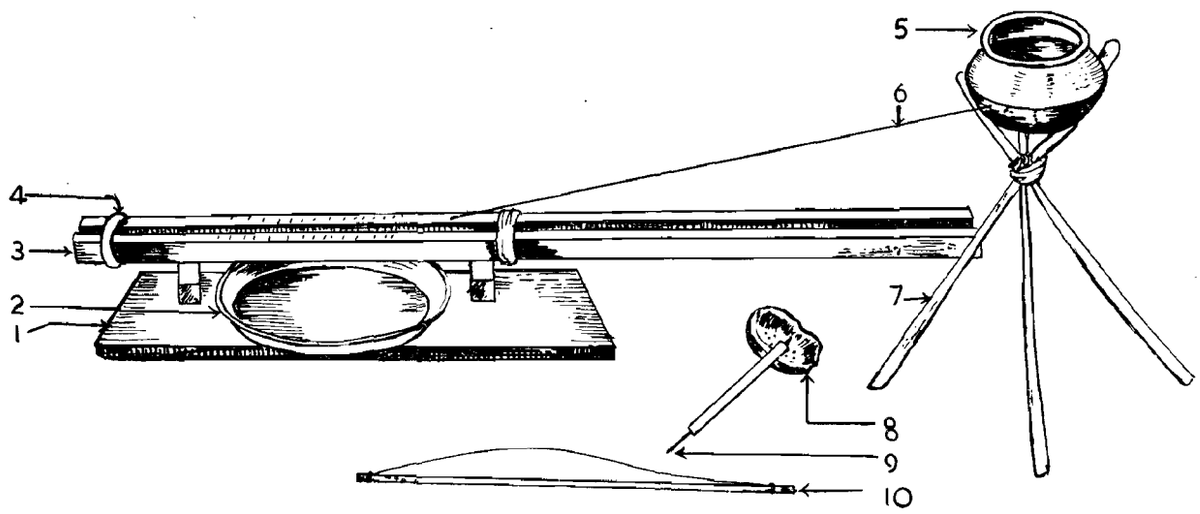


2. Tools in use for diamond setting

1. Punch 2. Iron rod 3. Pincers 4. File 5. Big iron nail 6. Drill 7. Drill handle 8. Cocoanut shell



1. Hand Drilling



2. Tools in use for drilling

1. Wooden platform 2. Clay dish 3. Wooden frame 4. Iron ring 5. Clay pot 6. Umbrella reed 7. Tripod 8. Cocoanut shell 9. Steel drill 10. Bow string

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(vi) DRILLING (Plate XI)

4.20 After the beads are polished, they are passed on for drilling holes. The persons engaged in this operation are known as 'vindhar' or 'sari' being derived from the local word 'vindhavu' or 'saravu' meaning thereby to pierce a hole from one end to another. There are only five establishments of 'vindhar' in Cambay town, two belonging to Rana and three to Baraiya castes. But the farmers of seven neighbouring villages Nagra, Neja, Kali-Talavadi, Kansari, Sakkarpur, Chhatardi, and Nana-Kalodra within a radius of five miles round about Cambay undertake this work as a subsidiary occupation along with their main occupation to farming.

4.21 About 100 households or 300 workers engaged in this work are Rajput, Rana, Baraiya-Koli, Waghari and Chunara by caste. As they own small land holdings, they supplement their income by undertaking this work which gives them livelihood for 12 months. Mostly all the male members from 9 to 12 and above upto the age of 45 are engaged in this operation. Except monsoon, when they are busy with agricultural operations, drilling becomes their principal preoccupation.

4.22 These establishments are of two kinds, viz., (i) those which work in their cottages on the field during leisure hours (Plate XII) and (ii) those who have regular establishments at home in the village wherein the household members and hired workers participate. The rates paid by the Cambay merchants vary according to the variety of holes to be drilled, payment being made in cash on piece work basis. As the relations between the two are cordial, the merchants in some cases give lumpsum amount by way of advance to please the artisans specialised in this art, so that they remain under their obligation and give regular output.

4.23 The technique of drilling consists of boring holes through beads by a diamond tipped steel drill. In order that the beads to be holed are gripped properly, they are fixed between two forks in a wooden clamp and kept in position by an iron ring, so that the beads do not get loose and remain properly fitted. This is known as 'bhinthi'. Round beads are kept in the hollow crevices on the wooden frame, which in colloquial terminology is known as 'khamanu'.

4.24 After marking drilling points on the top and bottom of the bead, the craftsman takes it up for drilling. The drill is encircled by a bow-shaped string fastened on a thin stick known as 'dhandhodi' held in the right hand. He holds the diamond tipped steel drill under a piece of cocoanut shell kept under his left palm. The drill is then turned to and fro, the pressure being regulated by the left hand passed under the left knee causing deformity in both these limbs (Plate XIII). A small earthen pot known as 'dagholu' or 'latodi' is kept on a stand made of three bamboo chips arranged in cross order. Inside this pot is tamarind solution or water mixed with agate powder. A thin narrow metal reed (about $1\frac{1}{2}$ ft. long) which is usually an umbrella reed is fixed in the side of the pot in a slanting position, so that the solution dripping from it helps drilling and prevents the diamond tip of the drill from slipping as well as from getting hot quickly. While drilling, the artisan inserts a portion of the drill in and out intermittently so that the water mixed with carnelian powder comes out from the hole and allows the drill to go ahead. After drilling midway, the bead is reversed if it is long and hard to complete the hole for the other half.

4.25 Proper drilling requires skill and experience. Even if the drill goes slightly wrong, the bead looses its value. A bead which is not correctly holed is known as 'ghodaveh'. While sorting, *ghodaveh* and *khadak* beads are excluded. Such wastage is known as *gabha*.

4.26 Drilling is one of the most important indigeneous and skilled operations, as undrilled beads are not accepted and returned from foreign countries. Secondly, this operation is not amenable to any mechanical device, as direct and continuous drilling by machine will create heat and will result in cracks; whereas by hand drilling the artisan can rotate the drill and regulate the pressure according to his requirements.

4.27 Fixing a diamond tip on the drill also demands great skill and experience. The diamond

is purchased from Cambay at the rate of Rs. 45-00 per *rati*, broken into fine pieces round in shape valued at Rs. 2-50 or Rs. 3-00 per piece. A tiny circular dent is made with a hammer on the steel top of the drill about five inches long wherein the diamond is fixed deftly with the help of a file.

4.28 The various techniques in vogue in the working of the agates have been examined in the preceding paras to give a complete idea of the processes in vogue in the making of finished articles. As already seen, except grinding on the emery wheel for giving shape and smoothing the surface and polishing, the entire technique is hand operated. Even the two processes aforementioned are still worked manually by some of the craftsmen. The general belief prevalent among the artisans is that entire mechanisation of the craft is not possible, as there are certain processes which call for human skill and judgement which will not be possible if the industry is entirely mechanised. A beginning has, however, been made by the Good Earth Industries Ltd., which has shifted their operations from Cambay to Jamnagar, and mechanised all the various processes as shown in Plates XIV and XV. The objects, however, that this establishment turns out are large in bulk and therefore capable of being subjected to mechanised processes. This, however, may not be possible in case of beads which are smaller in size and worked by hand. Even the Good Earth Industries have refrained from mechanising the drilling of beads which is not undertaken by them as it is essentially a hand operated process.

CHAPTER V

FINISHED PRODUCTS

5.1 The travel reports of various foreigners who visited this country contain references to a number of articles manufactured from agate. Herodotus (484 B. C.) speaks of the sard and onyx being brought from India to be used as finger rings and everyone in Babylon wore agate rings. The murrhine cups so highly prized by Romans and one for which Emperor Nero paid £ 58,125 or Rs. 6 lakhs were shaped in Cambay from moss agate. Tavernier in 1651 speaks of Cambay as a place where agate cups were hollowed. Of the 18th century travellers, Hamilton (1700–1720) in his Travel Accounts mentions among articles made at Cambay, stones for signets and rings some of them worth double their weight in gold, cabinets of stone, in some cases fourteen or fifteen inches long and eight or nine deep, worth from £ 30 to £ 40, bowls and spoons of several sizes, handles of swords, daggers and knives, buttons and stones to be set in snuff boxes of great value (New Account I pp. 140,145). Half a century later (1750), Tieffenthaler says that the white Ratanpor agate, baked red at the mines, was in Broach and Cambay, worked into vases, little plates, basins, and other pieces, and sold in Surat and thence taken to Europe. He also notices Kapadvanj agates worked in Cambay into different figures and made into vases, plates, and saucers (Res. Hist. et Geog. de l' Inde, pp.390,392). About the same time, the author of the Mirat-i-Ahmedi (1748–1762) mentions rings like those of Yeman, necklaces, cups, handles for knives and daggers (Bird, 104). The articles possessed by some local merchants or exhibited at some of the museums like Victoria and Albert Museum at Bombay, Salarjung Museum at Hyderabad, Picture and Art Gallery at Baroda, Gandhi Smruti at Bhavnagar and others show that a large variety of articles and objects of art were manufactured from agate in the past. Lists of articles found in some of the museums are given in Appendix V–A, B and C.

5.2 The articles to be produced from agate are determined by and shaped according to the size, colour and natural formation of raw stones. The colour or design found in one article will not be exactly the same in any other article. Beads for necklaces and rosaries, pieces of different sizes to be set in ornaments like necklaces, armlets, wristlets, rings, earrings, etc., and a few objects of decoration are the principal articles now worked from agate at Cambay. Beads are the chief products which command a good market in the countries of the Middle East and African coast. The beads are of different sizes and shapes varying according to the kind and quality of stone from which they are made. Their sizes vary considerably from 1" to 1½". Trade names for different varieties of beads current since last 4 to 5 centuries are modan, dol, tasbi, karela, dholak, ath pahel modan, kandora, supda, kathi loi,chakkar and gulli. Details about their size, shapes, colour, etc., are given in Table XIV. Some of the stones when worked upon exhibit natural formation like forests, rivers, serpents, creepers, beasts of burden, trees, crescent, *om* and whenever such formations are noticed, the articles are processed very carefully, so that their natural effects are not destroyed and kept in tact.

5.3 The Good Earth Industries which has recently come into existence has undertaken manufacture of decorative and ornamental articles like birds, flower vases, ash-trays, bangles, pestle and mortar, necklaces, paper weights, paper cutters, buttons and articles in abstract form. This has opened up new avenues in the manufacture of agate articles which are at present mainly confined to beads only. During the visit of Her Majesty the Queen Elizabeth II and H.R.H. the Duke of Edinborough to Ahmedabad, a bangle made of Akik and a steamer with lighthouse also made of agate were presented to the Royal visitors by this establishment. Some of the above-mentioned articles processed and manufactured by this establishment were also exhibited in the Industries Exhibition at Delhi and

the All-India Village Industries and Khadi Exhibition held at Bhavnagar in connection with the 66th session of the All-India Congress Session in 1960.

5.4 Appendix VI shows the different types of articles manufactured from agate in the past and at present.

5.5 It will be seen from the above that till the end of the eighteenth century articles manufactured from agate were highly prized and patronised all the world over for their artistic value and rarity. Thereafter, the artistic skill of the Cambay lapidary which had developed to perfection gradually declined, with the result that in present times, his activities are confined only to the manufacture of beads of various shapes and sizes and a few decorative pieces like tortoise, fish, birds, shiv-ling, etc. For, when the former patronage which inspired the craftsman to prepare objects of art was gone, persons possessing such skill disappeared. There is no craftsman now who can produce those excellent pieces which made Cambay agates once so famous. For, the creation of artistic pieces requires a high degree of artistic talent and patience. Both these in turn mean cost which only a few would afford, and a fewer still would go in for. The present day lapidary has, therefore, to go in for designs and shapes which are less costly and within the reach of the common man.

Articles made in the past and worked at present are illustrated in Plates XVI to XXI.

CHAPTER VI

MARKETING

Past Markets

6.1 Agate is more an article of export and sale in foreign markets than one of local consumption. This has been its characteristic feature since early times as revealed by records of foreign travellers who visited India at different periods of history. This speciality it has retained down to the present times when agate products mostly beads of different shapes and varieties are exported to foreign countries particularly on the African coast, where their demand by the Negroes is the greatest.

6.2 While Cambay stones found their way to foreign markets for the first time in the 15th and 16th centuries, Indian agates had been popular outside the country since the remotest antiquity. Commenting on agate and other minor gems, Birdwood has observed that "It is probable that the polished and cut pebbles of India have been spread over the world to an extent of which few people are conscious. It is said that the pebbles which the tourist or visitor is induced to buy at many well-known sea-side and other resorts in Europe, as momentos of the place, have not only been originally produced but have been cut and polished in India. If it be so, the trade is a more creditable one than that which sends sham jewels to Ceylon, because the stones are really what they pretend to be, true pebbles, and they are often extremely beautiful objects." [1] Agate articles were thus in demand all the world over, the markets differing at different periods according to the trade routes and channels prevalent at that time. Describing the preference for particular articles in certain countries it has been noted that in 1787 seal shaped stones went to Europe and Arabia, pearl-shaped stones as big as pistol ball to China and octagons to the Guinea coast and Mozambique.[2] For the Chinese markets, the carnelian ornaments in demand were beads of different sizes, flat, round, oval, square and watch like seals being worn as armlets and dress ornaments. The stones in demand in the markets of Arabia were Ranpur agates, Ratanpor carnelian, Cat's eye, blood-stone, wristlets and armlets. For the European markets, the articles most in demand were decorative pieces of art such as models of cannon with carriage and trappings, slabs for boxes and square tables, cups and saucers, chessmen, flower vases, pen-racks, watchstands, ink-stands, knife handles, brace and shirt studs. Between 1851–1878 part of the trade with Arabia passed through the port of Veraval, and during the last quarter of the 19th century, except for a very small supply to Sind and Kabul markets taken by horse dealers and other Afghans who visited Cambay, the entire produce was bought by Bombay merchants, chief of whom were from Bohora community, who exported the agate articles to China, Arabia and European markets.[3] The fortunes of agate industry thus appear to have risen or fallen with places which have, at one time or another, been centres of trade with foreign countries.

Markets Today

6.3 As in the past, countries outside India still continue to be the main market for the finished products manufactured from agate and allied stones. But with the change in the trade routes the former markets no longer exist. Trade in agates is confined to the countries of the African Continent like Nigeria, Gold Coast, etc., the only article of export being beads of various shapes and sizes required for ornamental wear and the rest of the 25% with the Middle East countries, Malaya, Singapore, Baghdad, Bassra, Beirut, Pitang and Saudi Arabia. On account of the increasing fondness

1 Sir George Watt: Indian Art at Delhi, 1903, p. 73

2 Hove's Tour, Bomby Government Selections XVI, 49

3 Gazetteer of the Bombay Presidency, Vol. VI (1880), p. 203

for minor gems, agates are also in demand these days in countries like America, Japan, Java and Sumatra. Nearer home, necklaces, bracelets, armlets, earrings, etc., manufactured from agate are getting popular in big cities like Bombay, Calcutta, Madras, Delhi, Lucknow, Jaipur, Hyderabad and Agra, as ornaments of fashionable wear. Agate beads are in increasing demand also by the tribals of Nagaland, NEFA and Assam.

6.4 Competition from rival markets—local as well as foreign—which Cambay agates have to face nowadays is very great indeed. For, apart from the decline in its former prosperity, and the adverse effect on the highly artistic skill it had once attained, the industry has been threatened by a fresh danger from artificial stones. Among the local rivals, Ogale Glass Works at Ogalevadi have started manufacturing glass beads of the size, shape and colour of agate, while among the foreign competitors, Germany has established itself as a great rival by developing this industry on a more scientific basis by manufacturing synthetic stones which take better polish and have a larger range of colours. Every industry must, if it wishes to survive, adjust itself to the changing needs of time by producing articles which suit modern tastes and command a ready market. Agate is a material from which various objects of art and decorative pieces can be made both for local consumption as well as foreign markets. Increase in tourist traffic has opened up a fresh avenue for the sale of agate articles of tourist tastes. With the operation of Gold Control, there are greater chances for the popularisation of agate articles than ever before. If the Cambay lapidary rises to the occasion and revives his former skill which was responsible in the past for manufacturing articles of great artistic value, the industry still has a bright future. Changes in design and introduction of new varieties and proper publicity should help the development of existing markets and explore new ones hitherto unknown.

Volume of Business

6.5 The figures of the estimated value of the export of agate articles by the East India Company upto the year ending 1878 extracted from Milburn's Oriental Commerce, will give a comparative idea of the nature and extent of business in agate in the past.

Year	Annual Sale (in Rs.)
1804	49,140
1805	59,900
1806	17,470
1807	111,870
1	54,240
1843	94,900
1 71	75,080
1872	78,490
1873	98,840
1874	84,370
1875	90,720
1876	53,160
1877	69,170
1878	50,970

6.6 These figures reveal that during the nineteenth century the volume of business fluctuated widely from year to year. The beginning of this century was a period of depression as in addition to the regular duty of £53-16s. 3d., a special cess of £ 17 8s. 9d. was imposed for some years making a total charge of £71-5s. per cent on articles manufactured from agate. The fluctuations were, therefore, greater in the beginning than in the latter part of this century as evidenced by the fact that the export of agate articles which was Rs. 59,900 in 1805 suddenly dropped down to Rs. 17,470 in 1806 and rose as high as Rs. 111,870 in 1807. Thereafter, the trade seems to have followed more or less an even tenor till 1875, when the decline seems to have set in. It is unfortunate that no figures about the volume of trade for the period prior or subsequent to the East India Company's regime are available. But according to present estimates obtained from some of the knowledgeable persons engaged in this industry, about Rs. 2 to 2½ lakhs worth of agate and other stones are processed annually at Cambay, the value of finished articles being Rs. 10 to 12 lakhs. These figures do not give a correct picture of the volume of trade in the past and present, as the purchasing power of rupee was far greater those days than it is at present.

Agency of Marketing

6.7 Till recently, finished products were in the first instance disposed off to Bombay merchants

who in turn exported them to foreign countries. This practice has now changed, as some of the dealers have established direct trade relations with foreign countries, while others still continue to avail of the agency of exporters at Bombay as they did before. Sales are nowadays effected either direct through agents in foreign countries or purchased by local merchants for export to foreign markets. Purchases are also made by commission agents and representatives of firms coming to Cambay from places like Jaipur, Bombay, Delhi, etc. In Cambay itself there are only three retail shops which deal in agate wares on wholesale as well as retail basis. Agates mainly being articles of export to foreign markets, it will be worthwhile to examine the various formalities required to be undertaken in this behalf. The following five are the main export dealers at Cambay through whom the major bulk of exports in agate takes place:-

1 K. G. Brothers or Mansuri Brothers, Rana Chakla, Cambay.
2 Thakorlal Chunilal Shah, Akikwala, Krishna Pole, Cambay.
3 Indo-Africa-Egypt Trading Co., Cambay.
4 Daud and Co., Cambay.
5 Agate Exporters, Cambay.

6.8 The finished articles are sorted out by the exporters according to the orders received by them from foreign countries. Certain procedural formalities are then undergone. Formerly, the parcels containing these articles were to be kept open for examination by the Bombay Customs. The necessity of going to Bombay every time a parcel is to be sent, has now ceased as it can be despatched by post in properly packed and labelled tins after filling in the prescribed forms at Cambay itself. The exporter has to fill in three forms, of which one is sent to the bank of the foreign country to which the articles are exported, the second to the Reserve Bank of India and the third is kept in the local post office. A cylindrical container of white tin of about 1 to 1½ feet is used for packing the articles to be exported. The tin holds articles weighing about 19½ lbs. which with the weight of tin and cloth into which it is sewn comes to 22 lbs. The packing charges per tin come to about Rs. 5/- and the insurance charges Rs. 0-19nP. per 100 pieces. The postage has risen from Rs. 8/- to Rs. 10/- in 1951 and now stands at Rs. 24/-. One such parcel contains articles worth Rs. 400/-to Rs. 650/-according to its size and quality. The parcel sent by steamer takes two and a half months to reach its destination. The container bears the following Customs' declaration:-

Customs' Declaration

5-1-63 Invoice : 78

CAMBAY AGATE STONES

1500 pcs YANKANKARA

Net wt.
22 lbs.

India Stamp

Rs. 464-15 nP.

For Mansuri Bros.
Sd/
Cambay

6.9 The transactions are wholesale and mostly on the basis of payment in cash. Local sales tax is charged at the rate of 5 per cent first on the price of raw material and then again on finished articles.

6.10 When the goods reach the destination, the party receiving them has to pay an import duty of Rs. 75/- per parcel to the Nigerian Government. This duty which was Rs. 20/- till 1955 was raised as high as Rs. 75/- in 1962, when agate stones were classified as precious stones. This heavy increase cannot but prove harmful to this industry which has already suffered a great set-back during the present century.

CHAPTER VII

ORGANISATIONAL PATTERN

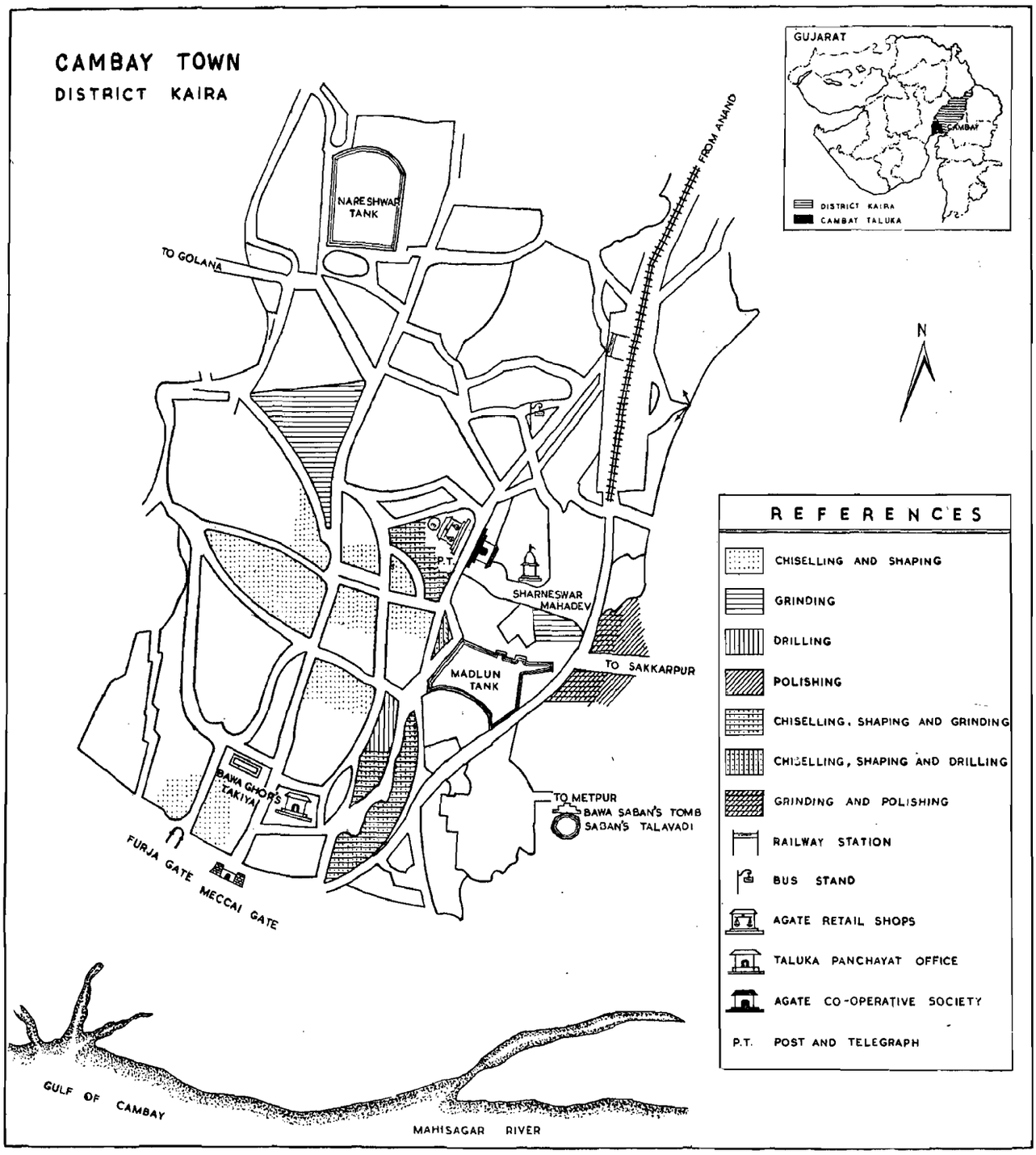
7.1 Separate trade guilds or panchayats for each individual process of the craft was a unique and interesting feature of the organisational pattern of the agate industry which has completely disappeared now. These guilds besides helping to strengthen the structural organisation of the industry and acting as a cementing tie between the various branches enabled the craftsmen to specialise in a particular technique and maintain its hereditary character and skill handed down from father to son. It also precluded the entry of any outsider without prior initiation and probation as an apprentice. Muslims and Patels formed majority communities in guilds. Their social contacts were kept alive, by arranging a community dinner once or twice a year in the mangroves of the neighbouring village of Vadva, two miles away from Cambay. The role these guilds or panchayats played in the past is vividly brought out in the following extract from the Bombay Gazetteer.

(i) Trade Guilds

" In each branch of the craft the heads of factories form a distinct guild or *panchayat*. There is the guild of polishers on stone, *dolia panchayat*; of polishers on wood, *pattimar panchayat*; of workers on the lapidaries' wheel, *ghasia panchayat*; and of drillers, *vindhar panchayat*. Above them is the dealers' guild, *akikia panchayat*, in whose factories the work of sawing and chiselling is carried on. Over each of these guilds a headman, chosen by the votes of the members, presides. There is no combination among the workers in the different factories, and there is no record of any dispute between the workers and their employers. Any skilled worker who raises himself to be head of a factory, may become a member of the guild of the branch of the craft to which he belongs. On joining a guild the new comer is expected to give a feast to the members, the expense varying from £17-10s. to £80 (Rs. 175-800). He is at the same time required to pay the Nawab a fee of from £1-10 s. to £10 (Rs. 15-100). From time to time the members of a guild hold a feast meeting the charges out of the common funds. In any factory, if one of the skilled workers wishes to have a son taught the craft, or, if a new hand is anxious to join, he gives a dinner to the head of the workshop and to the other skilled workers. Except in making arrangements for the unpaid service due to the Nawab, the trade funds would seem to be applied to no purpose but that of entertaining the members. When a guild feast is held, if one of its members chances to be sick, his share of the dinner is sent to him. With this exception, the practice of using trade funds to support the sick or those out of work, or to provide for widows and orphans, is unknown.

On paying the Nawab a fee, and agreeing to meet the customary charges including a yearly subscription of £ 1-4 s. (Rs. 12), any member of one of the underguilds may become a dealer, *akikia*. About four years ago, the heavy cost of joining the *akikia* guild caused a dispute. Certain of the polishers, *ghasias*, claimed the right to deal in stones without becoming members of the *akikia* guild. The regular dealers were too strong for them, and, failing to get in business, they were forced to leave Cambay. With some families of drillers they retired to Ahmedabad. But, finding themselves no better of there, they returned to Cambay.

The guilds are useful in arranging for the service due to the Nawab. When the Nawab wants a lapidary, he tells the dealers' guild what work he wishes done. The chief of the dealers sends to the master of one workshop in each branch of the craft, telling him what is wanted, and asking him if he will undertake the duty. If he agrees, and there is generally in each class one master-worker who undertakes the Nawab's orders, he receives from £ 5 to £ 6 (Rs. 50-60) from the guild funds. Among guild rules, one forbids master-workers engaging the services of workmen belonging to another factory. Another lays down certain



Distribution of agate workers

TO FACE PAGE 25

days, amounting in all to about two months in the year, to be kept as holidays. Breaches of the rules are punished by fines varying from 2s. 6d. to 5s. (Rs. $1\frac{1}{4}$-$2\frac{1}{2}$)."[1]

7.2 This unique frame-work under which these different guilds operated in the past helped the survival of the industry and resulted in specialisation of different processes by members of underguilds despite the various onslaughts and vicissitudes it had to suffer from time to time. The decline of the industry appears to be due to the fissiparous tendencies which made themselves manifest in the present century and brought about the gradual disappearance of all such institutions, social as well as economic. The absence of any alternative institution to replace them has hard hit the interests of the industry by removing the bonds of cohesion and unity among the members of different branches. Though no such guild or panch as existed in the past on the basis of craft survives today, one panch known as "Juna Akikiya Panch" organised on caste basis by Leva Patidars still exists in Cambay. It has lost its former character as trade guild wherein members of the craft participated irrespective of their caste or creed and has been now replaced by a panch based entirely on caste.

7.3 The organisational pattern on account of the diversified and dispersed nature of various operations of the industry is of a complex nature. Though each process is carried in a distinct workshop by skilled artisans specialised in each technique, all the different processes are interrelated. There is not a single establishment wherein all the different processes from refining of raw material to the production of finished articles are undertaken from start to finish. Apart from the Adivasis of the Rajpipla area who work as labourers extracting raw stone, the organisational pattern can be broadly arranged in two sections, namely, (1) Akikias, i.e., dealers or Karkhanedars and (2) artisans or craftsmen who have specialised in different techniques of agate manufacture. The former category includes (i) factory owners who run their own establishments either entirely with the aid of hired workers or who themselves being master craftsmen also participate and work with the help of family members and hired workers and (ii) dealers who purchase finished products for sale and export. They purchase the raw material at the mines and from various other places where different varieties of stones are available, store them and carry out the preliminary processes of (i) sun baking and heating, wherever necessary, (ii) cutting into appropriate shape and size and (iii) grinding the surface. The subsequent processes which involve drilling and polishing he gets done on piece work basis by individual craftsmen working either at home or in cottages on their fields. The distribution of different categories of workers is shown on the map opposite. The Karkhanedar is thus the real financier who plays the key role of feeding the various branches of the industry which are dependent on the work he parcels out to them. With his entrepreneurial ability and marketing intelligence, he guides and supervises the various operations of artisans working under his control, and regulates the production of finished products according to the prevalent trends in market. While the Karkhanedars usually make their own arrangements for the disposal of the finished products in the local as well as foreign markets, there are some who sell their products either to local exporters or to Bombay and other merchants who have direct trade relations through their agents or representatives stationed in foreign markets. The *karkhanas* can be further sub-divided into smaller and bigger units depending upon the number of employees varying from 2 to 10 and capital invested by the Akikia or Karkhanedar. The smaller size of *karkhanas* obviously engage lesser number of artisans and their capital investment is also proportionately smaller. These *karkhanas* do not come under the operation of the Factories Act and the industry is mostly run on a household basis with the help of family members and hired workers. The larger ones operate on factory basis wherein hired workers are for the most part employed under the supervision of the owner.

(ii) ARTISANS

7.4 Different shapes are given according to the requirements of articles to be ultimately manufactured. All the various processes of agate indursty are carried out either in the establishment of the Karkhanedar or in the household by skilled

1 Gazetteer of the Bombay Presidency, Vol. VI, (1880) pp. 204-205

craftsmen on behalf of some Karkhanedar who gets them manufactured into finished articles after passing through the hands of six different categories of specialised workers. The preparatory processes like spreading on the open terrace or on corrugated iron sheets on house tops to divest the raw material of its moisture, sun heating and firing in trenches are invariably carried out in the factory. They work either on their own or in the establishment of another and are remunerated according to their output on piece work basis. They work under or for an establishment of their choice where the conditions and terms are suitable and favourable. As frequent change over of employer is not resorted to by the workers, bond of relationship between both the sections is generally friendly and harmonious. The organisation of agate industry though marked by vertical integration of different processes and techniques pursued by persons engaged in different operations is thus based on mutual cooperation and cordiality of relations at different levels.

(iii) Cooperation

7.5 Formation of cooperative society for procuring raw material from Jhagadia mines is the only phase of this industry which has been recently brought under the purview of cooperation. An association of 37 members engaged in this industry was formed in 1949. Thereafter, a cooperative society was registered as " Akik Udyog Vikas Sahakari Mandli Ltd." on 24th August, 1951 with the object of procuring a lease to work the mines. From 17th July 1961 it has secured a mining lease for a period of 20 years. Prior to the grant of the mining lease, under the permit system then in vogue, permission to extract 20 brass was issued to the society by the Director of Geology to be renewed every year after 31st May. One brass approximately weighs 145 Bengal maunds. At present, the agate stones are distributed to the members of the cooperative society on an indent basis, that is, to those members who place their indents before the prescribed date and agree to take delivery against cash payment. The society's representative is stationed at Jhagadia to supervise the working of mines and arranges for the movement of raw material to Cambay after sorting it at the pit's mouth. The total average output per year comes to about 20 to 22 brass or 2900 to 3190 Bengal maunds of raw material. Before the society was registered, there were only 37 *karkhanas* in Cambay which have now risen to 67. The membership has risen from 37 to 169 (1961-62). This large increase in the number of establishments and membership is indicative of the confidence inspired by the working of and greater facilities in procuring raw material offered by an institution organised on a cooperative basis as against individual contractors operating on a monopolistic basis. There are five other private lease holders or contractors who work the mines and sell their raw material to karkhanedars of Cambay on cash or credit basis. Cooperative activity is thus restricted to the karkhanedars or Akikias, whose only objective is to obtain raw material for its members by working mines taken on lease at Rajpipla. The actual workers who are likely to benefit by the formation of a cooperative society by the elimination of the middlemen have so far remained outside the pale of cooperation. The cream of profit thus goes to a few financiers who work as dealers and run their own factory.

CHAPTER VIII

ECONOMICS OF AGATE INDUSTRY

Manpower

8.1 The manpower employed in this industry at Cambay can be divided into skilled and unskilled. The unskilled workers undertake miscellaneous type of work like collecting and removing stones, supplying and arranging tools for artisans, sorting of pebbles, etc. As the different processes and techniques require skilful handling, it is very essential for workers to undergo some training and acquire necessary experience before they become skilled artisans. All such persons under training have to pass through a period of apprenticeship of about 6 to 8 months, before they get regular employment as skilled workers. Even in mining, though the work involves manual labour, finding out the real type of stones from different trap beds is a specialised and skilled job, which can be undertaken only by experienced Adivasi (Bhil) labourers working in mines in and around Jhagadia in Broach district.

8.2 In each technique of the industry from excavating of raw stones from the mines to the final technique of drilling, skilled workmanship is thus very essential. It is marked by vertical integration of all the different processes involved in the making of finished products.

8.3 The agate industry has suffered a progressive decline in its prosperity since the middle of the nineteenth century as can be seen from the fact that the total number of families engaged in this industry have dwindled down to 446 from 600 in 1878 as stated by the author of the Gazetteer. With the decay in trade and numerous other factors noticed elsewhere, this industry suffered a severe set-back from which it has not revived so far. Such set-backs were not unknown in the past. In fact, the downward trend seems to have started much earlier and continued till present times. For, as stated in the Gazetteer, even during 1845–1878, no less than 167 families of agate workers abandoned their craft, 125 took up agriculture in Cambay, 25 went to Bombay and took up stone polishing and glass mending, 10 went to Baroda and took up tobacco-selling and 7 went to Ahmedabad and took up silk weaving. Fall in demand of finished articles, insufficiency of work, low productivity and competition from synthetic stones from Germany which have flooded the market are the causes responsible for the decay in this industry. Oil fields at Lunej nearby Cambay and at Anklesvar at a distance of about 14 miles from Ratanpor in recent times, though not a happy sign for the agate industry, have opened up a new avenue of employment for labourers working in this industry. On enquiry it has been found that about 25 to 39 workers have shifted their place of work to oil fields to better their economic condition.

Wage Structure and Earnings

8.4 Owing to the diversified and specialised nature of techniques and processes involved in the industry, the artisans work mostly on piece rate basis. The wages paid differ from one branch to another according to the skill of the artisan and fineness of performance. Daily average earnings of skilled artisans vary from Rs. 6 to 8 and for the apprentice or semi-skilled workers from Rs. 3 to 4. Absence of payment on daily wages and remuneration on piece wage system is the age old feature of this industry which it has retained till now. Wages paid for the main processes involved in this industry are detailed below.

Piece work Rates for Different Processes

Sl. No.	Type of Process or Work	Unit	Piece rate (in Rs.)
1	Extracting and collecting stones from the mines	35 lbs.	3.00
2	Cutting and shaping stones (Khondiya)	1,000 (pieces)	45.00
3	Roughing and smoothing the surfaces (Ghasiya)	1,000 (pieces)	40.00
4	Polishing (Opiya)	½ Bengal Md.	20 to 25
5	Polishing round shaped pieces (Doliya)	1,000 (pieces)	20.00
6	Drilling (Vindhar)	(a) 1,000 (pieces) Long shaped	40.00
		(b) 1,000 (pieces) Round shaped	16.00

Caste-wise Distribution

8.5 Another peculiarity of this industry is participation by people of all castes and religions. It is not restricted to one particular section or caste of society. Out of a total number of 446 households engaged in this industry as many as 161 belong to Patel community, 96 are Ranas, 39 Muslims, 21 Thakors, 20 Valmiks, 15 Chunaras, 13 each Baraias and Ravals, 11 Nagarbandharas, 10 Bhavsars and 47 others. The latter include such castes as Bania, Rajput, Panchal, Dudhara, Kadia, Prajapati, Pakhali, etc. Distribution of artisans by community is given in Table No. II. A total number of 2,903 persons are dependent upon this industry, of whom 739 are workers—707 males, 32 females and 134 children. The age composition of these families goes to show that out of a total of 873 earners, as many as 799 or 91.5 per cent belong to the age-group 15 to 59 as against 32 below 15 years and 42 over the age of 60.

Income Groups

8.6 The total annual earnings of 446 households stood at Rs. 581,900, the average annual income per household being Rs. 1,305. Table No. XVII shows that 44.84 per cent earn Rs. 1,000 and above per annum, and the rest below Rs. 1,000, those earning more than Rs. 2,000 and above per year constitute only 15% of the total. Distribution of households according to income range further reveals that while 333 households or 74.7 per cent of the total earn Rs. 1,500/- and less per year, 45 households come under the income range Rs.1,501–2,000, 38 in the income range Rs. 2,001–2,500, and 29 in the range Rs. 2,501 and above. One household had not stated its income. The percentage of households earning over Rs. 1,500/- per year thus comes to 25.10.

Mining

8.7 The agate industry is unique in its composition in that the raw material required for working it is available in the mines of Jhagadia in Rajpipla Taluka of Broach District, and the finished products are processed and manufactured at Cambay in Kaira District both in Gujarat State. Since mining is one of the basic operations of this industry, its working should also be examined before we close this section.

8.8 Mining at Jhagadia is carried out by (i) a cooperative society formed at Cambay and (ii) contractors who have obtained a mining lease from Government. Shri Akik Udyog Vikas Sahakari Mandli Ltd., Cambay, though registered in 1951, started actual mining operations in 1957–58, when regular mining lease was given. Between 1951 and 1957, it obtained a permit to extract stones from certain special area from the Collector, Broach. The terms and conditions on which a prospecting license and mining lease are given by Government are reproduced in Appendix IV-A and B. The working of the cooperative society since 1957 reveals that the extraction of raw material varies from year to year, with corresponding fluctuations in (a) labour charges paid to the miners, (b) expenses of management and (c) royalty paid to Government. While labour charges have increased from Rs. 15,174 in 1957–58 to Rs. 26,374 in 1961–62, the overall expenditure on all the different heads incurred by the society has more than doubled from Rs. 32,855 to Rs. 66,279 during the same period. On the other hand its profits went up from Rs. 922 in 1957 to Rs. 4,694 in 1960, but fell down to Rs. 1,528 in 1961, probably due to higher labour charges, rise in the expenses of management and increase in the amount of royalty and local fund cess paid to Government. With greater economy in management, it should be possible for the society to reduce cost and raise the profits appreciably.

8.9 The following statement compiled from the statistics furnished by the Royalty Inspector is instructive:-

Number of leaseholders, area, quantity and value of stones excavated at Jhagadia

Year	No. of lease holders	Area (in Acres & Gunthas)	Quantity excavated (in tons)	Quantity despatched (in tons)	Value (in Rs.)	Average value at pit's mouth (in Rs.)	Rate of Royalty	Total Royalty received (in Rs.)
1	2	3	4	5	6	7	8	9
1959	3	1157-02	494-10	448.20	162,885.18	336.13	20% of sales	15,073.67
1960	3	1157-02	180-10	161.00	78,895.40	246.66	value	7,032.39
1961	3	1157-02	221-10	387.24	43,997.44	148.92	,,	4,687.21
1962	4	1789-12	587-81	536.29	137,547.92	394.98	,,	20,484.09

8.10 On the whole, there seems to be a slight improvement in the condition of the industry in recent years. While the area worked has increased from 1157 acres in 1959 to 1789 acres in 1962 with the corresponding increase in the quantity excavated, which has gone up from 494 tons to 587 during the same period, there is a small decline in the value of the raw material in terms of rupees which has gone down from Rs. 162,885 to Rs. 137,547. The royalty recovered by the Government during the same period has also increased from Rs. 15,073 to Rs. 20,484. These figures are exclusive of the area worked in the Mardak Beyt of Kutch district, where the contractor worked in 903 acres, extracted 1652 Bengal maunds of raw material and paid a royalty of Rs. 2,000 to Government. All these figures may reasonably indicate the possibility of improvement in the future prospects of this industry provided some of the handicaps in its way are removed and necessary encouragement given to the industry in finding alternate markets inside and outside the country. It has been estimated that about 400 workers are employed in mining, of whom 300 male workers are skilled and about 100 female workers unskilled, who help the former in filling up and carrying baskets of raw materials. It is also estimated that about Rs. 70,000/- are paid every year to the miners by way of wages they receive on piece work basis at the rate of Rs. 3/- per basket of 35 lbs. The wages the society has paid since its inception work out to be on an average Rs. 22,479 per annum. Since it has been excavating about 22 Brass of raw material every year as against a total requirement of 60 Brass, there is every possibility of expansion of cooperative activity in this operation in view of the wide margin between the quantity extracted by the society and the private leaseholders. In other words, more cooperative societies can still be formed and the scope of operation extended to those who should benefit by the fruits of their own labour. Since the cooperative society has been organised by dealers of Cambay and not by the persons who work the mines at Jhagadia, the real object and spirit of cooperation are lost sight of. It benefits the employers whoever they may be, society or private contractors but not the persons who actually work the mines, the Adivasis of Jhagadia and surrounding areas.

Tools and Implements

8.11 Except in the case of one or two processes wherein mechanisation has been introduced during recent times, the implements required are those which are traditionally in use and locally available and such as can be made by the craftsman himself or the local artisan from material locally available. They are simple and do not cost much as will be seen from Table XIII and the illustrations of various processes given in this Monograph.

8.12 The following table extracted from Table XIII will give an idea of the overall investment required to be made in different processes of this industry:-

Investment in tools and implements by processes

1	Mining	Rs.	11/-
2	Baking	Rs.	53/-
3	Breaking and shaping..	Rs.	36/-
4	Grinding		
	(a) By hand operated emery wheel ..	Rs.	22/-
	(b) By electrically operated emery wheel	Rs.	1,045/-
5	Drilling	Rs.	20/-
6	Polishing		
	(a) By hand operated emery wheel ..	Rs.	21/-
	(b) By electrically operated emery wheel	Rs.	790/-

The only processes wherein some sizeable amount of capital is required are those which relate to grinding and polishing which have been recently mechanised by the use of electric power, the main item of expenditure being an electric motor of ½ H. P. and accessories costing about Rs. 500/-.

Housing and Working Conditions

8.13 The housing conditions and environment of the place of work reveal that while there is concentration of establishments in certain localities of the town within a radius of a furlong or two, there are certain units like those of the Vindhars or drillers located in the neighbouring villages on the periphery of Cambay. In most of the cases, the nature of establishment is of workshop-*cum*-dwelling type. Out of 446 households, 89 per cent have their place of work located either in the

front or in a verandah or upper portion of their residence. Only 11 per cent of households have their place of work at some distance from their place of residence. All the houses have good ventilation and lighting facilities. Analysis of the housing conditions according to tenure status discloses that 362 households or 81.16 per cent live in owned houses and 84 households or 18.84 per cent in rented houses. Distribution of households according to number of rooms according to household schedule revealed that 107 households or 23.99 per cent lived in single room tenements, 180 or 40.36 per cent in houses with two rooms, 60 or 13.45 per cent in houses with three rooms, 39 or 8.74 per cent in houses with four rooms, 18 or 4.04 per cent in houses having five rooms and more, whereas in case of 42 households, the number of rooms was not specified. Of the total households, 64.35 per cent of the households are found living in substandard houses having two rooms and less, occupied by 1,806 persons or 62.21 per cent of the total employed in this industry. As regards living space, it has been found that of 446 households, 189 or 42.38 per cent of the total have 251 sq. ft. and above per average family of six persons.

Characteristic Features of the Industry

8.14 Some of the distinguishing features of the industry may be examined below:-

1 The entire industry is labour intensive. This is one of the reasons why the participation by women folk who work merely as unskilled labourers is insignificant. In this respect the industry has preserved its former characteristic intact even to present times.

2 It is essentially a household industry which is worked in individual households with the help of the members of the family and hired workers wherever necessary. Establishments where more than five persons are employed in workshops set up outside the house are quite a few in number. Even some of the latter type of units are located in the household itself, some portion of which is used as workshop and godown and the rest utilised as residential quarters by the family.

3 Hired labour is employed by two sections of workers, viz., (i) by factory owners or Karkhanedars, who are, as seen elsewhere, the real financiers and (ii) by the householders who work themselves and also employ hired workers, in addition to participation by the members of the household.

4 Another distinguishing feature of this industry is that while it is the principal occupation of the majority of the households engaged therein, it also supports a number of cultivating families in the surrounding villages having very small holdings which are uneconomic and cannot sustain themselves only on the income of agriculture. Such households supplement their income by working (except in monsoon) in drilling operation either in their household or in their farmhouses on field.

5 Agates are not in appreciable demand in its homeland though they are so very popular abroad. The reason for such a phenomena is to be traced to psychology of the Indian people who have from times immemorial fancy for real gems rather than artificial ones.

6 Last but not the least. The greatest consumers of the finished products made from the raw material extracted by the tribals, the Bhils of Jhagadia, are also the tribals, the Negroes of Africa, who claim nearly 75 per cent of the total export. Use of agates by the civilized man is thus comparatively much less.

CHAPTER IX

CONCLUDING REMARKS

9.1 The survey of the agate industry which has been made in the preceding pages traces its glory in the past and decay in the present. As already examined, the decline of the industry during the latter half of the nineteenth century as well as during the whole of the present century has been brought about by the general decay of trade at Cambay, its disappearance as the principal centre of maritime trade owing to the construction of railway line between Ahmedabad and Bombay and severing off of its former connections with the hinterland. The prosperity of an industry depends on the markets it finds for the disposal of its products. The former markets having disappeared owing to the changes in trade routes and competition in recent times from the artificial stones manufactured by Germany which have flooded the markets these days, the future of the industry has been greatly jeopardised. The danger from the latter is indeed very great and cannot be staved off unless some positive steps are taken for the creation of new and alternative markets at home and abroad. Proper publicity in the foreign markets and changes in design to suit modern tastes are equally essential. While it may not be possible to modernise some of the age old techniques, some labour saving devices can be introduced with advantage, resulting in greater output and profit. Every care will have, however, to be taken to see that the essential household character of the industry is not disturbed by transferring some of the remaining processes which are at present operated in the household to the factory. If this is done, the very objective of promoting household industry will be frustrated, as such a course will benefit only the capitalist factory owner and not the actual artisan whose condition would remain the same as ever before. Arrangements should also be made for the training of local artisans in new techniques of the industry as operated in foreign countries. Some of them can be sent to Germany to learn the art of artificial colouring by chemical processes. In fact, there have been certain households who have in response to the inquiry made stated that they are willing to send their family members abroad in case such a facility was forthcoming at State expense.

9.2 As already noticed before, there is ample scope for the expansion of cooperative activity in this industry, both at the base as well as at the top. Cooperative of miners if organised at Jhagadia will benefit the actual workers on the field. Formation of a cooperative society of craftsmen at Cambay so as to coordinate all the various processes at one place will eliminate the middleman and improve the economic condition of the workers. In case such an organisation is possible, necessary finance will have to be provided to the society so that it may not have to suffer for want of adequate funds. All possible facilities will have to be rendered to the society in arranging direct export to foreign markets without having recourse to any intermediary. Such help can best be given by the Handicrafts Board.

9.3 Agate industry is so constituted since it started at Cambay that the different processes of manufacture have been specialised by different sets of artisans. This specialisation made Cambay famous for the manufacture of a variety of articles and decorative pieces so highly prized all the world over. Unfortunately, the workmen who executed such artistic pieces no longer exist as a result of the decline of this industry and the loss of former patronage. The principal articles now produced are beads of various sizes and shapes and pieces required for setting them in jewellery such as necklaces, armlets, wristlets, finger rings, earrings, etc. If proper encouragement is given, there should be no difficulty in reviving the former talent which has reached perfection in the past. Rather than confining his talent to the making of beads, the Cambay lapidary should revert to the production of some of the articles which his forefather made in the past. Alternate uses of agate should also be thought of. Pestle and mortar so very useful for pounding medicines and colours required for inlay work in gold and silver ornaments would

fetch high prices. Agate being rustproof can be used as jewel in the manufacture of watches and also as fulcra for chemical balances. Chips of agates are in demand in some parts of the country in the making of Ayurvedic medicines. Agates are also used in polishing earthenwares at Anand, 32 miles from Cambay. After applying an oily coating on their surface, smooth agates are rubbed to bring out glaze and shine. Sankheda in Baroda district is famous for lacquer work on wooden furniture and toys which are rubbed with agate after tin is applied to them.

9.4 The fortunes of agate industry of Cambay are at stake owing to a variety of reasons noted above. It has suffered a further blow in the heavy import duty recently imposed by the Nigerian Government, which has raised it from Rs. 20/- in 1955 to Rs. 75/- in 1962. The further handicap of foreign rival in the shape of synthetic stones is equally great. In order to appreciate the danger from all these quarters, it is necessary to remember that apart from its being an old-established household industry and the employment it offers to about a thousand families in Cambay and Jhagadia areas, agate is a foreign exchange earning commodity which deserves active consideration and help for its immediate revival against heavy odds.

PLATE NOTES

With a view to have a clear understanding and present a realistic picture of various techniques and processes involved in the working of agate stones from raw to finished stage, the monograph is supplemented with some representative illustrations by way of line drawings, photographs and maps. Besides 11 such illustrations given along with the text, the various techniques and finished products have been represented at plates I to XXI. The plates are broadly subdivided into the following two categories :

A. *Techniques and processes :*— Plates I to XV illustrate different techniques and processes from mining roundabout Jhagadia to making of finished articles at Cambay and cover some of the latest mechanised processes also.

B. *Finished products :*— Plates XVI to XXI show finished products. Artistic pieces of Cambay agates in the possession of local dealers or exhibited at the Victoria and Albert Museum, Bombay and the Museum at Baroda have also been reproduced in this section.

The particulars of each individual plate are listed below :—

A. TECHNIQUES AND PROCESSES : PLATES I TO XV

(a) MINING

PLATE		
I		Agate Mining, Ratanpor, Jhagadia taluka, Broach district
II		An Adivasi quarry worker at Ratanpor

(b) SUN HEATING AND BAKING

III	1	Sun heating agate stones on a terrace of the workshop of a Karkhanedar
	2	Bhalsal method—baking raw agates in cement built trenches
IV	1	Handla method—baking of raw agates in pots placed in trenches
	2	Sorting of baked and unbaked stones for re-baking

(c) CUTTING AND SHAPING

V		Cutting buffalo horn by a circular saw worked by electric motor for making horn-headed hammer
VI	1	Chipping the stone with horn-headed hammer
	2	Shaping the stone into round beads with nail shaped hammer

Note:-
The manner of holding the stone and covering the thumb with a piece of cloth to guard against bleeding may be noted.

(d) SHARPENING THE TOOLS

VII	1	Hammering the edge of an iron spike
	2	Sharpening the edge of an iron spike on Porbandar stone
	3	Smoothing the edge of horn-headed hammer against a steel file

(e) POLISHING

VIII		A polisher on hand-operated emery wheel with bow and string, an earthen bowl and different types of hand-made polishing discs showing the extent of polish acquired by each
IX	1	Rough polishing of round beads on Porbandar stone
	2	Fixing round beads between wooden clamps
	3	Indenting grooves on Porbandar stone
X		One of the polishing barrels and electric motor

(f) DRILLING

XI 1 A Driller at work
2 Moments of Relaxation

XII Farmhouse-cum-workshop of an agriculturist driller

XIII Physical deformity in a driller's wrist and underneath his knee caused by constant pressure against coco-anut shell

(g) MECHANICAL UNIT IN OPERATION

XIV 1 Stone cutting
2 Hollowing

XV 1 Drilling
2 Polishing in a drum

B. FINISHED PRODUCTS : PLATES XVI TO XXI

XVI Acquatics and birds made of agate ready for polishing

XVII Artistic agates worked at Cambay in the past

1 A chariot
2 A cannon
*3 A finely polished bowl
*4 An exquisitely worked jug (late Mogul) 18th century A.D.
5 Pestle and mortar
*6 A liquor cup of jade (Mogul) 18th century A.D.
*7 Jade box studded with imitation jewels (Mogul) 17th century A.D.
*8 Dagger hilt of jade inlaid with semi-precious stones (Mogul style)
**9 Leaf shaped necklace
**10 Dice representing figures of king, minister, soldiers, elephants, horses and camels

XVIII Pieces of Cambay Agates exhibited at Victoria and Albert Museum, Bombay

1 Stationery, buttons and other articles made of agate, viz., seal, ink pot, knife, toilet box with mirror, snuff boxes, penholder, fork, paper cutter, whistle, cigarette holder and key chain
2 Agate spoon

XIX An idol of Lord Krishna; a toy for an infant; a spoon and a cigarette holder

XX 1 Natural formations in agate pieces of various shapes
2 Phases of the moon

XXI 1 Necklaces of agate
2 Steamer, lighthouse, crescent, bangle and bangle box presented to H. M. Queen Elizabeth and H. R. H. the Duke of Edinborough during their visit to India in 1961 by Messrs. Good Earth Industries, Cambay

* From Baroda Museum

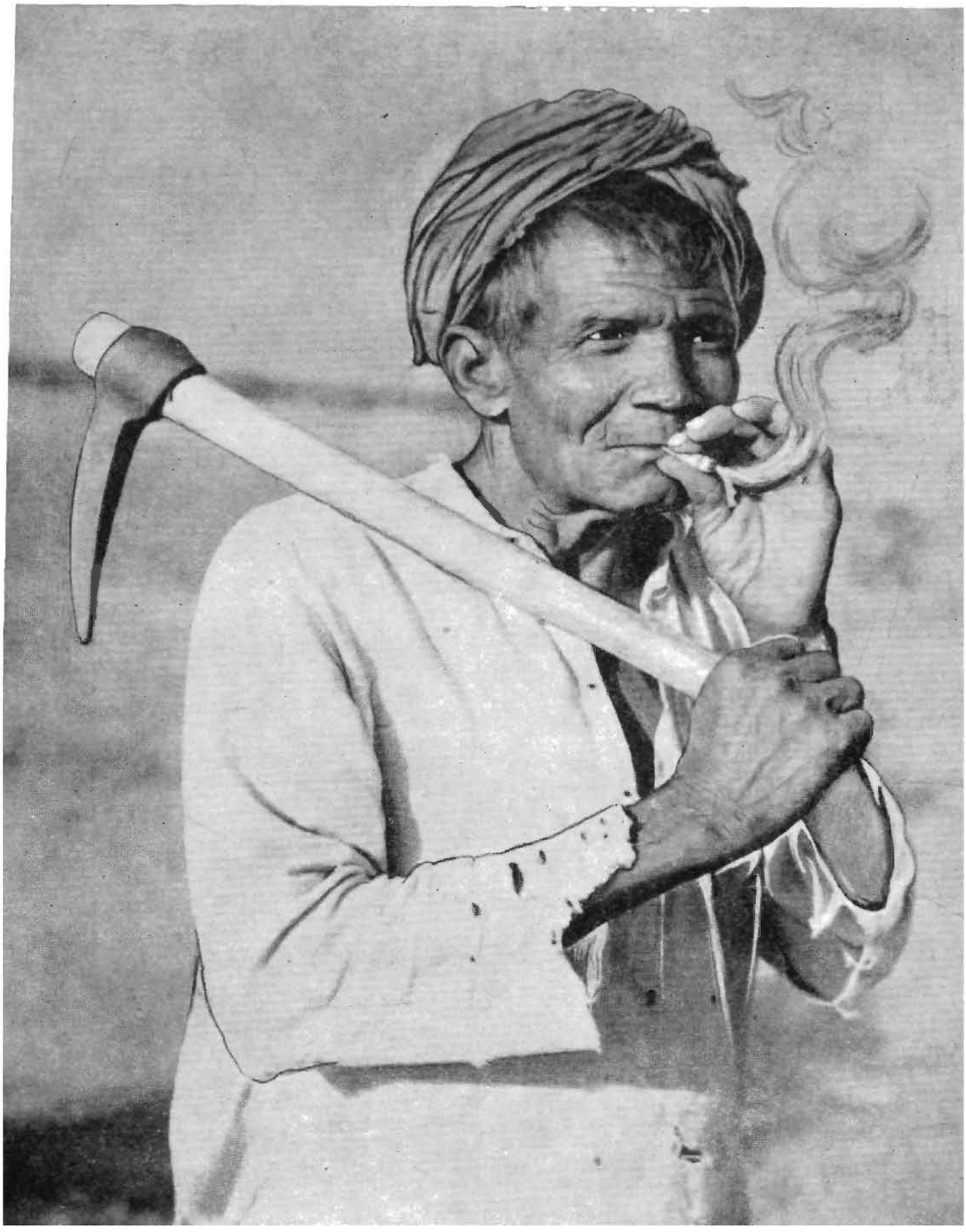
** From the Victoria and Albert Museum, Bombay; the rest from the local dealers at Cambay



Agate Mining, Ratanpor

PLATE I

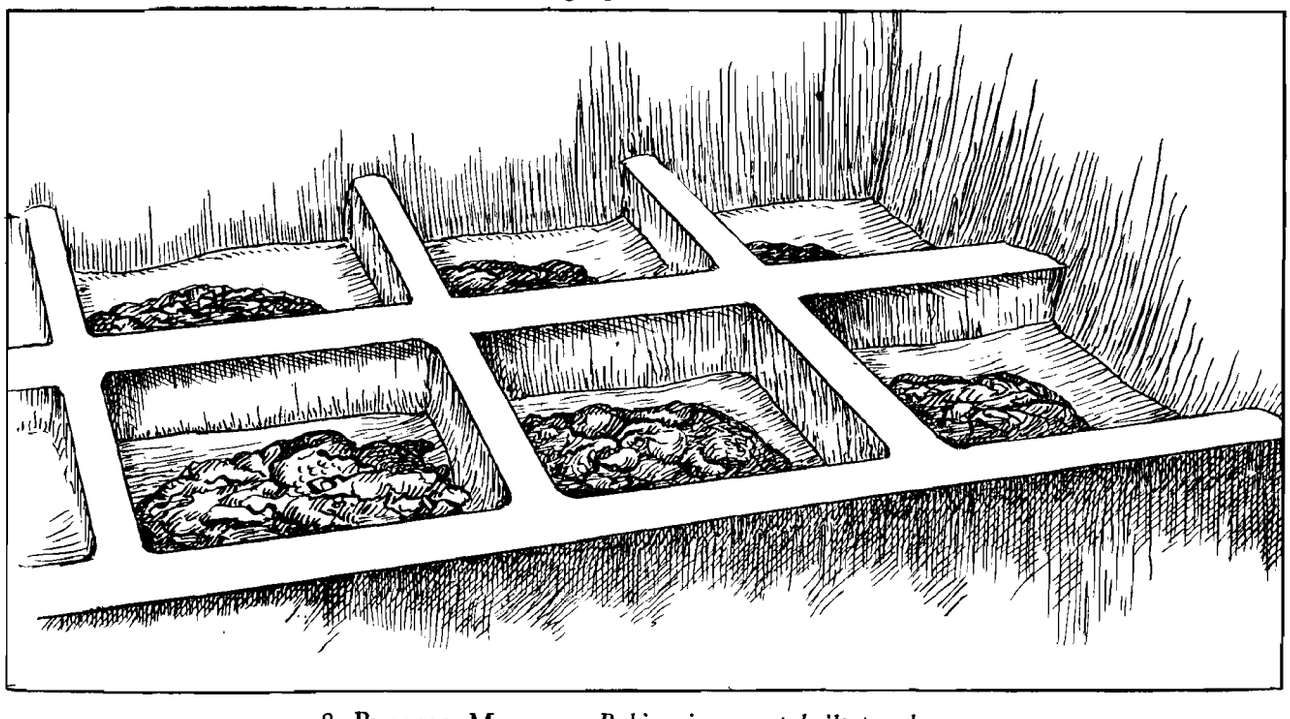
PLATE II



An Adivasi quarry worker at Ratanpor

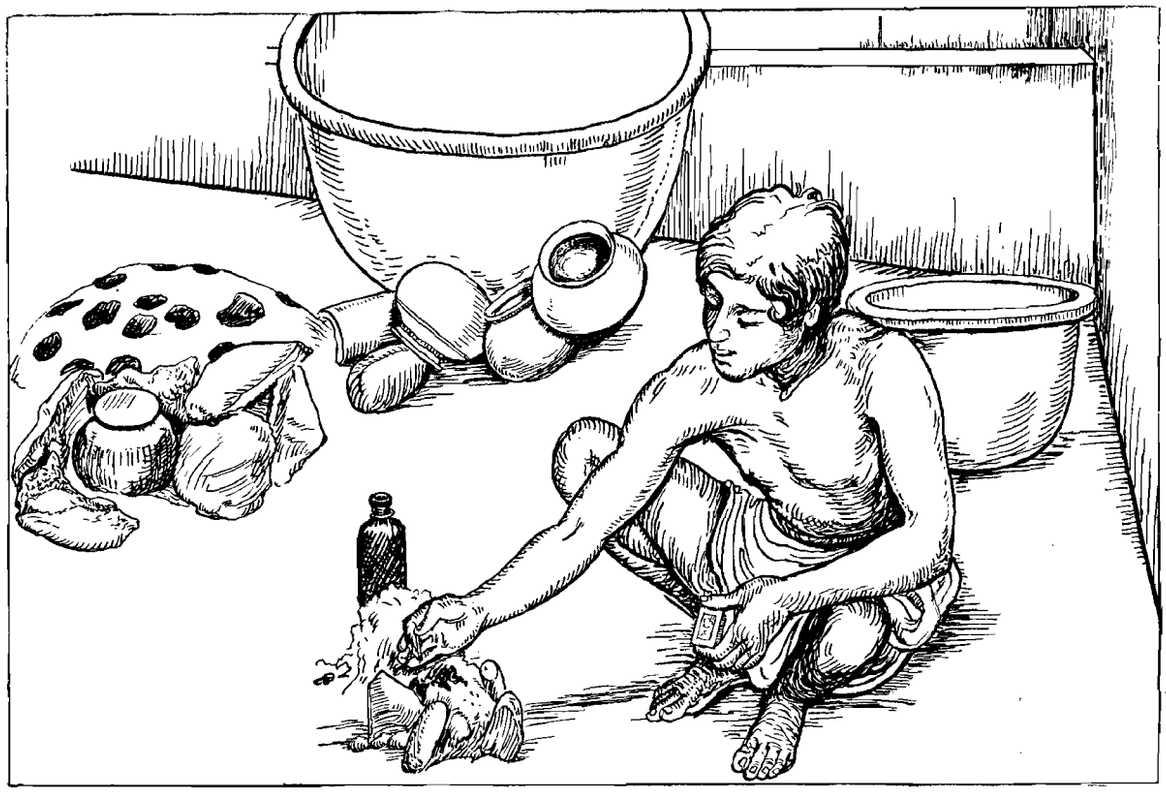


1. Sunheating agate stones on a terrace



2. Bhalsal Method—*Baking in cement built trenches*

PLATE IV



1. HANDLA METHOD—*Baking in pots placed in trenches*



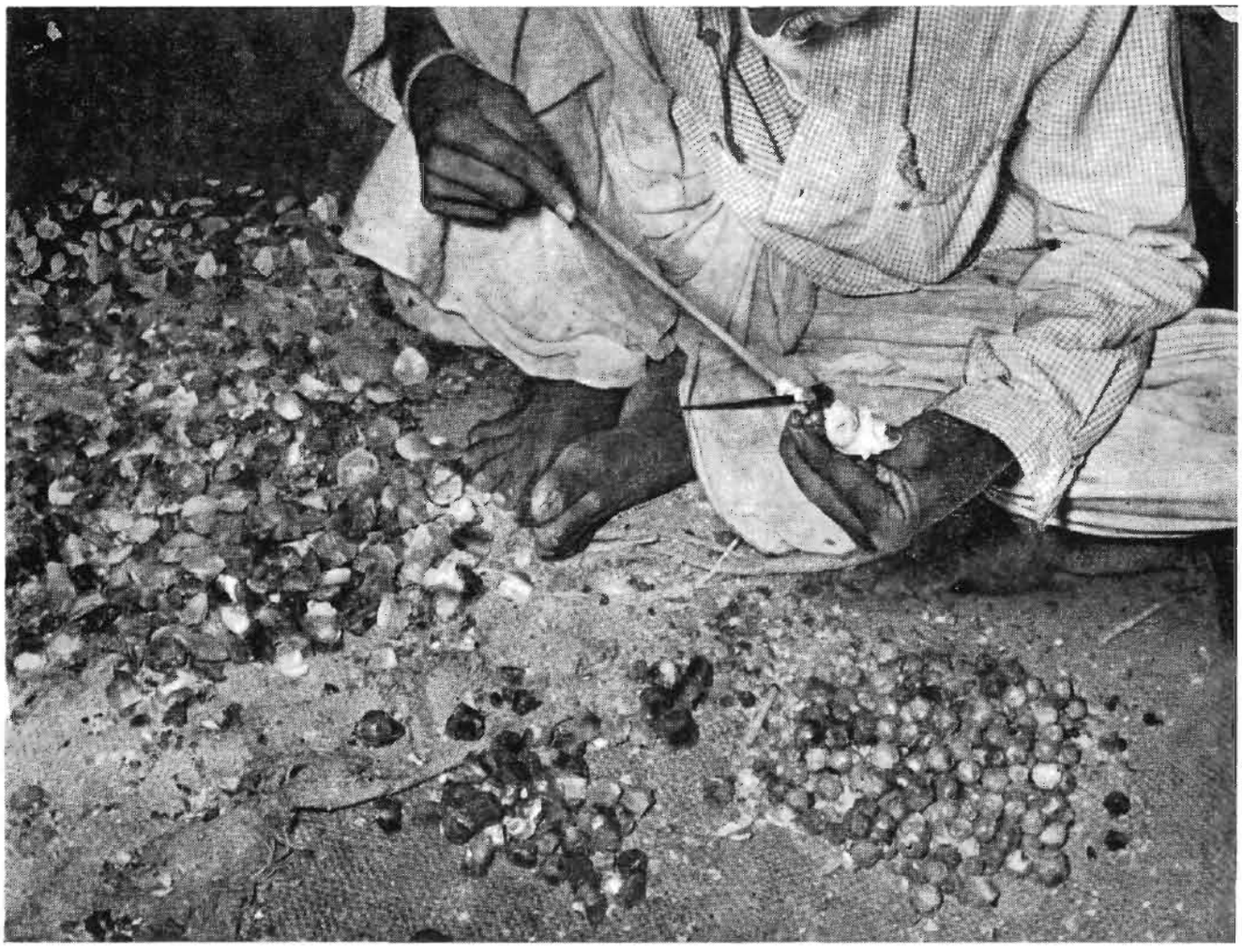
2. Sorting stones for re-baking



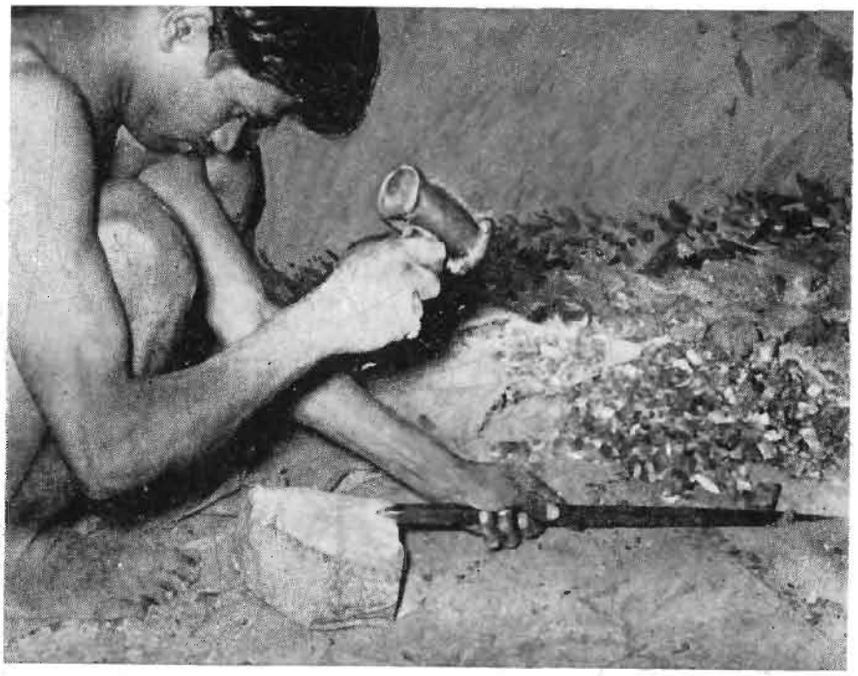
Cutting buffalo horn for making horn-headed hammer



1. Chipping the stone with horn-headed hammer



2. Shaping the stone with nail-shaped hammer for round beads



1. Hammering the edge of iron spike



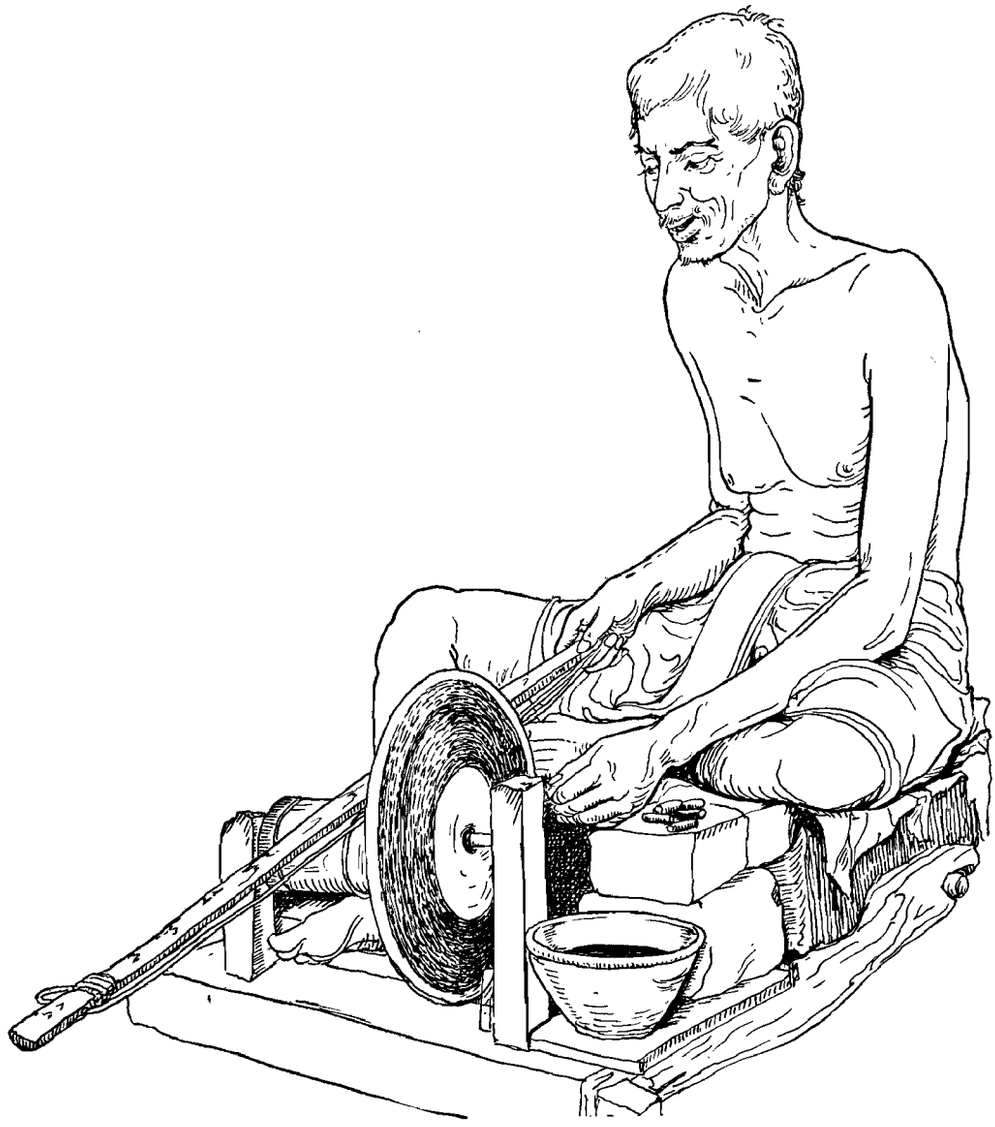
2. Sharpening the edge of iron spike on Porbandar stone

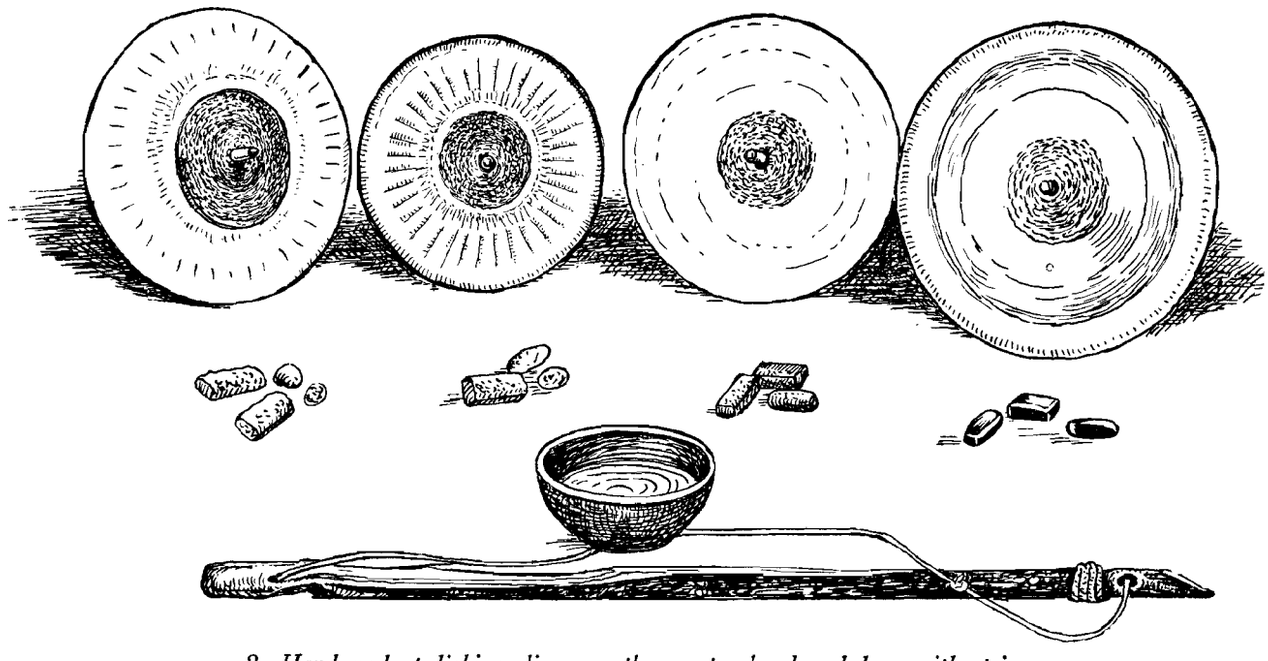


3. Smoothing the edge of horn-headed hammer

PLATE VIII

1. A Polisher on hand-operated emery wheel





2. Hand-made polishing discs, earthen water bowl and bow with string



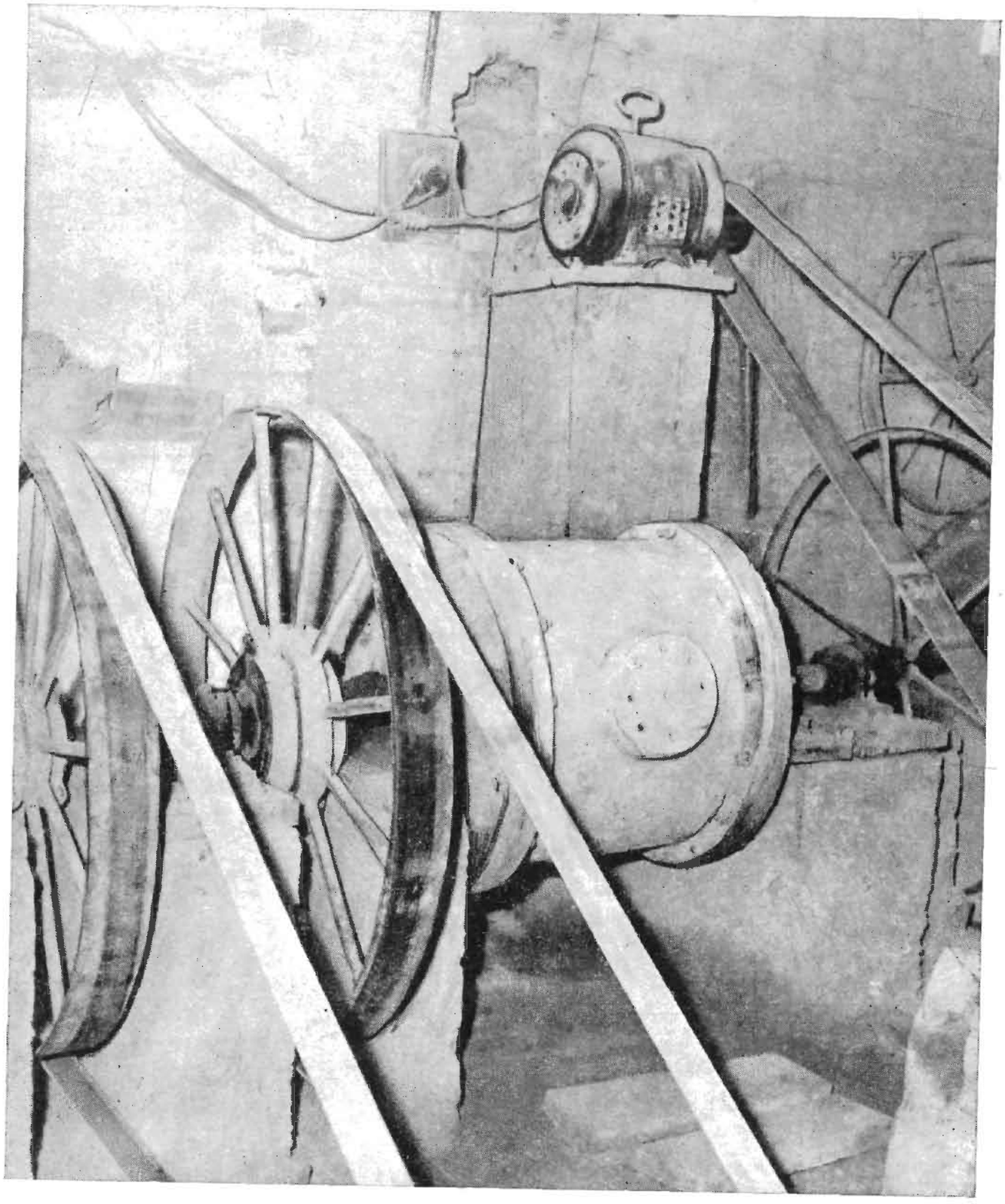
1. Rough Polishing of round beads on Porbandar stone



2. Fixing round beads between wooden clamps



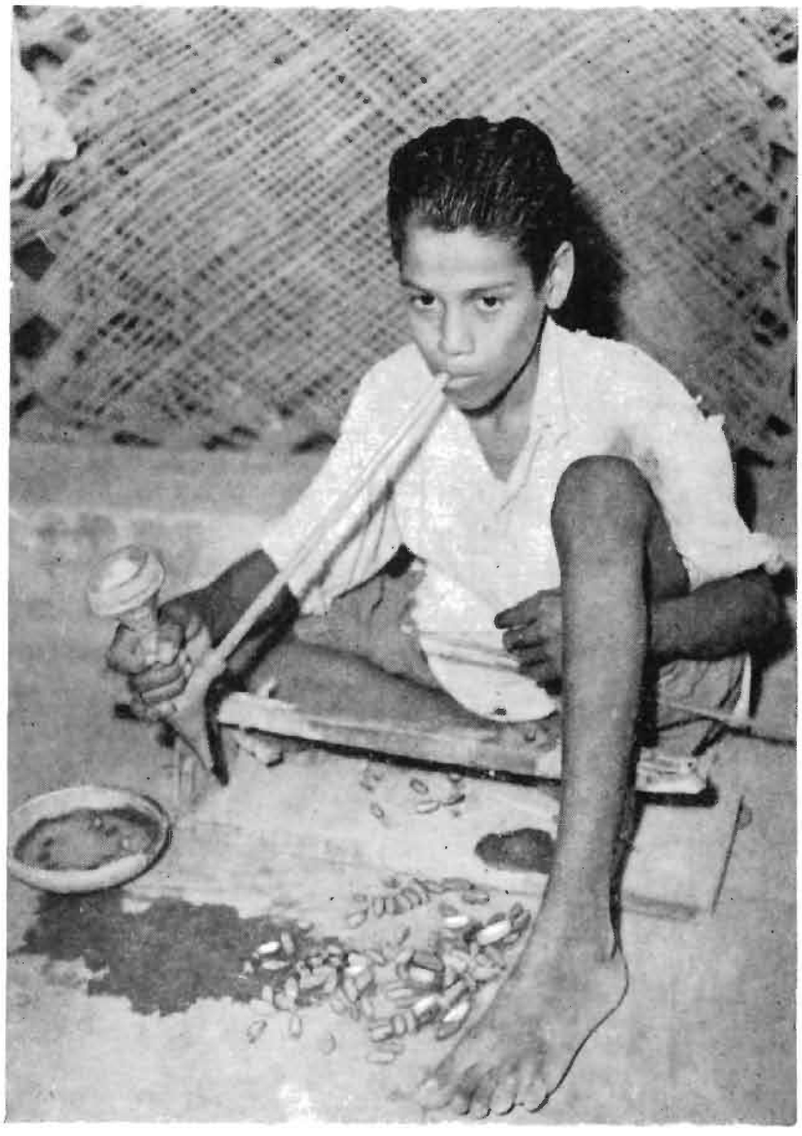
3. Indenting grooves on Porbandar stone



Polishing in barrels

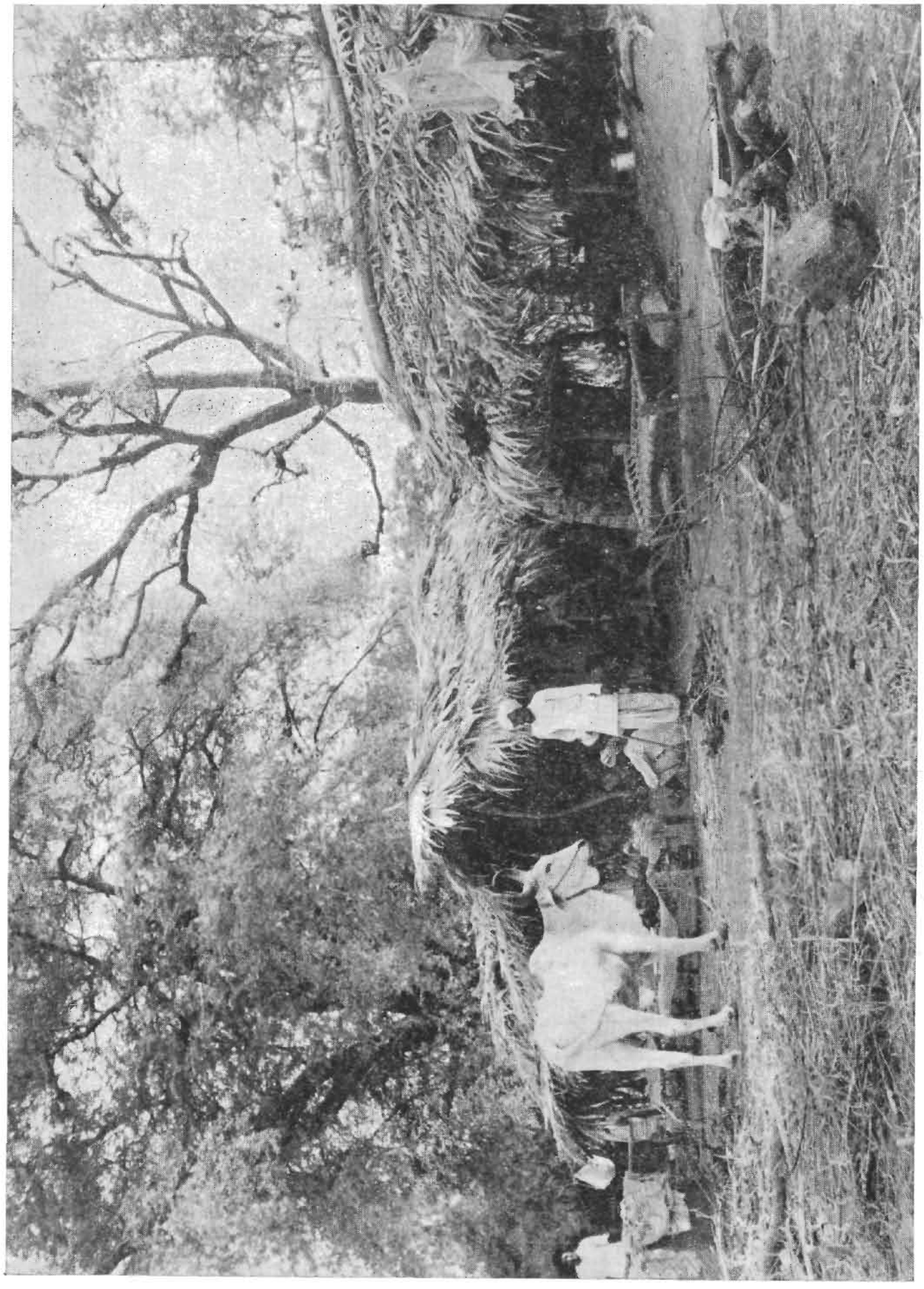


1. A driller at work

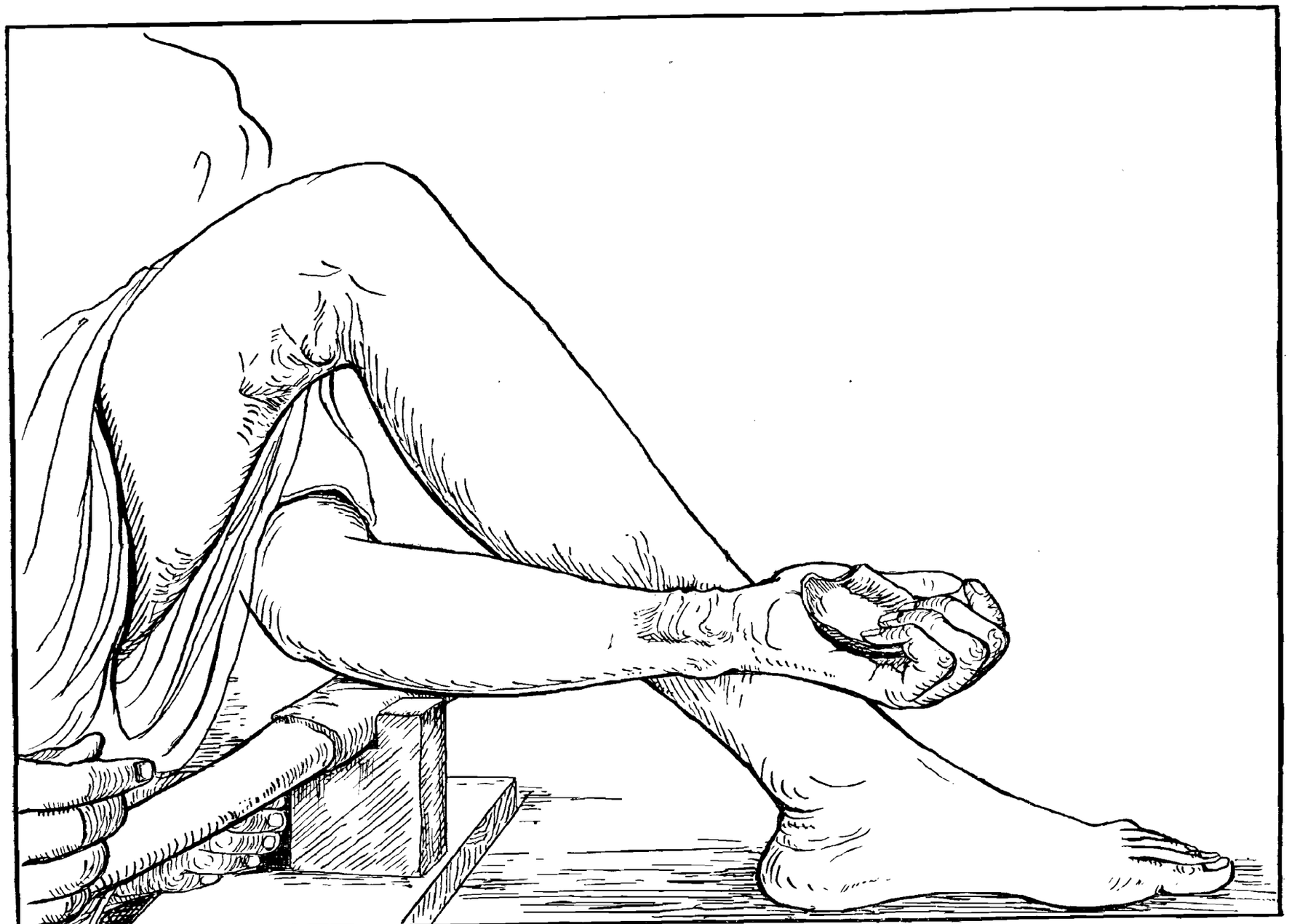


2. Moments of Relaxation

PLATE XII



Farmhouse-cum-workshop of an agriculturist driller

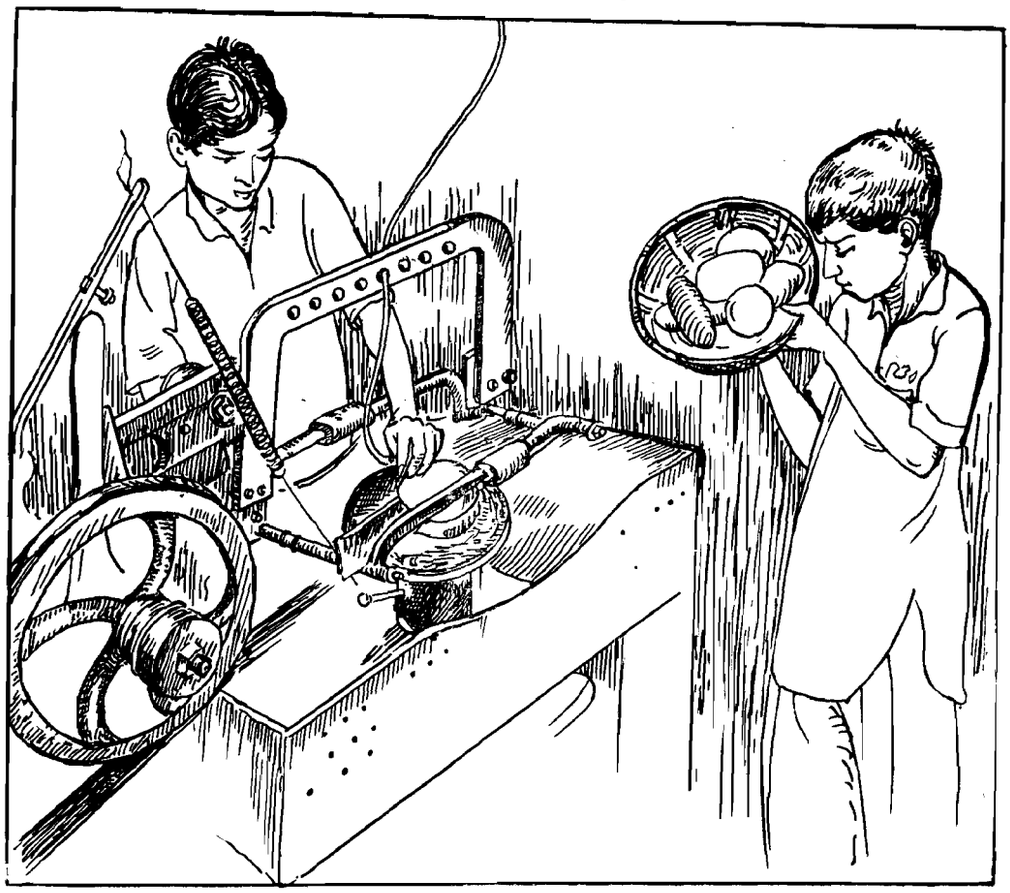


Physical deformity on a driller's wrist and underneath his knee caused by constant pressure against cocoanut shell

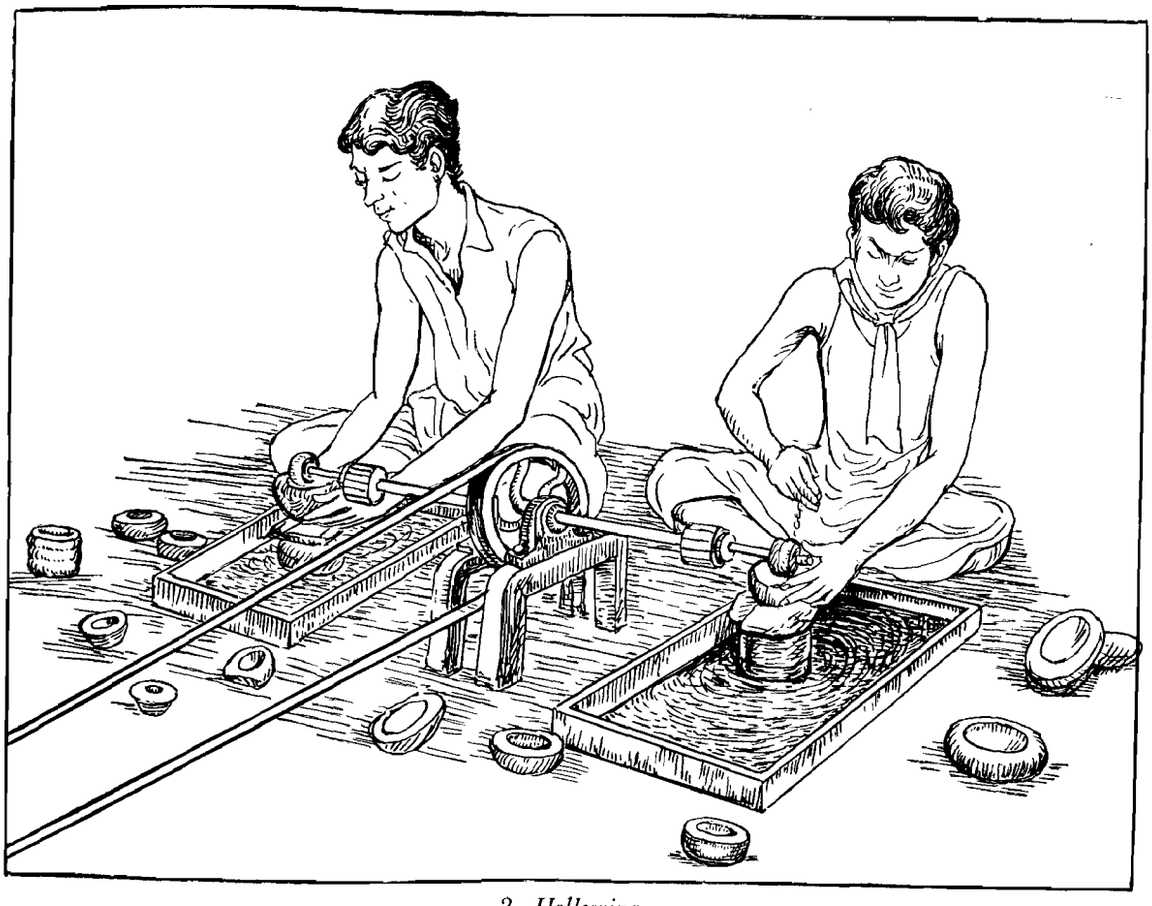
PLATE XIII

PLATE XIV

Mechanical Unit in Operation

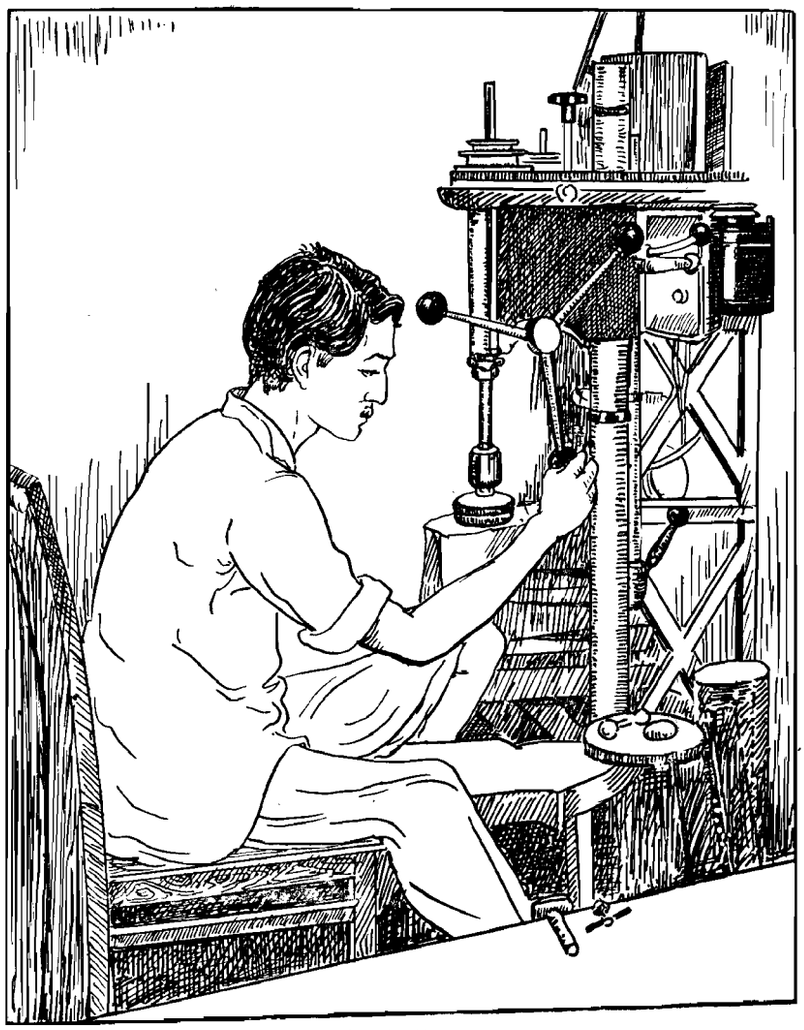


1. Stone-cutting

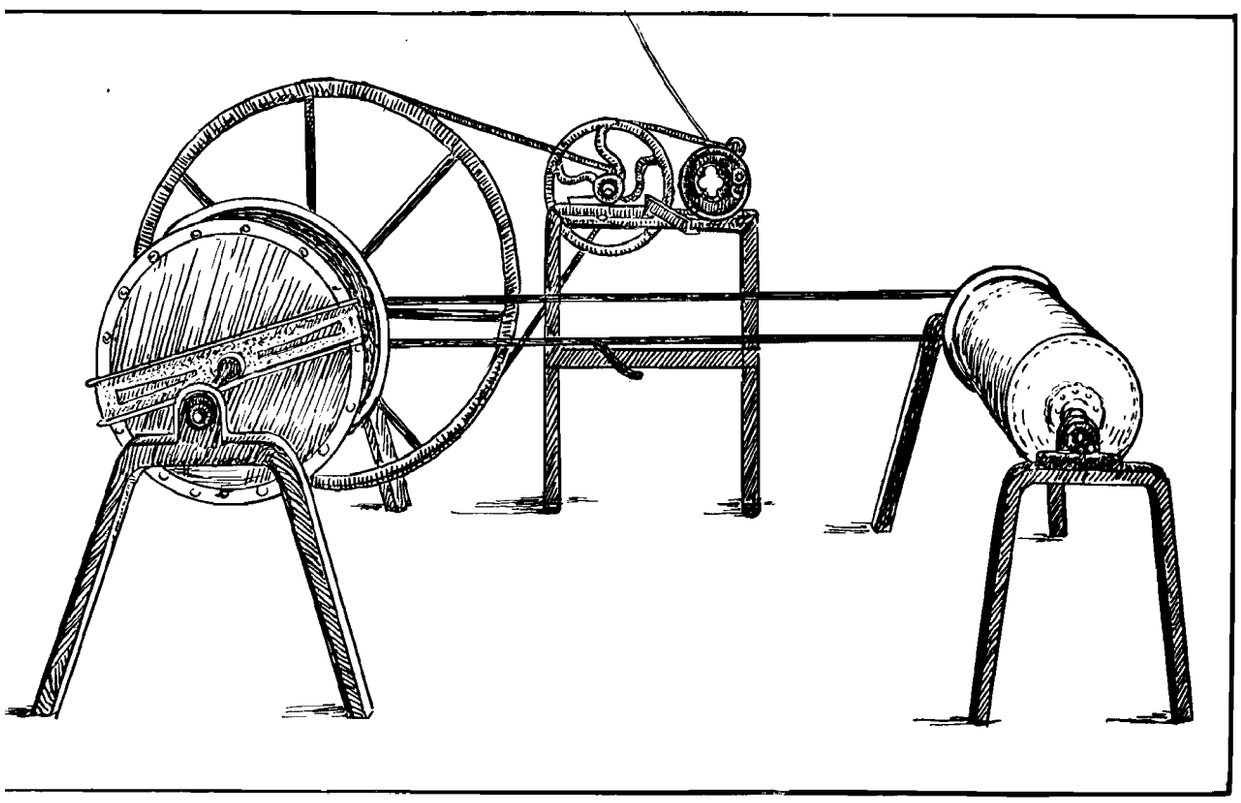


2. Hollowing

Mechanical Unit in Operation-contd.

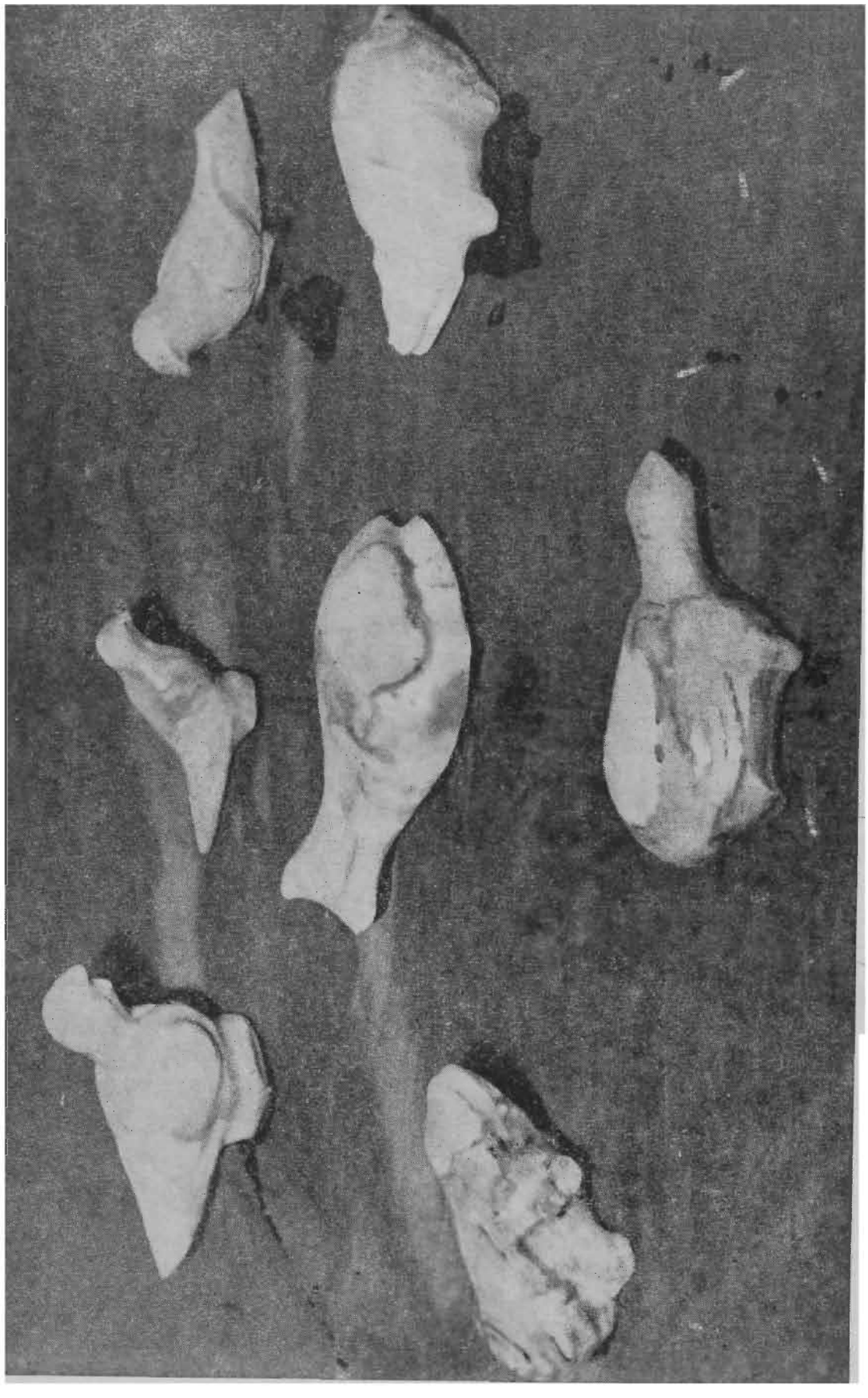


1. Drilling



2. Polishing in a drum

PLATE XVI

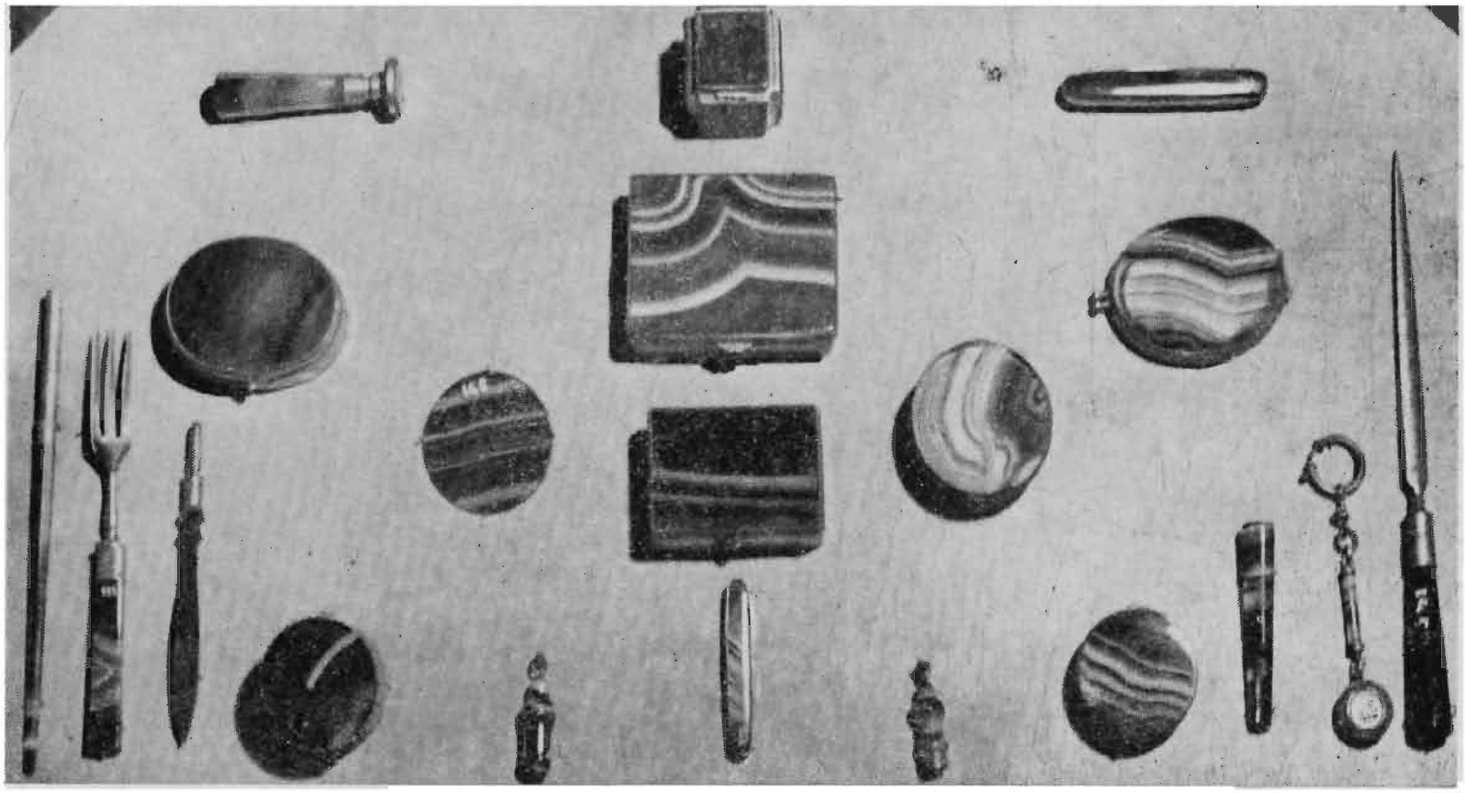


Acquatics and birds made of agate ready for polishing

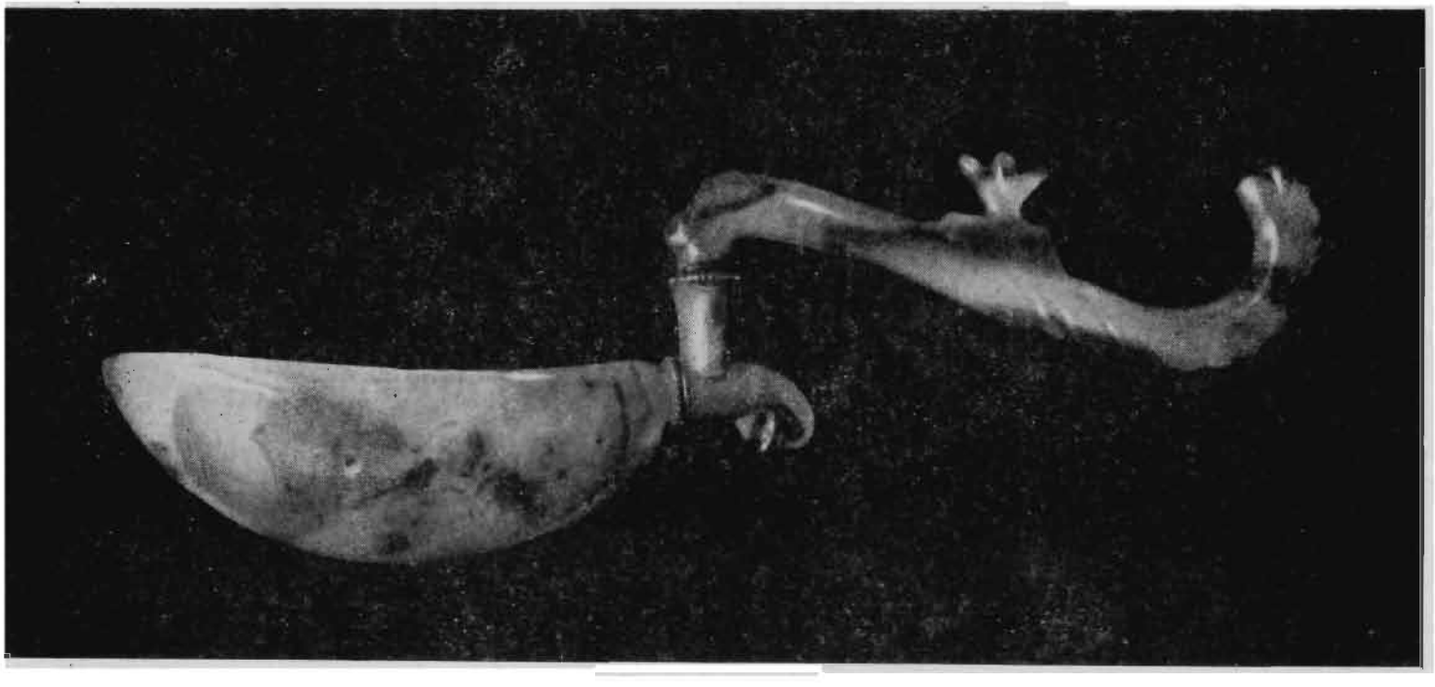


1. Chariot 2. Cannon 3. Bowl 4. Jug—Exquisitely carved 5. Pestle and mortar
6. Liquor cup 7-8. Jade box and Dagger hilt (inlaid with jewels) 9. Necklace 10. Chessmen

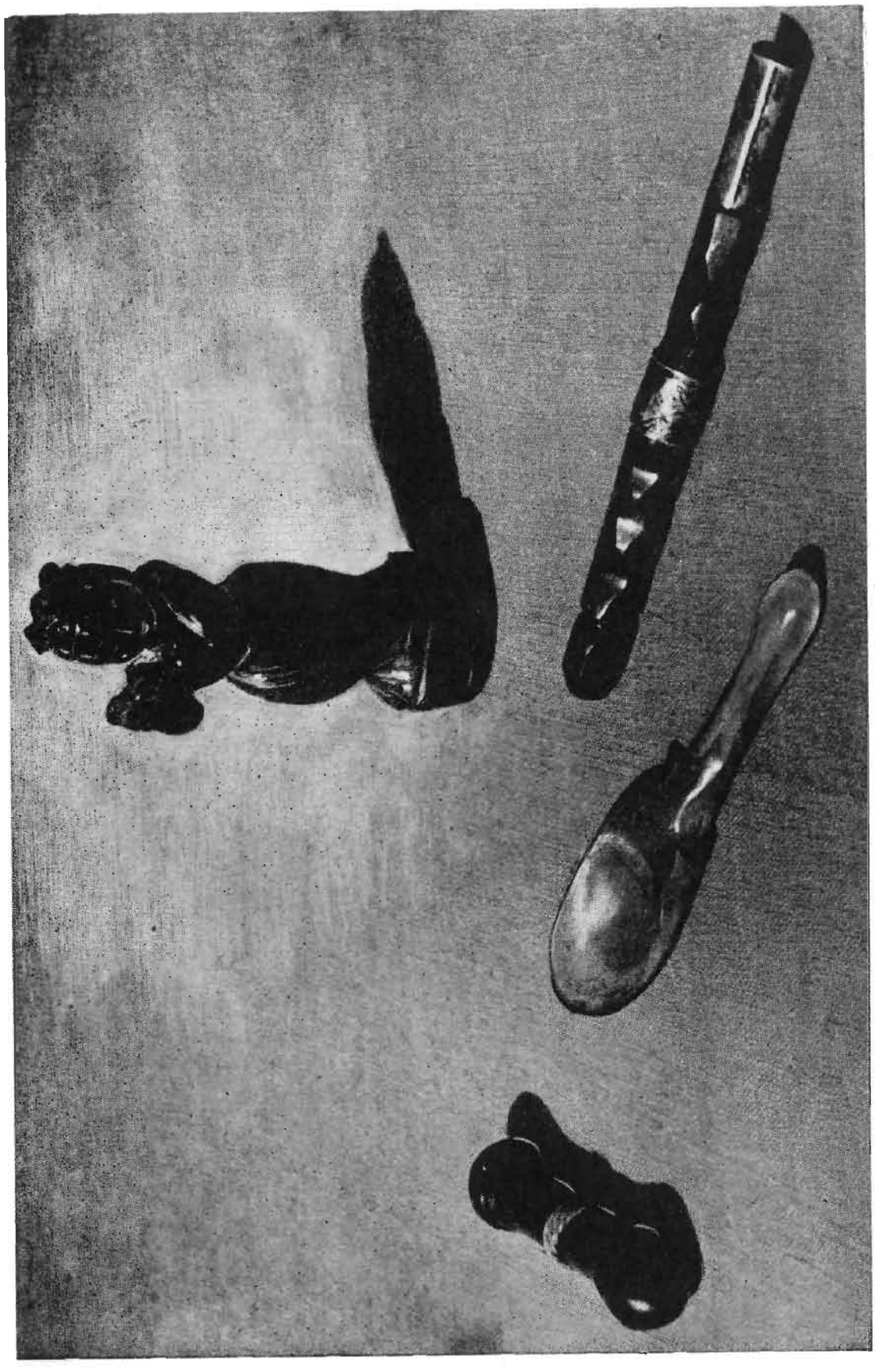
PIECES OF CAMBAY AGATES EXHIBITED AT THE VICTORIA AND ALBERT MUSEUM, BOMBAY



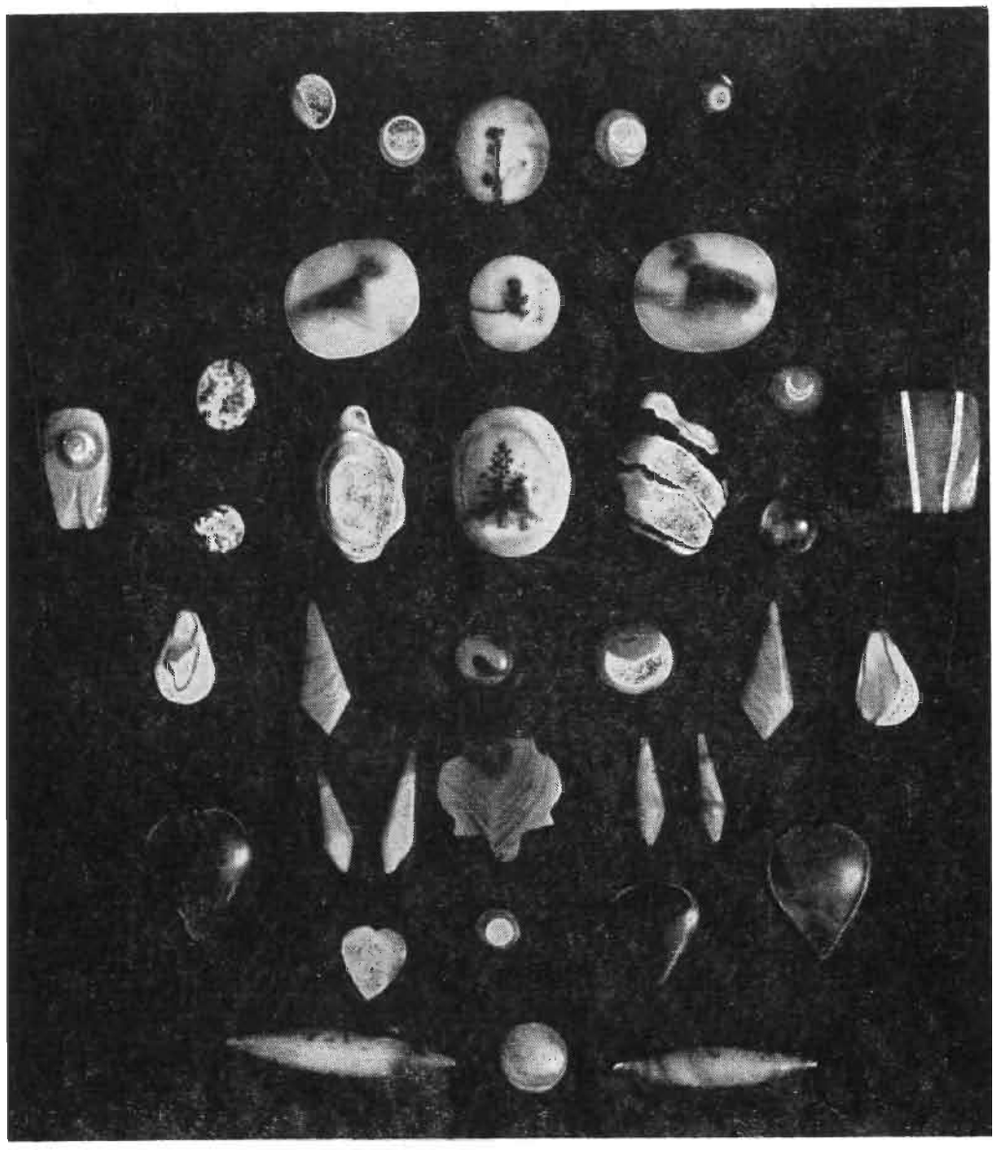
1. Buttons, Stationery and other articles made of agate



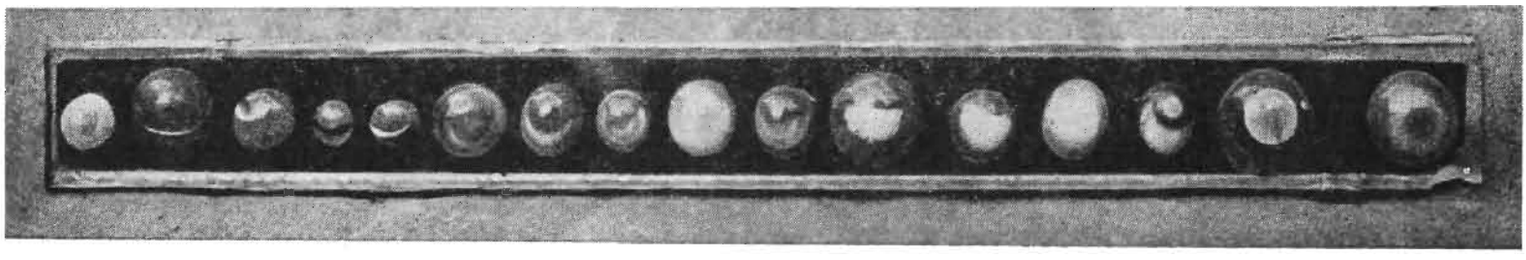
2. Agate spoon



An idol of Lord Krishna; a toy for an infant; a spoon and a cigarette holder made of agate



1. Natural formations in agate pieces of various shapes



2. Phases of the Moon



1. Necklaces of agate



2. Steamer, Lighthouse, Crescent, bangle and bangle box presented to H. M. Queen Elizabeth and H. R. H. Duke of Edinborough during their visit to India in 1961

TABLE I

Number of Persons Employed in Production

Name of craft	Name of villages/ towns	Households	Population			Number of persons employed in production		
			Persons	Males	Females	Persons	Males	Females
1	2	3	4	5	6	7	8	9
Working on Agate Stones (Manufacture of ornaments and ornate articles)	Cambay	446	2,903	1,515	1,388	739	707	32

TABLE II

Distribution of Artisans by Community

Name of Caste or Community	Number of villages/ towns Surveyed	Approximate No. of families	Total No. of workers			Number of families working in own houses or in work-shops set up by their employers	Number of families working under cooperation§
			Persons	Males	Females		
1	2	3	4	5	6	7	8
Total		**446**	**739**	**707**	**32**	**446**	..
1 Patel	1 Town	161	275	269	6	161	..
2 Rana	..	96	168	161	7	96	..
3 Muslim	..	39	68	61	7	39	..
4 Thakor	..	21	29	29	..	21	..
5 Valmik	..	20	32	32	..	20	..
6 Chunara	..	15	25	25	..	15	..
7 Baraiya	..	13	23	21	2	13	..
8 Raval	..	13	28	24	4	13	..
9 Nagar Bandhara	..	11	12	11	1	11	..
10 Bhavsar	..	10	15	14	1	10	..
11 Others*	..	47	64	60	4	47	..

§ There is no society of workers. But one cooperative society is functioning at Cambay to work agate mines at Jhagadia and supply raw materials to its members.

* 'Others' includes Bania, Rajput, Panchal, Barot, Dudhara, Brahmakhsatri, Kadia, Parekh, Vaghari, Prajapati, Suthar, Brahmin, Chavda, Darji, Chhopara, Garasia, Khalasi, Kharva, Pakhali, Soni, Sadhu.

TABLE III

Distribution of Articles by Material used

Name of the Article	Main Material: Name of Material	Main Material: Number of villages/town engagesd in manufacture	Subsidiary Material: Name of Material	Subsidiary Material: Number of villages/towns engaged in manufacture	Raw Material imported: Place from which imported (name of State or Country)	Raw Material imported: Number of villages/towns engaged in manufacture
1	2	3	4	5	6	7
I ORNAMENTAL PIECES						
Necklace beads of various shapes like round (big and small), square, triangular, oblong, hexagonal, decagonal, octogonal, oval, etc.	1 Carnelian	1 Town	..	..	Gujarat	1 Town*
	2 Margaj (Jade)	..	..	..	Mysore, Bangalore	..
	3 Mansur	..	..	..	Rajasthan	..
	4 Karla	..	..	..	Poona	..
Earrings, buttons (shirt and coat), pieces of stones (Nagina) for setting in rings of various shapes, bracelets, wristlets, armlets and lockets	5 Jasper	..	..	..	Gujarat	..
	6 Rajavarat	..	..	..	Bombay	..
	7 Phatak	..	..	..	Gujarat, Madras	..
II DECORATIVE ARTICLES						
Stones for setting them in snuff box	1 Margaj	..	..	..	Mysore,Bangalore	
	2 Jasper	..	..	..	Gujarat, Aurangabad	..
Birds like parrot, sparrow, and dove		..	..	..	..	..
		..	..	..	..	..
Animals like horse, elephant, camel					..	..
		..	..	..	..	..
Acquatics like tortoise, crocodile, fish	Margaj (Jade)	..	..	..	Mysore, Bangalore	..
		..	..	..	..	..
Ash-trays, flower vases	Jasper	..	..	..	Gujarat, Aurangabad	..
III STATIONERY ARTICLES						
Pen-holder		..	..	..	Gujarat, Aurangabad	..
Pen-rack		..	..	..	..	..
Ink-stand	Jasper	..	..	..	..	..
Paper weight		..	..	..	..	..
Paper cutter		..	..	..	..	..
IV OTHERS						
Dice		..	..	..	Gujarat	..
Polishing stone (Opni)	Carnelian	..	..	..	Gujarat, Madras	..
		..	..	..	..	..
Shivling	Phatak					
Door knob						
Cupboard and	Jasper	..	..	..	Gujarat, Aurangabad	..
Door handles		..	..	..	..	..

* The artisans within a radius of five miles of Cambay Town namely Nana-Kalodra, Nagra, Kali Talavadi, Sakkarpur, Kansari, Neja and Chhatardi are also engaged in drilling operations.

TABLE IV

Designs

Name of the articles	Name of designs	Distribution of households indicating different sources from which the designs are received					
		Traditional	Self-designed	Middlemen who undertake marketing	Design centres	Cooperative sales societies	Other sources (Specify)
1	2	3	4	5	6	7	8
I Beads	1 Modan	446	..	..	..	..	..
	2 Dol		..	..	..	..	..
	3 Tasbi		..	..	..	..	..
	4 Karela		..	..	..	..	..
	5 Dholak		..	..	..	..	..
	6 Atth Pahel Modan		..	..	..	..	..
	7 Kandora		..	..	..	..	..
	8 Supda		..	..	..	..	..
	9 Loi		..	..	..	..	..
	10 Chakkar		..	..	..	..	..
	11 Gulli		..	..	..	..	..
	12 Pahludar dol		..	..	..	..	..
	13 Gokhrudar dol		..	..	..	..	..
	14 Chamakali dol		..	..	..	..	..
	15 Almond shaped		..	..	..	..	..
	16 Spear head shaped		..	..	..	..	..
	17 Chhasai		..	..	..	..	..
	18 Badami		..	..	..	..	..
II Decorative articles	1 Birds		..	..	..	..	..
	2 Animals		..	..	..	..	..
	3 Acquatics		..	..	..	..	..
III Stationery articles	1 Square		..	..	..	..	..
	2 Round		..	..	..	..	..
IV Others	1 Dice		..	..	..	..	..
	2 Shivling		..	..	..	..	..
	3 Door knob		..	..	..	..	..
	4 Cupboard and Door handle		..	..	..	..	..

TABLE V

Distribution of Households according to Consumption and Sale of Products

Total No. of households engaged in the craft	Number of households according to consumption and sale of products						Number of villages/ towns with cooperative sale societies
	Household consumption only	Ceremonial purpose	Household consumption and sale	Sale only	Personal use only	Fair, Open market, etc.	
1	2	3	4	5	6	7	8
446	..	..	..	446	..	..	None

TABLE VI

Cost of Production, Sale Price and Earnings

Article*	Number of villages/ towns surveyed	Cost per lb. raw material	Cost per 10 tolas of conversion into finished product	Average sale price of finished goods (10 tolas)	Average earning per worker
1	2	3	4	5	6
I Ornamental pieces II Decorative articles III Stationery articles IV Others	1 Town	Re.nP. 0–07	Re.nP. 0–14	Re.nP. 0–28	Approximate earning per day Rs.nP. Shaping 3.00 Drilling 4.00 Grinding 6.50

* For details of articles see Table No. III

Note :-

Column No. 4 gives the cost per 10 tolas, as 1 lb. of raw material yields 10 tolas of finished product. The cost of conversion is exclusive of cost of price of raw material given in Column No. 3.

TABLE VII

List of very Skilled Craftsmen of each Community

Name of village/town	Name of craft	Name of community	Name of skilled craftsmen
1	2	3	4
Cambay	Agate stones (Akik)	Muslim	1 Shaikh Lalbhai Chandbhai
		,,	2 Pinjara Abderasul Sidibhai
		,,	3 Mansuri Sidibhai Ramubhai
		Hindu	4 Thakor Kesarisinh Mavsinh
		,,	5 Patel Kantilal Chunilal

TABLE VIII

Number of Workers in the Past and at Present by Type of Operation

Sl. No.	Type of operation	Number of workers 1850	1878	1960–61
1	2	3	4	5
1	Polishers			
	(a) on rough stones (Dolia)	200	100	100 †
	(b) on wooden frame (Pattimars)	50*	50*	..
	(c) on electrically operated emery wheel	..	..	15 §
2	Drillers	100	100	303 ‡

Figures for the year 1850 and 1878 have been extracted from the Gazetteer of the Bombay Presidency, Vol.VI, (1880) p. 203

Note:-

† Includes Dolias working at different villages roundabout Cambay

* The Number of polishers shown here are pattimars working manually

§ Includes polishers from 5 households working on electrically operated machines

‡ Includes drillers working at different villages roundabout Cambay

TABLE IX

Family and Hired Workers

No. of the households engaged in the craft	No. of households working on their own	No. of family members	No. of households engaging hired workers	No. of hired workers
1	2	3	4	5
446	262	739	184	553

TABLE X

Distribution of Establishments according to the Number of Persons Engaged

Size of establishments	Number of households	Category of workers			Investment on tools and implements (In Rs.)
		Family workers	Hired workers	Total	
1	2	3	4	5	6
Total	**446**	**739**	**553**	**1,292**	**152,950**
1 Person	132	132	..	132	46,310
2 to 5 Persons	259	493	274	767	86,254
6 to 9 Persons	55	114	279	393	20,386

TABLE XI

Distribution of Family Members according to Age, Sex and Earning Status

Age group	Persons			Males			Females		
	Earner	Non-Earner	Total	Earner	Non-Earner	Total	Earner	Non-Earner	Total
1	2	3	4	5	6	7	8	9	10
Total	**873**	**2,030**	**2,903**	**789**	**726**	**1,515**	**84**	**1,304**	**1,388**
Below 15	32	1,184	1,216	28	603	631	4	581	585
15 to 34	495	512	1,007	449	86	535	46	426	472
35 to 59	304	255	559	274	21	295	30	234	264
60 and over	42	79	121	38	16	54	4	63	67

TABLE XII

Varieties of Agate Stones now Worked at Cambay

Type of stone with its local name	Source of raw material: Within the State	Source of raw material: Outside the State	Colour in raw form	Whether baked or not	Colour into which transformed after baking or processing
1	2	3	4	5	6
1 Rajpipla carnelian or akik	Jhagadia Taluka Broach District Gujarat State	..	Slate or dull cloudy brown or yellow	Yes	Pinkish purple or orange red fleshy colour
(a) Mor or Bawa Ghori onyx	do	..	Dark with white veins or greyish white with dark veins	No	..
(b) Cheshmedar or Dola, cat's eye	do	..	Cloudy brown	No	..
(c) Rori or Lasania	do	..	Yellow half-clear	No	..
2 Veined agate or Doradar	Ranpur (Ahmedabad)	..	White half-clear	No	..
3 Chalcedony and Jasper Blood stone	Mardak Beyt (Kutch)	Aurangabad	Various colours, Green variety with red streaks or spots	No	..
4 Crystal or Phatak stone	Tankara (Rajkot)	Madras	Milky white	No	..
5 Rajavarat or Taramandal Lapis-Lazuli or Azure stone	--	Bombay	Deep-blue or red-brown with sprinkles of silver gold spots	No	..
6 Margaj-Jade stone	..	Mysore, Bangalore	Green	No	..
7 Mansur	..	Rajasthan	White	No	..
8 Karla	--	Poona	Orange	No	..

TABLE XIII

Tools and Implements used in Different Operations and Techniques

Sl. No.	Name of the operation	Tools and implements used	Value (Rs. nP.)	Age of article (in years and months)
1	2	3	4	5
I	Mining	*Total*	*11.00*	
		Hoe	5.00	2 years
		Spade	5.00	2 ,,
		Basket	1.00	3 months
II	Baking	*Total*	*53.11*	
		Furnace (cement)	50.00	10 years
		Water-pot	2.00	3 months
		Clay-pot	0.37	1 month
		Clay-pot	0.12	1 ,,
		Sieve	0.50	6 months
		Basket	0.12	1 month

TABLE XIII-*contd.*

Tools and Implements used in Different Operations and Techniques

Sl. No.	Name of the operation	Tools and implements used	Value (Rs. nP.)	Age of article (in years and months)
1	2	3	4	5
III	Breaking and shaping	*Total*	*35.61*	
		Pointed iron rod	5.00	3 years
		Horn-Hammer	0.37	15 days
		Small iron hammer	0.25	1 month
		Numberless spectacles	0.87	3 years
		Finger-wrappers of cloth rags	(negligible)	
		Iron Hammer	4.00	5 ,,
		File	1.00	1 month
		Porbandar stone	1.00	5 years
		Pincer	1.00	6 months
		Scale and Balance	20.00	10 years
		Basket	0.12	1 month
		Sieve	0.50	6 months
		Tin container	1.50	3 ,,
IV	Grinding	*Total*	*21.12*	
	(a) Hand grinding	Whet stone	5.00	½ month
		Wooden bench	15.00	5 years
		Bow with leather string	1.00	1 year
		Water pot	0.12	1 month
	(b) Machine grinding	*Total*	*620.24*	
		Electric motor ½ H. P.	350.00	10 years
		Axle, pulley, belts, etc.	100.00	10 ,,
		Emery wheel 14" x 2"	95.00	2 months
		12" x 2"	40.00	2 ,,
		Wooden stool	35.00	5 years
		Clay pot	0.12	1 month
		Basket	0.12	1 ,,
	Drilling	*Total*	*19.73*	
		Cocoanut shell	(negligible)	
		Bow with cotton string	0.50	6 months
		Clay pot	0.37	6 ,,
		Wooden frame and iron ring	5.00	2 years
		Wooden stand	0.75	6 months
		Iron spoke	0.12	2 years
		Steel drill	0.75	2 months
		Wooden stand	3.00	2 years
		Pointed file	2.00	3 months
		Pincers	1.00	6 ,,
		File	1.00	2 ,,
		Hammer	4.00	5 years
		Clay pot	0.12	1 month
		Basket	0.12	1 ,,
		Wooden seat	1.00	1 year
VI	Polishing			
	(a) Polishing on whet stone by manual operation	*Total*	*21.12*	
		Whet stone	5.00	½ month
		Wooden bench	15.00	5 years
		Bow with leather string	1.00	1 year
		Clay pot	0.12	1 month
	(b) Polishing by mechanical operation	*Total*	*925.50*	
		Elecrtic motor	500.00	5 years
		Pulley and belts	200.00	5 ,,
		Barrel (copper)	100.00	10 ,,
		Barrels (two) of galvanised tin	28.00	1 year
		Leather bags	10.00	1 ,,
		Tin containers	1.50	3 months

TABLE XIV

Particulars of Finished Products

Sl. No.	Name of articles produced	Type of stone	Colour	Size (in inches)
1	2	3	4	5
1	Ornamental Pieces			
	Necklace-beads of various shapes, e.g., round (big and small), square, triangular, oblong, hexagonal, decagonal, octogonal, oval, etc.	Different types of Carnelians, Margaj (Jade), Jasper, Rajavarat, Phatak, Mansur, Karla	Different colours like orange, red, greyish white with dark veins, dark with white veins, yellow half-clear, dull cloudy brown, fleshy colour, liver brown, green	½" x 2"
	(a) Earrings	,,	,,	1½" to 2"
	(b) Buttons (shirt and coat)	,,	,,	¼" to ½" (Diameter)
	(c) Pieces of stones (Nagina) for setting in rings of various shapes	,,	,,	¼" to ½" (Diameter)
	(d) Pieces for bracelets, wristlets and armlets	,,	,,	1" to 2"X 1"x2"
	(e) Lockets	,,	,,	½" to 2" (Diameter)
II	Decorative Articles			
	Stones for setting them in snuff box	,,	,,	1" to 2"
	Birds like parrot, sparrow, and dove	Margaj (Jade)	Green	1½" to 2"
	Animals like horse, elephant, camel	,,	,,	1" to 6"
	Acquatics like tortoise, crocodile, fish	,,	,,	1" to 6"
	Ash-trays	Jasper	Red-brown	2" to 2½" (Diameter)
	Flower vases	,,	,,	4" to 6"
III	Stationery Articles			
	Pen-holder	,,	,,	4" to 6"
	Pen-rack	,,	,,	2" to 2½"
	Ink-stand	,,	,,	2" to 2½"
	Paper weight	,,	,,	2" to 2½"
	Paper cutter	,,	,,	4" to 6"
IV	Others			
	Dice	Carnelian	Orange and Red	2" to 2½"
	Polising stone (Opni)	Veined agate	Cloudy Brown	5" to 6"
	Shivling	Carnelian and Phatak	Orange, yellow, half-clear, greyish white	1" to 2"
	Door knob and cupboard handles	Jasper	Red-brown	1" to 2"
	Door-Handle	,,	,,	4" to 6"
	Pestle and	Jasper and Carnelian	Red with white streaks	6" length 3½" breadth
	Mortar			Ht. 4" length 13¼" depth, 2½" circumference: 32" (upper) ,, 11½" (bottom)

Note :—

The value of quantity produced as described in Column No. 2 is estimated at Rs. 1,000,000 to 1,200,000

TABLE XV

Distribution of Raw Material, Production and Labour charges by type of Stones used

Sl. No.	Name of raw material	Estimated value of raw material (In Rs.)	Approximate labour charges (In Rs.)	Estimated value of finished products (In Rs.)
1	2	3	4	5
	Total	**250,000**	**500,000**	**1,000,000**
1	Rajpipla Carnelians	160,000	320,000	640,000
2	Veined Agate	25,000	50,000	100,000
3	Crystal or Phatak	25,000	50,000	100,000
4	Jasper/Blood stone	10,000	20,000	40,000
5	Mansur	10,000	20,000	40,000
6	Rajavarat	7,000	14,000	28,000
7	Margaj	6,500	13,000	26,000
8	Karla	6,500	13,000	26,000

Note :—These figures have been obtained by inquiry from large factory owners (Karkhanedars)

TABLE XVI

Wage Structure and Working Hours according to Different Types of Operations

Type of operation	Unit	Rs.nP.	Wages paid	Average daily working hours: Busy	Average daily working hours: Slack	Remarks
1	2		3	4	5	6
1 Mining	Baskets of 35 lbs.	3.00	(Agate pebbles of low quality)	8.00	..	The working of mines is closed in monsoon
		5.00	(Agate stones of high quality)			
2 Chiselling and shaping	Pieces 100	2.00	Modan or Kandora	8.00	..	
	„ 100	0.50	Ornamental pieces			
	„ 100	3.00	Loi			
3 Grinding	Lb.	3.00	Round	8.00	6.00	
	Pieces 100	4.00	Modan			
	„ 100	5.00	Kandora			-
	„ 100	2.00	Ornamental pieces			
	Lb.	5.00	Loi			
4 Polishing	Std. Md.	40.00	Any variety	10.00	8.00	Machine operated establishments work for more than 15 hours
5 Drilling	Pieces 100	2.00	Red			
	„ 100	3.00	Fancy colours	8.00	6.00	
	„ 100	5.00	Modan-Kandora (Red)			
	„ 100	8.00 to 10.00	„ (Fancy colours)			
	Std. Md.	300.00	Loi			

TABLE XVII

Distribution of Families according to Income

Income Range (In Rs.)	No. of households	Percentage to total
I	2	3
100–200	2	0.45
201–500	38	8.52
501–800	102	22.87
801–1000	103	23.10
1001 and above	200	44.84
Income unspecified	1	0.22

APPENDICES

APPENDIX I

HANDICRAFTS SURVEY

List of Centres and Crafts/Industries selected for Handicrafts Survey in Gujarat

Name of the craft selected for survey		Location of the centre/village/town	Taluka/Mahal	District
1		2	3	4
I TEXTILES				
(i) WEAVING				
Cotton				
(a) Handloom Cotton Fabrics	1	Kanodar	Palanpur	Banaskantha
	2	Dholka	Dholka	Ahmedabad
	3	Cambay	Cambay	Kaira
(b) Sujani Weaving		Broach	Broach	Broach
Silk				
(a) Atlas	1	Jamnagar	Jamnagar	Jamnagar
	2	Surat	Choryasi	Surat
(b) Silk Patola		Patan	Patan	Mehsana
(c) Silk Brocade or Tanchhoi		Surat	Choryasi	Surat
(d) Mashru		Patan	Patan	Mehsana
Zari				
(a) Zari		Surat	Choryasi	Surat
(b) Zari Brocade	1	Jamnagar	Jamnagar	Jamnagar
	2	Nardipur	Kalol	Mehsana
	3	Ridrol	Kalol	Mehsana
	4	Surat	Choryasi	Surat
Wool				
Woollen Blankets	1	Savarkundla	Savarkundla	Bhavnagar
	2	Chhaya	Porbandar	Junagadh
	3	Rabiya	Porbandar	Junagadh
	4	Mankuva	Bhuj	Kutch
	5	Dholka	Dholka	Ahmedabad
	6	Aniali (Bhimjibhai)	Dhandhuka	Ahmedabad
(ii) DYEING AND PRINTING				
(a) Bandhani : Tie and Dye	1	Jamnagar	Jamnagar	Jamnagar
	2	Anjar	Anjar	Kutch
	3	Bhuj	Bhuj	Kutch
	4	Vasana (Dolarana)	Dehgam	Ahmedabad
(b) Block Printing	1	Rajkot	Rajkot	Rajkot
	2	Anjar	Anjar	Kutch
	3	Bhuj	Bhuj	Kutch
	4	Deesa	Deesa	Banaskantha
	5	Vadnagar	Kheralu	Mehsana
	6	Vasana (Dolarana)	Dehgam	Ahmedabad
	7	Kaira	Mehmedabad	Kaira
	8	Gandevi	Gandevi	Surat
	9	Mandvi	Mandvi	Surat
(c) Roughan Printing		Rajpur	Deesa	Banaskantha
(d) Screen Printing	1	Jetpur	Jetpur	Rajkot
	2	Ahmedabad	Ahmedabad City	Ahmedabad
(e) Khari Printing		Baroda	Baroda	Baroda
(iii) CROCHET WORK (Bora Cap)		Jamnagar	Jamnagar	Jamnagar

II METAL

(i) Brass and Copper				
(a) Brass and Copper Wares	1	Jamnagar	Jamnagar	Jamnagar
	2	Wadhwan–Joravarnagar	Wadhwan	Surendranagar
	3	Sihor	Sihor	Bhavnagar
	4	Visnagar	Visnagar	Mehsana
	5	Nadiad	Nadiad	Kaira
	6	Dabhoi	Dabhoi	Baroda
(ii) Iron				
(a) Scale Making		Savarkundla	Savarkundla	Bhavnagar
(b) Penknives, Nutcrackers and Scissors	1	Jamnagar	Jamnagar	Jamnagar
	2	Anjar	Anjar	Kutch
	3	Bhuj	Bhuj	Kutch
	4	Nana Reha	Bhuj	Kutch
	5	Mota Reha	Bhuj	Kutch
	6	Sojitra	Petlad	Kaira
	7	Pij	Nadiad	Kaira
(c) Padlock		Sarva	Botad	Bhavnagar
(d) Button Making		Jamnagar	Jamnagar	Jamnagar

III JEWELLERY

Gold and Silver ornaments	1	Rajkot	Rajkot	Rajkot
	2	Paddhari	Paddhari	Rajkot
	3	Palitana	Palitana	Bhavnagar
	4	Mandvi	Mandvi	Kutch
	5	Anjar	Anjar	Kutch
	6	Bhuj	Bhuj	Kutch
	7	Nadiad	Nadiad	Kaira

IV CERAMICS

Pottery Toys and Earthenwares	1	Wankaner	Wankaner	Rajkot
	2	Morvi	Morvi	Rajkot
	3	Wadhwan	Wadhwan	Surendranagar
	4	Muli	Muli	Surendranagar
	5	Thangadh	Chotila	Surendranagar
	6	Patan	Patan	Mehsana

V WOOD WORK

(i) Furniture				
Patara Making		Bhavnagar	Bhavnagar	Bhavnagar
(ii) Lacquer Work				
(a) Toys and Fruits	1	Junagadh	Junagadh	Junagadh
	2	Mahuva	Mahuva	Bhavnagar
	3	Bhirandiala	Bhuj	Kutch
	4	Idar	Idar	Sabarkantha
(b) Simple Lacquer Work	1	Dhoraji	Dhoraji	Rajkot
	2	Bhavnagar	Bhavnagar	Bhavnagar
	3	Junagadh	Junagadh	Junagadh
(c) Transparent Lacquer Work	1	Baroda	Baroda	Baroda
	2	Sankheda	Sankheda	Baroda
(iii) Block Engraving	1	Rajkot	Rajkot	Rajkot
	2	Pethapur	Kalol	Mehsana
	3	Ahmedabad	Ahmedabad City	Ahmedabad

VI IVORY

Ivory Articles	Mahuva	Mahuva	Bhavnagar
Marquetry Work	Surat	Choryasi	Surat

VII STONE

Hand-Turned Stone Akik (Agate)	Cambay	Cambay	Kaira

VIII CANE AND BAMBOO

Cane and Bamboo	1	Ahmedabad	Ahmedabad City	Ahmedabad
	2	Anand	Anand	Kaira
	3	Dohad	Dohad	Panchmahals
	4	Jhalod	Jhalod	Panchmahals
	5	Rajpipla	Nandod	Broach
	6	Asura	Dharampur	Surat
	7	Unai-Charvi	Bansada	Surat
	8	Waghai (Ambapada)	Dangs	Dangs
	9	Kudikas	Dangs	Dangs

IX MISCELLANEOUS

Perfumery	1	Jamnagar	Jamnagar	Jamnagar
	2	Palanpur	Palanpur	Banaskantha
Papier Mache	1	Dhoraji	Dhoraji	Rajkot
	2	Junagadh	Junagadh	Junagadh
Snuff	1	Kadi	Kadi	Mehsana
	2	Anand	Anand	Kaira
	3	Sihor	Sihor	Bhavnagar
Glass Work		Kapadvanj	Kapadvanj	Kaira
Rope Making	1	Tembada	Khedbrahma	Sabarkantha
	2	Ratanpor	Khedbrahma	Sabarkantha
Soap Making		Kapadvanj	Kapadvanj	Kaira

X GENERAL*

Wood Carving	Bead work
Embroidery	Doll Making

* No Schedules have been canvassed for these handicrafts which have been surveyed in a general way.

Note :-

The following are the handicrafts selected for special study by the Superintendent himself :

1 Agate industry of Cambay	2 Jari industry of Surat
3 Silk weaving of Surat	4 Tie and Dye Bandhani of Jamnagar
5 Lacquer work at Sankheda	6 Block printing at Jetpur
7 Patara making at Bhavnagar	8 Embroidery and bead work
9 Wood carving	10 Pottery

APPENDIX II

CAMBAY

22° 19' N., 72° 37' E.

Cambay called Khambhat, is a port situated at the head of the Gulf named after it. Its population according to the Census of 1961 is 51,291. The capital of a Muslim State till 1948, it is at present the headquarters of a taluka, and the terminus of the Anand-Cambay broad guage section of the Western Railway, 32 miles from Anand. It is also connected by State Transport buses with large towns like Baroda, Ahmedabad, Nadiad, etc. Cambay is a very ancient town, known as Stambhatirtha or Skambhatirtha, the 'Pillar Shrine', from the pillar said to have been raised by Gods in memory of *Kumar's* victory over Tarakasur. Stambhavati and Trambavati are also said to have been its other names. Known to foreign travellers as Khambhayat or Cambay or Cambact, it prospered under the Chalukya rule in the tenth century, and became the chief port of Gujarat after the fall of Somnath in 1024. Vastupal, the minister of Vaghela rulers, who was the Governor of Cambay in 1241, built many Jain institutions and temples. By the end of the thirteenth century, Muslims, who knew it as the first city of India, praised its fertile land, air, water, scenery and buildings. Visiting it in 1290, Marco Polo called it the chief city of a large country and the centre of a great trade. It fell to the Muslims in 1304, when the troops of Allauddin Khilji captured and plundered it, destroyed temples and slew people without pity. Later, Ibn Batuta, on his way to China in 1345 found it a very fine city, remarkable for the elegance and strength of its mosques and houses built by foreign merchants, who constituted the chief part of its population. It was again pillaged during the rebellions of 1347 and 1349. Therefore, the special care and strengthening of the navy by Ahmed Shah I and Mahmud Begada enriched Cambay, then a noble city 14 miles around, with many crafts. Five fleets were fitted out and stationed in the Gulf of Cambay for operations against pirates and the Bahmani kingdom. On the rise of the Portuguese power in the sixteenth century, its trade suffered heavily as the markets of Africa, Arabia, South India and East Indies were lost to it. In 1535 Humayun while in pursuit of Bahadurshah pillaged the city as his camp was looted by the Kolis. Three years later it was plundered and burnt by the Portuguese who took away so much booty that the ships could not hold it. At this time Cambay, the richest town on the west coast, was called "Garment of the World" as it supplied textiles to the whole of the East and the greater part of the West. In 1573 it passed under Akbar, who revived its lost trade. The first three English merchants carrying a letter from Queen Elizabeth to Akbar who was styled the King of Cambay, wanted to come to Cambay, but were prevented by the Portuguese. The Venetian traveller Caesar Frederic writes in 1585 that the trade of this fair city is to be seen to be believed. Establishing at Cambay in 1617,the Dutch had a thriving factory by 1623. The English, given permission to start a factory in 1613, had the Portuguese dismissed from the town in 1616. Finch, the English traveller to Cambay in 1611 mentions its strong fortwall of bricks and high and handsome houses. Other European travellers like Dela Valle in 1623, Ogilby in 1670, Tavernier in 1642-66, and the Italian Gamelli Careri in 1695, have left accounts of its prosperity. However, after the seventeeth century, the English were the only Europeans having a factory at Cambay. Surat was by that time becoming the chief Muslim port, facilitated by the closure of the northern route to Upper India by Mount Abu by disturbances in Rajasthan, the presence of the Mogul court in Khandesh for long periods for quelling disturbances and the safer anchorage for the European ships in the Tapi. The tide at Cambay was very fast making it dangerous for ships to approach. During the next century it further declined, and was often plundered by Rajputs and Kolis. On the fall of the Mogul power, it became a separate Muslim State since 1750. It suffered from repeated

levies of Marathas and harassment by Kathis and Kolis. By 1797 the English factory was unremunerative and useless, and in 1818 the British Resident was withdrawn, and the Collector of Kaira made the Agent to the Government.

In the ancient and medieval times there were two principal trade routes in India, viz., (1) through the ports of Gujarat and (2) through the ports of Bengal, which captured all the trade to foreign countries such as Persia, Arabia, Safala, China, etc. Various foreign travellers, geographers and merchants, have described Cambay as one of the greatest and richest cities of India, a position which it retained till the beginning of the 17th century. As an important centre of maritime activity on the western coast of India, it enjoyed the same position that Bombay and/or Calcutta now do. It was also at Cambay that literature, art, architecture and various industries of the time developed and flourished. Dr. Balkrishna in his "Commercial Relations between India and England (1601 to 1775)" pages 30 to 40, refers to Cambay in the following terms:-

"CAMBAY has been called the 'Indian Cairo'. In modern terminology, it can appropriately be styled the 'Indian Manchester' being the commercial centre of Gujarat, the Lancashire of India. From Polemy onward all travellers have attested its great wealth,magnificence, and flourishing trade. This port being one of the greatest and richest of all the coast towns in India, merchants resorted to it from all quarters of the world. It was the home and nursery of all that was best in India. The workmanship of its inhabitants in weaving and dyeing in embroidery as well as curious works of art, made of wood, metal, ivory, amber, horns of sea-horses, and various kinds of stones was the wonder of the world. There were found all kinds of cotton and silk manufactures, perfumes, innumerable things of ivory, beautiful woodwork of all kinds, bedsteads of all colours, works of art made of coral, as well as agates, carnelians, onyxes, and other precious stones, delicate cushions, quilted cloths, canopies of delicate workmanship, beautiful paintings, shields made of tortoise-shells which were "wrought and inlaid very workmanlike," fair signets, rings, buttons, handles of knives, and beads of white-as-milk stone which were sold in all parts of the world."

At one time its area was said to be 14 square miles, at another time it was twice as big as Surat, surrounded by fort wall, with buildings and mansions of brick and stone, beautiful mosques and Jain temples, with well laid streets. But Cambay began to decline in the early 17th century, when the only articles of export which remained out of a large variety of items of foreign trade was cotton and silk textiles. Causes for the decline of Cambay were many. Apart from the silting of the head of the Gulf, noticed as early as the 16th century, the competition from European companies—Portuguese, Dutch, British and transference of maritime trade to place like Diu, Goa and Surat were to a large extent responsible for the subsequent decline of Cambay. In addition to the diversion of trade by sea route, the weakness of the Muslim rulers as a naval power and European supremacy of the sea also came in the way of Gujarat retaining its export trade through Cambay. The blow that further hit Cambay the hardest was the construction of B. B. & C. I. Railway in 1863 from Bombay to Ahmedabad, that finally sealed all sea and land trade that formerly passed through this town and seaport for over 5 to 6 centuries. At present Cambay port has lost all its former glory, because it is impossible for large vessels to reach the harbour which has been silted up. It is now a minor port handling only about 225 tons of goods annually. The only industries that now survives are the handicraft of cutting and polishing of precious and semi-precious stones like rubbies and sapphires, the unmatched art of working on Akik (agate stones) and weaving on handlooms and power looms. The weavers of Cambay are skilled workers. They have preserved their former reputation for manufacturing fine varieties of silk and cotton textiles and produce brocade or Jari Kasab Saries, as well as Nylon and Crystal Nylon saries to suit modern tastes. There are also one textile mill known as Shubh Laxmi Mill, an oil mill, three ginning factories and three saw mills. Cambay came suddenly into prominence in recent times when it was placed on the oil map of India by the recent find of petroleum and natural gas. By

31st May 1962, 33 pin points were drilled and 27 wells were completed and 8 more pin points were proposed to be drilled in the year 1962-63. Cambay is well known also for its sweets, viz., Sutarfeni, Halvasan, etc.

Being an important centre of Jainism since olden times, Cambay possesses four important collections of palm leaf manuscripts and works on Jainism. The Shantinath temple has very valuable old manuscripts and palm leaves written by various Jain Sadhus and their disciples. An imporant manuscript written on palm leaves in his own handwriting by the well known Jain warrior statesman Divan Vastupal and builder of magnificent temples in white marble at Dilwara near Mount Abu in the thirteenth century is still preserved in a very good condition. There are other old Jain temples as well. The Parasnath temple dating back to 1526 is in two parts, one of them being underground. One of the old temples is said to have been founded by the well known Jain Acharya Hemachandrasuri. The old Juma Masjid said to have been built in the beginning of 14th century measures 200 feet by 210 feet and its inner court is 120 feet by 135 feet. Its plan and arrangements are similar to those of the Altamesh Mosque at Ajmer, but the three arches are plain and low to suit the Jain pillars inside, which form a picturesque whole.

APPENDIX III

Bawa Ghor, Bawa Saban and Saraneshwar Mahadev

(a) Bawa Ghor

Bawa Ghor was an Abyssinian mendicant, who during the course of his wanderings came to Rajpipla. He recognised the importance of agates available in abundance in that area and developed a lucrative trade in Limodra or Nimodra where he established a factory for the manufacture of agate articles. Since Broach in its vicinity had at that time lost its past importance as a centre of maritime trade, and Cambay had established itself as an emporium of trade with the Middle East and countries on the African coasts, like a wise tradesman that he was, he opened a branch at Cambay for the export of finished articles. He first stationed his brother Bawa Saban in Cambay for the export of finished agates, but subsequently opened a factory at Cambay itself by transferring some of his Muslim and Kanbi craftsmen, who taught the various techniques to the local craftsmen. The unique contribution Bawa Ghor made to the development of agate industry and expansion of its trade with foreign countries particularly on the African coast was noteworthy. This is evident from the fact that certain finished articles which then got currency in foreign market under the trade name of Bawa Ghor and Mai Mariam, his sister are even today popular and known by these names.

Bawa Ghor alias Bawa Abbas who introduced the industry to Cambay from Rajpipla is held in high reverence by the agate workers of Cambay. His tomb is located at Ratanpor 5½ miles away from Jhagadia, where he breathed his last. But as it is not possible for the artisans to go there regularly to pay homage to this great mendicant and merchant prince, a brick has been brought from Ratanpor as a symbol and a 'छील्लो' or *takia* i.e., a raised platform, is established in Cambay opposite the Court building. It is the usual custom that if a person of the rank of a 'Pir' stays at a particular place for a considerable time but expires at another place, then the 'छील्लो' will be constructed in his memory at the place where he passed the greater period of his life but a tomb would be erected where he expired and got buried. A building has been constructed at Cambay with two rooms and a kitchen and a verandah. In a big room, in the left wall there is a niche, known as 'छील्लो' of Bawa Ghor and in another room is another 'छील्लो' of one of his seven brothers, including Bawa Saban. Cambay has the 'छील्लो' of all the seven brothers and their sister Mai Misara. Generally, Siddis coming from outside, use this place as a rest house. The charges for repairing, it is reported, are paid by Akikias or agate dealers. The 12th day of the month of Rajab is celebrated as his death anniversary, when the artisans engaged in the agate industry both Hindus and Muslims offer a cocoanut and garland and burn incense at his 'takia' at Cambay where the Akikias also give a feast to the artisans working in their establishment. All the agate establishments in Cambay remain closed on this day. Some visit his tomb at Ratanpor also.

(b) Bawa Saban And Saban Talavadi

On Survey No. 45, in Machhipara, Cambay, is the tomb of Bawa Saban, brother of Bawa Ghor, who settled at Cambay and traded in agates. Situated on a slightly elevated plain, the area admeasures 16'-6" x 18' x 6" and contains three tombs. In the middle lies Bawa Saban, keeping his head to the north and feet to the south, but the particulars of the two adjoining tombs are unknown. To the west of the tomb is the town of Cambay, to the east is village Metpar, to the north Machhipara, a locality of Cambay town and to the south lies the Arabian Sea.

In the south-west is a dry pond which is even to this day known as 'Bawa Saban Talavadi' (बावा साबान तलावडी) so named after Bawa Saban who lived near the tank. Quite close to the tomb in the south, is the plinth of some raised brick

construction which is believed to be the remains of the former residence of Bawa Saban. From the name of 'Saban Talavadi', it can be presumed that he preferred for his residence and later his factory a place near the seashore from where he could carry on business by sea.

(c) Saraneshwar Temple

The origin of the word 'शारणेश्वर' can be traced out from '*Raghuvansha*' where there is a reference that मणिः शाणो लिङः which means 'a jewel ground on a whetstone'. In the present Bhatt street where there was a concentration of grinders घसीया workers on grinding wheel had erected a temple of Shiva and named it Saraneshwar, i.e., the deity of those working on Saran or grinding wheel. But on account of increasing Muslim residence in the area surrounding this temple, it was decided to shift it to some safe Hindu locality. The Brahmin Committee set up under the presidentship of Shri Bhaskaranand Saraswati therefore transferred the symbol of Shiva from Bhatt Sheri to its present site near Gavara, opposite vegetable market. This temple was constructed in Samvat 1960 on the eighth day of the month 'Shravan', as can be seen from the inscription on the main entrance to the temple. Three acres of land stand in the name of this temple at village Khanpur of Dholka taluka. Swami Adwaitanand of Dholka looks after the temple. There is a fine wooden carved seat of Swamiji in the open verandah where he gives religious discourses whenever he visits this place.

APPENDIX IV

A—Terms and Conditions for the Grant of Mining Lease by Government of Gujarat *

The grant of the Mining lease is subject to the terms and conditions mentioned below:

(a) Mining lease shall be in respect of agate stones only. If any other minerals are found in association with this mineral they should be brought to the notice of Government and if the lessee desires to mine these minerals along with this/ mineral he should do so only after the consent of the State Government is obtained in writing.

(b) Royalty at the rate of twenty per cent of the sale price at the pit's mouth or the dead rent at Rs. 25/- (Rupees Twenty five only) per mineral per annum or part thereof, per hectare (2 acres and 2,280 sq. yards) or part thereof, whichever is greater shall be charged provided that the dead rent shall not be payable for the first year of the lease.

(c) Surface rent and water rate at such rate not exceeding land revenue, water rate and cesses assessable on the land shall be charged.

(d) If beryl or any other substance prescribed under Section 3 of the Atomic Energy Act 1948 (No. XXIX of 1948) is found to occur in the property under the lease, the lessee shall make available such mineral to the Government of India.

(e) The lease shall be subject to the provisions of (i) The Mines and Minerals (Regulation and Development) Act, 1957 (67 to 1957) (ii) the rules in Chapter IV of the Mineral Concession Rules, 1960 and (iii) the Mineral Conservation and Development Rules, 1958.

(f) The lessee shall furnish to the Collector of Broach an accurate map of the area sanctioned duly attested by him. The Collector is authorised to get the map prepared after demarcation of the area if the applicant so desires and recover the cost from the deposit of Rs. 500/- paid for preliminary expenses.

(g) The lessee shall pay to the Collector of Broach necessary security deposit of Rs. 1,000/- for due observance of the terms and conditions of the lease in accordance with Rule 32 of the Mineral Concession Rules, 1960, before the lease is issued to him.

(h) The lessee shall submit confidentially from time to time or when required progress reports to the Director of Geology and Mining, Ahmedabad or an officer authorised by him along with analysis and representative samples of the ores collected during the mining operations.

* Gujarat Government Gazette Part IV.C, 16th December 1960

B—Prospecting Licence

P. L. Terms and Conditions

1 The licence shall be operative for a period of one year with effect from the date of execution of the licence. The option to renew the licence for a further period shall be reserved to Government.

2 The licensee shall pay to Government a prospecting fee of Rs. 2 and 50 nP. per hectare or part thereof, of the land covered by the licence for each year or portion of a year in advance.

3 The licensee shall win and carry away the said mineral won during the course of prospecting operation on payment of the royalty at the rate of twenty per cent of the sale price at the pit's mouth.

4 The licensee shall make available to the Government of India beryl or any other substance prescribed under Section 3 of the Atomic Energy Act, 1948 (No. XXIX of 1948) if they occur in the property under the licence.

5 The licence shall be subject to the provisions of the Mines and Minerals (Regulation and Development) Act, 1957, the Mineral Concession Rules, 1960 and the Mineral Conservation and Development Rules, 1958.

6 If any other mineral is traced during the course of prospecting, the licensee shall report about the same to the Director of Geology and Mining, Ahmedabad and shall not work such mineral without prior permission of Government in writing.

7 The licensee shall furnish to the Collector of Broach an accurate final map of the areas covered by the licence together with a description giving the situation and boundaries of areas duly attested by the licensee. The Collector is authorised to get the accurate final map with survey numbers, etc., prepared and demarcation done before executing the licence, if the licensee so desires, and to recover the cost of the same from the licensee.

8 The licensee shall, before the deposit is returned to him submit confidentially to the Director of Geology and Mining, Ahmedabad from time to time or whenever required a full report in the course of the operations carried on under the licence regarding the geology and mineral resources of the area covered by the licence.

9 The licensee shall allow any officer authorised by the Central or the State Government to inspect at any time the area covered by the prospecting licence as also any accounts, plans and records maintained by him.

10 The licensee shall, before licence is issued to him, deposit as security a sum of Rs. 200/- for each square killometre or part thereof the area covered under the licence, for due observance of the terms and conditions of the licence.

11 The licensee shall engage a qualified geologist or a mining engineer to conduct its prospecting methodically and

12 The licensee shall not give any ore-raising contract during the prospecting stage.

APPENDIX V

A–List of Raw agates, Semi-finished and Finished articles of Agates kept in the Victoria and Albert Museum, Bombay

Name	Cost Rs.nP.
1 Raw Agate	0-25
2 Fired Agate	...0-25
3 Agate partially skinned and opened	...0-25
4 Agate skinned and shaped ...	...0-25
5 Agate skinned and refined into Goldana	...0-25
6 A Goldana polished on wheel 1st stage	...0-25
7 A Goldana polished on wheel 2nd stage	...0-25
8 Phala for buttons	...0-25
9 Phala partially shaped into buttons	...0-25
10 Button cut and polished on the wheel	...0-25
11 Phala for making beads ...	...0-25
12 Agate skinned for beads ...	...0-25
13 Agate shaped into rough round form for beads	...0-25
14 Bead polished on the stone ...	...0-25
15 Bead polished and bored ...	...0-25
16 Bead polished and cut ...	...0-25
17 Agate rough shaped for Modandana	0-25
18 Agate skinned and shaped for Modandana	...0-25
19 Agate rough shaped for Chasiya (Name of the shape) ...	...0-25
20 Agate finally shaped for Modandana	...0-25
21 Modandana polished on the wheel	...0-25
22 Modandana bored	...0-25
23 Chasiya cut and bored on the wheel	0-25
24 Modandana and Nagina (Name of the shape)	...0-25
25 Modandana polished on the wheel	...0-25
26 Agate Giloda(Name of shape) raw and dark	...0-25
27 Agate Giloda, bored and shaped	...0-25
28 Agate Giloda shaped on the wheel	...0-25
29 Agate Giloda partially polished	...0-25
30 Agate Giloda polished with a bag	...0-25
31 Agate Giloda polished and bored	...0-25
32 Agate skinned and shaped for ring	...0-25
33 Agate bored for ring	...0-25
34 Agate ring polished on the wheel	...0-25
35 Agate	...0-25
36 to 47 Agate polished (each costing Rs. 0-25) ...	...0-25
48 to 54 Chalcedony (each costing Rs. 0-25) ...	...0-25
55 to 68 Chalcedony, polished (each costing Rs. 0-25) ...	...0-25
69 Chalcedony green	...0-25
70 Chalcedony green polished ...	...0-25
71 & 72 Carnelian	...0-25
73 to 75 Carnelian polished (each costing Rs. 0-25) ...	...0-25
76 A spike for making beads	
77 & 78 A spike for making Guldana Rs. 2/- each	...2-00 ...2-00
79 to 81 A hammer (Shingadi) for making beads Rs. 1-50 each	...1-50
82 to 84 Maradia for skinning agates Rs. 1-50 each	...1-50
85 Apparatus for boring agates	...13-50
86 A lathe with four wheels ...	...23-50
87 A stand for water pot ...	...12-25
88 to 96 A necklace of agate beads one costing Rs. 5-00 ...	...5-00
two costing Rs. 3-00 each...	...3-00
and the rest each costing ...	...2-00
97 & 98 An armlet	...3-00
99 A knife handle	...25-00
100 A set of blood stone buttons each	...2-00

Name	Cost Rs.nP.
101 & 102 A set of Jasper buttons each	2-00
103 A set of agate buttons ...	...2-00
104 A set of twenty two ornamental pieces made of agate ...	...20-00
105 to 109 A slab of moss agate each	...2-00
110 to 112 Slabs of agate one costing	...6-00
and two costing each ...	...5-00
113 to 115 A box made of processed real agate one costing	3-75
two costing each	4-25
116 A square slab of imitation agate ...	3-50
117 A paper cutter made of processed real agate	2-25
118 A paper cutter made of blood stone	2-25
119 & 120 A knife handle made of processed real Jasper each ...	2-00
121 Necklace made of agate beads	...16-00
122 A set of agate Indian chess game	400-00
123 A set of agate Indian Backgammon	12-00
124 A yellow slab of agate ...	...12-00
125 A white slab of agate ...	...13-00
126 A slab of blood stone ...	...10-00
127 A slab of blood stone ...	...10-00
128 A gun made of agate on wheels	250-00
129 A necklace made of agate beads ...	8-00
130 A set of square agate buttons ...	6-00
131 A set of round agate buttons ...	6-00
132 A necklace of crystal beads	...40-00
133 An agate, honey colour and straps	40-00
134 An agate oval box with blue straps	30-00
135 An agate snuff box/colour and strap	...30-00
136 An agate ink stand (moss)...	...40-00
137 An agate case, oval with mirror, honey colour and straps ...	...35-00
138 An agate pork, blue and straps	...17-00
139 An agate holder, royal blue and straps	...25-00
140 An agate seal, blue and white straps	...15-00
141 An agate needle, handle, royal blue	25-00
142 An agate cigarette holder, honey colour with straps	...12-00
143 An agate pen knife, double blade blue colour...	...15-00
144 An agate pen knife, small honey colour	...15-00
145 An agate paper cutter blue...	...22-00
146 An agate disc, round, blue with lines	20-00
147 A mariner's compass, honey colour	...20-00
148 An agate whistle, honey colour	...10-00
149 An agate whistle, black and lines	...10-00
150 A carved spoon with handle agate	50-00

Note:

(1) All the articles are from Cambay

(2) The total cost is Rs. 1429.25 nP.

(3) Some old photos depicting craftsmen at work in the former days are kept in the Museum

(4) Implements :

1 Hammers made of horn for skinning agate (wooden handle with horn rod)

2 Small hammers for making agate beads (wooden handle with pointed iron nails)

3 Iron spikes for making beads made of

4 Wooden apparatus for boring

5 Wheels for polishing agates (Iron discs) and wooden lathe for cutting and polishing agates

6 Instrument used in agate industry (wooden)

7 Apparatus for holding water pot

Source : Curator, Victoria and Albert Museum, Bombay

APPENDIX V-*contd.*

B—List of Agate Articles in the Museum and Picture Gallery, Baroda

M. No.		
1	648	Agate crescent of yellowish colour (Cambay)
2	619	Agate bowl, carved, with two handles (Old Indian)
3	629	Agate cup small, carved, pale-green (Old Indian)
4	617	Agate bowl, plain, greenish yellow (Old Indian)
5	627	Agate cup, plain ... ,,
6	630	do ... ,,
7	626	Agate cup, green blood-stone ,,
8	628	Agate plate ... ,,
9	631	,, ,, ... ,,
10	632	Agate stool, octagonal with legs (Old Indian)
11	639	3 agate dice ... ,,
12	640	
13	642	
14	647	agate Sogta ... ,,
15	636	3 agate dice ... ,,
16	637	
17	638	
18	646	agate Sogta ... ,,
19	643	3 agate dice ... ,,
20	644	
21	645	

Source : Director, Museum and Picture Gallery, Baroda

APPENDIX V-*concld.*

C—List of Agate Articles in Geological Survey and Museum, London, England

Sl. No.	Specimen No.	Description	Particulars: Raw materials used	Particulars: Place of manufacture/ processing	Dimensions: Height	Dimensions: Breadth (C. ms.)	Dimensions: Depth	Colour	Date of collection
1	2	3	4	5	6	7	8	9	10
1	MI 22303	String of beads	Sardonyx Agate	Cut in India	Beads (22) about	1 diameter	Fluted	Brown/ White	Prior to 1864, presented by R. G. Hennell
2	MI 22384	Cup and Saucer	Moss Agate	Manufactured at Cambay	Cup: 3.5 C.m.	5.2 C.m.	..	Green/ Red/ brown	Prior to 1864, presented by Lieut. Winscow
			—do—	—do—	Saucer: 1 C.m.	Diameter 8.7 C.m.	..	Green/red	—do—

Source:— Director, Geological Survey and Museum, London, England

APPENDIX VI

Different Types of Articles Manufactured from Agate and sold in the Market in the Past and at Present

Sl. No.	Articles produced in the past	Market	Sl. No.	Articles produced at present	Market
	I Ornamental Pieces			**I Ornamental Pieces**	
	Necklace Beads known as Modan, Gol, Gal			Necklace beads of various shapes, e.g., round (big and small), square, triangular, oblong, hexagonal, decagonal, octogonal, oval, etc.	
	Buttons			Earrings	
	Rings			Buttons (Shirt & Coat)	
	Bracelets, armlets & wristlets, ornamental slabs, plates & pieces (Muglai Gul)			Pieces of stones (Nagina) for setting in the rings of various shapes	
	Dress ornaments like brooches, etc.			Pieces for bracelets, wristlets armlets, lockets, etc.	Africa
	Lockets and Talisman (Tavit and Madalia)				Bassra
	II Decorative Articles			**II Decorative Articles**	Bagdad
	Stones for setting in snuff box, cabinet of stones, flower vases, square tables, cannon with two wheels, dagger, and sword hilts, pistol, chariot	Cairo		Ashtrays, Flower vases	Saudi-Arabia
		Egypt		Birds like parrot, sparrow and dove;	Nigeria
		China		Animals like horse, elephant, camel,	Singapore
		Europe		Acquatics like tortoise, crocodile, fish	America
		Arabia			Japan
		Guinea			Java
		Mozambique			Sumatra
	III Stationery Articles			**III Stationery Articles**	Malaya
	Pen-holders	Sind		Pen-holder	Bombay
	Pen-racks	Kabul		Pen-rack	Jaipur
	Ink-stand			Ink-stand	Calcutta
	Card & letter racks			Paper weight	Lucknow
	Rulers			Paper cutter	Hyderabad
	Paper weights				Delhi
	Paper cutters				Agra
	Seals				
	IV Others			**IV Others**	
	Saucers, cups, bowls, spoons, knives, knife-handles, sogtha baji			Dice	
	Backgammon			Polishing stone (*Opni*)	
	Chess			Shivaling	
	Dice			Door knob	
	Silk winder			Cupboard and Door handle	
	Hookah pipe			Pestle and Mortar	
	Cigarette holder				
	Polishing stone (*Opni*)				
	Pestle and mortar (*Kharal*)				
	Crochet needles				
	Watch stand				
	Brace & shirt studs				
	Whistle				
	Mariner's compass				

APPENDIX VII

Unstructured Biographies

BIOGRAPHY NO. I

A biographical sketch giving the past and present of Agate Industry

NAME : Shri Jamnadas Narotamdas Rana
AGE : 75 years
CASTE : Gola Rana
ADDRESS: Gandharap Wado, Cambay, Kaira District

Introduction

I was 12 or 15 years old at the time of Samvat 1956 (1900 A. D.) known as 'chhapaniyo'. Today I am 75. My birthplace is Cambay. During that critical period my father was compelled to send me somewhere for training so that I could earn my livelihood. I joined the agate establishment of Shri Prabhudas Patidar at Kadiya Pole of Cambay. From Prabhudas Patidar, I learnt the grinding and polishing of agate beads on hand-operated emery wheels.

Education

I, remember even today that the teacher named Shri Chhaganlal (Mehataji) was coming to a place where we gathered for study. For this service, a bowl of grains was given to him daily by every student. I do not remember now what type of education was imparted to me. But I do not care for education as in those days it was not important for me or for my caste fellows.

Caste and Occupation

In 500 households of our caste of Gola Rana, the main occupation was cleaning of food-grains and grinding of grains by hand-operated grinding wheels. The subsidiary occupation of some of my caste fellows was to bring water by keeping the filled in leather bags or carry other load on the back of donkeys on payment of wages at the rate of Rs. 0.50 nP. per day. But they now have changed their old occupation and shifted to working in agate industry, cutting and polishing of diamonds, weaving, tailoring and have also taken to serve in offices and private shops. Eight or ten persons of my caste are earning Rs. 200 to Rs. 300 per month because they are educated. In agate industry from Rana community, at present 10 are engaged in drilling, 15 in shaping of agate articles and 3 are dealing in the business relating to agate.

Family History

In those old days, my father was going to other villages or towns from the early morning with donkeys to carry paddy and Kodara and was returning in the evening. The trafficking of different commodities was thus two-sided; on the one side different articles were carried away from Cambay to near-by villages or towns and on the other side he was bringing commodities and goods from that village or town. He was thus remunerated for carrying the load both ways, and earned Rs. 2/- per day by carrying load to and fro from Cambay to near-by villages or towns. The paddy of high quality giving fragrance at the time of cooking was sold in those days at the rate of Rs. 3.00 per deshi maund and that of low quality at the rate of Rs. 1.50.

After the death of my father in Samvat 1956, all the four brothers had to do some work for earning our bread. The eldest pursued the ancestral occupation but the other four learnt the grinding and polishing of agate articles on hand-operated emery wheel. My mother expired 25 years ago and my three brothers also went on the same path. My younger brother is enjoying a retired life, as his eyes have become weak by working in agate industry.

Marriage Customs

My marriage took place when I was 12 months old, i.e., it was child marriage or craddle-marriage. The expenditure on marriage in those days came to Rs. 50/- to 60/-. In our caste we have to pay Rs. 16/- to the parents of the bride, while the bridegroom party has to pay to the bride Rs. 32/-. The value of money paid to the bride even today is very nominal, as dowry is not to be paid, and hence the term *'kanku-ni-kanya'*, which means that the bride is given in marriage without taking any dowry and simply placing a red mark on the forehead of the bride. My mother was reminding me that the marriage expenses of my two brothers came to Rs. 75/- only.

Because of the concentration of our caste in Cambay, two of my daughters and one son are married here. The husband of my elder daughter namely Savita was working in a weaving factory. T. B. kept her in bed for 3 years but Dr. Cooper operated on her lungs. After this operation she survived for 7 years. She expired ten years ago. She was a helping hand to her husband as she was earning something by miscellaneous labour.

My younger daughter Kamala is happy in the sense that she is also earning by doing some miscellaneous labour and her husband Dahyalal is working as a grinder in a diamond factory. Her son Amritlal was very eager to study further after his matriculation but on account of shortage of finance he has dropped the idea and has registered his name in the Employment Exchange at Ahmedabad.

My son Shankaralal has passed vernacular 5th standard. He is now earning Rs. 1-50 to 2-00 per day by making bidi on piece wages. Prior to that he got a job in weaving establishments, he did not care for it, today he is after a job.

Birth and Death

My wife gave birth to 3 sons and 4 daughters, out of whom 2 sons and 2 daughters expired shortly after delivery. My son, Shankaralal has also lost 2 of his sons (aged 4 and 5 respectively) in fever and whooping cough.

Family Disease

My wife expired before 20 years as she suffered from T.B. and tumour. My daughter Shanta and two of my brothers were also victims of this disease. I suffered from illness four times and was also a victim of T.B. and tumour.

Method of Working, Wages and Living Conditions Past and Present

In the past, the merchants were giving Rs. 100/- in advance to artisans like me. Sometimes when needed, minor sums of Rs. 3/- or 5/- were also given on loan to artisans by the merchants to purchase grains and other necessities of life. Because of getting money in advance and working at least according to their convenience, the artisans were happy as they led a very simple life and the standard of living low. There was only one shop of betel leaves near Gawara and one hotel of Ravjibhai where a big cup of tea was charged one pice only. There were only two cloth shops, where four pieces of dhoti of short breadth, (पनीयु) each of 4 to 5 yards were sold in one rupee. Fried food like puri, sweet Malpuva and Bhajiya were sold 8 lbs. a rupee and a pair of shoes cost Rs. 0.50 nP. only.

In those days, eighteen varieties of agate beads were offered for grinding and polishing but now only the following main varieties are given for grinding and polishing at the rates mentioned against each.

Sl. No.	Variety	Unit	Rate of grinding and polishing
1	Round beads	pieces 100	Rs. 2.00 (Approximately one seer)
2	Oblong beads	„	Rs. 5.00
3	Nagina (ornamental pieces)	„	Rs. 2.00
4	Square beads	„	Rs. 4.00
5	Loi	B. Md.	Rs. 100.00 to 160-00

Position of Traditional Artisans and New Entrants

All the existing establishments of agate industry are owned by Muslims, Patidars and Ranas

from the time of their forefathers. But Pinjaras and Rajputs who were formerly hired workers in this industry are now working independently and having their own establishments.

The ancestors of Kachhiyas, who are grain merchants today were working formerly as *patti-mar* (polisher). Ten of them were working on hand-operated emery wheels. There were 200 Dolias and they were working at the rate of Re. 0.12 nP. for the whole day and were also supplied by their employers with bread and pickle. I still remember that 'Dolias' were working separately for day and night shift, which indicates the prosperity which this industry attained in the past.

In the days by-gone, there were about 500 hand-operated emery wheels used for grinding and polishing in the different localities of Cambay.

Locality	No. of Emery wheels
Pakhalivas	100
Chawk	100
Ari	100
Para	60
Rangrej Ambali	60
Nana Kumbharwada	25
Scattered in other localities	55

In each establishment 2 to 5 persons were working in a group as hired workers.

Workshop-cum-dwelling

At present I work on the 'otta' in the front portion of my house. For Rs. 100/- this building was mortgaged by my father to a merchant who after some years asked to pay back a sum of Rs. 400/- including interest. On the day of auction I pursuaded him and purchased the house myself on paying Rs. 400/-. Before purchasing this building, I stayed in a rented building for a period of five years. After purchasing the house, I have spent Rs. 500/- for its repairs. Since last 60 years I stay in the same house which has tiles on the floor and country tiles on the roof.

Making of Emery wheels

The electric motor for grinding and polishing has been introduced since last more than 10 years. In spite of this mechanisation, at this age even, now I can earn Rs. 2/- per day single-handed by working on hand-operated emery wheel. I, myself, prepare the emery wheels by preparing a kind of mixture called समादो prepared by mixing lac and a kind of emery stone. Fifty years ago, the rate of this stone was Rs. 4/- per deshi maund but today the rate is Rs. 3/- per lb. and hence emery discs which are discarded by merchants are purchased from them at the rate of Rs. 0.75 nP. per lb. and powdered to make a paste. Four types of emery wheels are used for grinding, smoothening, polishing and glazing, each weighing 3 to 4 pounds. In the preparation of emery wheel for polishing the agate beads etc., dried agate powder falling out at the time of drilling operation known as 'vindhar's vadi' विंधारनी वडी is also used in the lac mixture.

Health and Habits

On account of my old age I generally do not go out but pass my time with my neighbours and worship God. I take tea. From morning to evening, I work slowly and at ease. On account of constantly gazing at the agate articles while grinding and polishing, my eyes have become weak. Partly due to sedentary nature of my work which requires constant bending and physical strain and partly due to old age, I experience back-ache and pain in my fingers.

BIOGRAPHY NO. II

A biographical sketch of a well reputed skilled craftsman

NAME : Lalbhai Chandbhai
AGE : 44 or 45 years
CASTE : Muslim
ADDRESS : Bhoibari, Cambay, Kaira District

Individual and Family History

My birth place is Cambay. I am 44 or 45 years old now. As for my education, I can say that I can sign only. My marriage took place in 1933 or 36 in Cambay. Abdul Husen was the youngest and Fajalbhai was the eldest of the three brothers. Both my married brothers and my father expired after 1960, because of T. B., an ancestral disease in my family. At the age of 14 or 15, I saw the death of my mother. I have 5 sons and 3 daughters in my family. I have also to look after 5 children of my deceased brothers. Thus, I shoulder the burden of a joint family of 18 persons single handed through the income, I get from working with agate industry. I have no other source of income like agricultural land, live-stock, etc. I own one pucca house but my brothers' families occupy rented premises.

Training in the Craft and its Development

In this industry my father trained me in shaping of agate stones when I was 10 or 12 years old. At that time he was working in breaking and shaping of agate stones, as मांगीया on the daily wages of Rs. 1-25 nP. When I was 15 to 18 my father started this industry independently. Over and above, my two brothers and myself, my father employed 10 to 12 workers in peak season. We were exporting agate articles especially 'Gol Modan' गोल मोदन round beads worth about Rs. 12,000 to 15,000 to Africa.

In those days (before 35 years ago), there were 15 to 20 'karkhanas', but today there are more than 60 establishments working independently. There were 15 to 20 Bhangiya establishment in those days, whereas today more than 200 artisans of different castes are engaged in this operation. In the absence of electric motor, hand-operated emery was in use, engaging 20 to 30 workers, while one man was rotating it with hand, the other person sitting opposite was grinding shaped stones on it. In those days if the beads were not properly shaped by Bhangiya on hand-operated wheel, they were returned and accepted only after they were properly shaped. Such was the special care taken for maintaining the quality of work.

Efficiency and Reputation

In my youth, I was earning Rs. 300/-per month by breaking and shaping Gol Modan or round beads. As regards my work it is said that while shaping and breaking the baked agate stones, the chips from these stones will be seen fixed in the ceiling of the roof. People also say that well shaped beads worked by me will not make any scratch if rubbed on the skin. I work without putting on 'anguthia' or finger wrappers made from rags and also without numberless spectacles.

Present Situation

Now, I am training my sons and nephews, so that they can earn their bread in future from this industry. On account of shortage of finance I have disturbed their education against my will.

The rent of the workshop which is near my home is Rs. 5/- per month. Moreover, I am of the opinion that like myself, my family members also should keep up the reputation of doing fine work. But on account of the high demand for the agate articles, the persons of different castes engaged in the work do not care for such a fine shaping and electric motor introduced in the grinding operation is also partly one of the factors for the deterioration in the quality of work.

Health and Habits

I do take bidi and pan with a view to revive freshness and remove my fatigue. When

I get time, I go to Gawara, a central place of gathering for citizens, merchants and villagers in the town or go to my friends who reside near my house and gossip there. I pay homage to Bawa Ghor. I go to mosque for regular worship.

Physically I look healthy but I had been in bed on account of serious illness. Now I experience pain in my legs, hands and back during night time because of continuous squatting on the ground while at work. I start my work at about 8 a.m. and after my lunch I sit again upto 6.00 or 7.00 p. m. I now shape leaf shaped and square agate articles with an average of 150 to 200 beads daily. My total annual production of agate articles comes to 5,000 only, which I sell on retail basis to customers or on wholesale basis to the merchants on cash payment. In olden days, raw stones were extracted by the merchants from Jhagadia mines of Rajpipla State after signing the 'theka' or contract for that purpose with the Maharaja of Rajpipla. Formerly the stones were brought to Cambay by ships and rail, but today they are mostly brought to Cambay in trucks.

BIOGRAPHY NO. III

A biographical account of a master craftsman

NAME : Shri Kesarisinh Mavsinh Thakor
AGE : 35 years
CASTE : Rajput
ADDRESS : Rajput Wado, Cambay, Kaira District

Individual and Family History

I was born on 30th day of Jyestha of Samvat 1982 in Cambay. Today I am 35 years old. I completed my education in Cambay up to sixth standard, i.e., the present 9th standard, but failed in 10th standard. My marriage took place in my childhood at the age of 3. I started my regular married life at the age of 16. My wife has passed 4th vernacular. My father-in-law is dealing in the business of diamonds. I have 6 sons and 3 daughters and all of them are educating themselves. My eldest son, Shri Jayantkumar (aged 21) is studying in Senior B. Com. at Ahmedabad in H. A. College of Commerce. He is very fond of being photographed and table tennis is his favourite game. After completion of his graduation, I intend to send him to foreign countries, for learning the latest development of techniques and processing of agate. He also wishes to do so.

My brother Shri Amarsing or Jivanbhai is 25 years old. His birthplace is also Cambay. At the age of 18, he appeared in the Matriculation examination but failed.

Main and Subsidiary Occupation

We have never tried for employment anywhere because agate industry is our main occupation and agriculture is our subsidiary occupation. I own 5 Bighas of agricultural land in Cambay. As for livestock, I must say that after the death of a cow, we do not like to have livestock. I am not interested in politics.

Development of Agate Industry

My grand father Shri Ranchhodlal was working as employed worker in agate industry of Cambay. My father started it independently and my family is working in this industry since last 55 years. I started my training under my father at the age of 10. The industry which was working on a very small scale, has been developed by me and my uncle who was working with us. With the development of this industry and also to cope up with the increasing volume of work, my uncle started a separate unit of his own in Samvat 2003. (1947 A. D.).

I have installed electric motor since last 10 to 15 years. All the processes and techniques of agate stones from drying of stones in terrace to chiselling, shaping, grinding and drilling are done in my own workshop. I have constructed modern cement furnace for baking of agate stones. All the sections of agate industry are working separately in separate buildings. Two rooms are used as warehouse for raw materials and finished products. I am employing 6 to 8 artisans on piece wages for various operations as described above. It is only, for polishing and drilling that I have to depend on others. Polishers are not showing this operation to anybody because it is a question of their livelihood. Ornamental pieces are sent for grinding and polishing to the artisans who are working on hand-operated emery wheels.

Our annual total production comes to about Rs. 45,000 to 50,000 which we sell generally in Africa and particularly to the merchants at Bombay, Delhi and Benaras who purchase Shivling on wholesale basis through banks on cash payment. I sell sometimes on credit basis but shortage of finance puzzles me. I have recently started correspondence with foreign countries for the development of this industry abroad and in Asia.

Naga Tribes and Agate Industry

In the past for the development of this industry, my father had stayed for a period of 25

years in Assam and Nagaland, with one of his Marwari friends, on whose shop agate articles were sold on retail and wholesale basis. My brother, Amarsing, who has been trained at the age of 12 or 13 is visiting Assam and Nagaland since last five years and stays at Bimapur on Manipur Road. Agate articles mainly sold and popular among tribal people of this region are 'chhasai' छसै, an oblong shaped agate bead with six edges and 'loi'. These Naga tribes on ordinary days put on their necks one necklace of agate beads—chhasai, but on the special occasions like fairs and festivals they decorate the necks with more necklaces of beads and loi. They never purchase low quality of agate beads and they are prepared to give high prices for high quality of agate beads. In marriage ceremony, the Hindus give golden ornaments to the bride, but the Naga people give necklaces of agate beads. Shri Amarsing has also visited NEFA area in Lakhimpur of Subinpur district as my representative to sell agate articles. But now on account of China's aggression, he has come back and will revisit after Diwali for this purpose. I wish to develop my establishment in the form of a big business firm dealing with agate wares.

Leisure, hobby and recreation

Smoking is not my regular habit but I take tea. Generally I do not get time for recreation, because I have to look after the working of my workshop, purchase of raw materials and sale of finished products. But when I get time, I go for a walk to the garden, read newspapers and religious books and see pictures, drama and games. Before 10 years ago, I was seriously attacked by brain fever but today I feel healthy.

BIOGRAPHY NO. IV

A biographical account—occupational shift

NAME: Chhotalal Desaibhai Patel
AGE: 35 years
CASTE: Leuva Patidar
RESIDENCE & BIRTHPLACE: Nana Kalodra (2 miles away from Cambay)
PLACE OF WORK: Cambay, Kaira District

Introduction

My birthplace is Nana Kalodra of Cambay taluka in Kaira district at a distance of 2 miles away from Cambay town which is also the taluka headquarters. The village is inhabited by my caste fellows—Leuva Patidars all of whom are mostly agriculturists. I have passed 7th vernacular standard. At present I have completed 35 years.

Main Occupation

Our ancestral occupation is agriculture; two acres of land are held by my father. We are five brothers and it is but natural that we cannot make both ends meet from agriculture on account of such a small piece of land. My father was worried for our future because of meagre income from the land and he was always thinking to send us somewhere for training or to divert us in some other occupation. When I was 15, one of the friends of my father, Shri Rasiklal Maganlal of Harman's Pole, Cambay, came to his rescue and promised to teach me the working of agate industry. I joined his establishment as an apprentice and worked for two years without any regular pay; only a pittance in terms of a cup of tea daily was given to me. Today after experience of 20 years, I am a skilled craftsman in breaking the agate stones and shaping the agate beads and other articles. My monthly income is Rs. 100/-. I am coming and going from Nana-Kalodra to Cambay daily on cycle and working for 8 hours in the establishment of well-known Akikwala, Shri Mahmadbhai Ahmedbhai, Jalipole, Cambay.

Subsidiary Occupation

During leisure hours, I do look after agriculture and help my brothers in the peak seasons of sowing and harvesting. Thus I spent 30 days in a year in agricultural activities, for which my brothers give me 8 to 10 maunds of grains, as the land is still owned jointly and field produce is shared.

Family History

Before 12 years my father died and my mother expired 7 years ago. I owned a pucca house to accommodate my family of 9 persons including my wife, 4 sons and 3 daughters. My wife knows how to read and write, whereas my 3 sons and one daughter are going to school. Other 3 are infants. A big occasion like marriage has not occured in my family so far, as family members are still minor. But according to prevalent custom in our Pattani Patels' caste, we have to give ornaments worth Rs. 500/- to the bride at the time of marriage of a son, while in case of a daughter we have to spend Rs. 100/- to 200/- after clothes over and above serving sweet dishes to relatives घोल जमाडवुं. I have never thought for the future of my sons but I think to let them decide their future after getting proper education.

Health and Habits

In my life I have never been in bed for a long period. No issues of mine have been spoilt also. I do take tea and bidi and read religious books when I get time. I like to enjoy drama, games, fairs and festivals in my village and also at Cambay. I also observe fasts on sacred days and pay homage to Hindu gods and goddesses and Bawa Ghor who has shown us the way of livelihood.

SCHEDULES

ANNEXURES

ANNEXURE I

CENSUS OF INDIA 1961

GUJARAT

Handicrafts Survey

VILLAGE SCHEDULE

District..... Sub-division.....

Taluka/Mahal..... N. E. S. Block..... (if any)

Village..... ..... Location Code No.....

PART (A)

General Description of Village

DESCRIBE BRIEFLY :

1 Area of village in acres.....

2 Population.....

3 Approximate number of families.....

4 Various sections in the village corresponding to communities and their names.....

Name of community	Name of community
A	F
B	G
C	H
D	I
E	J

5 Distance from nearest railway station..... (in miles)

6 Distance from nearest main road (in miles)...

7 Distance from Police Station, Taluka/Mahal Headquarters (in miles).....

PART (B)

Artisan Community in the Village (Tribal & Non-tribal)

Name of artisan Caste/ Community	Approximate number of families	Describe legends or myths current on the origin of the community	When did the community come to this village? Who were the patrons? How old is this craft in this village?	Are there any villages in the neighbourhood where branches of this community live? If so, give name of village(s) and community	Total No. of adult workers		Approximate number of families working under cooperation	Number of families working in own houses or in workshops set up by their employers
					Males	Females		
1	2	3	4	5	6		7	8
Non-Tribal Caste/ Community 1								
2								
3								
4								
5								
Tribal Community 1								
2								
3								
4								
5								

Articles produced, Design, Raw Material-Column No. 9 to 16

Names of articles produced. Describe the articles and mention approximate sizes and heights.	Main material used	Subsidiary material	Whether raw material is imported and if so, from where? What are the main ingredients?	Describe colours used. How are the colours obtained?	Who gives the designs?	Give the names of the designs.	Give the myths or stories behind names of the designs, i.e., explanation of what the design stands for and the shape or decoration of objects.
9	10	11	12	13	14	15	16
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							

Describe 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.)

17

First stage	Second stage	Third stage	Final and finishing stage

Tools and Workshops

Tools used (describe tools, give pencil sketches and photographs of special tools)	Who make these tools and from where are they imported?	General description of workshop (use separate sheet of paper, if necessary)
18	19	20
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

Household Use, Demand, Market—Column No. 21 to 26

21 Do the communities produce for their own use entirely? Describe whether for domestic or ceremonial purposes.

22 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? or

(ii) Are they for ceremonial or ritualistic purposes? If so, for which ceremony or ritual.

23 Whether the communities produce for themselves and for sale?

(i) Describe types of objects for own domestic or ceremonial use.

(ii) Describe types of objects for sale. (Mention heights of objects)

24 Do the communities produce for sale in open markets, *hats* and fairs? Mention the markets, *hats* or fairs and the occasions.

Do they make to the order of middlemen who advance money and undertake marketing facilities?

25 Is there a cooperative society? Are there members in it who belong to different castes?

26 Give a list of very skilled craftsman of each community.

PART (C)

For Tribal Communities Specially

27 Is this a tribe where every household produce things for its own use?

28 Is this a tribe of which only particular sections produce particular things? If so, which sections produce which things? Mention names.

Name of section of tribe	Name of article produced

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.

Name of neighbouring tribes	Name of articles produced for them

30 Does this tribe produce articles for non-tribal or advanced communities? If so, mention names of these communities and the names of articles.

Names of non-tribal or advanced communities	Names of articles produced for them

ANNEXURE II

CENSUS OF INDIA 1961

GUJARAT

Handicrafts Survey

HOUSEHOLD SCHEDULE

District..... Sub-Division.....

Taluka/Mahal..... N. E. S. Block..... (if any)

Village..... Code No.....

Household Number.....

Name of the industry/craft under survey.....

Date of Survey.....

Name of Investigator.....

1 General Information

1.1 Name of the Head of the Household

Religion.....

Caste.....

Sub-Caste.....

Tribe .....

Sub-Tribe.....

1.2 If belonging to Scheduled Caste/Tribe, the name of Scheduled Caste/Tribe

1.3 Composition of the Household (Beginning with head of the Household)

St. No.	Name	Relationship to head	Age	Sex	Marital status	Educational status	Occupation		
							Principal	Subsidiary	Others
1.4	1.5	1.6	1.7	1.8	1.9	1.10	1.11	1.12	1.13

1.8 M=Male, F=Female, 1.9 M=Married, UM=Unmarried, S=Separated/Divorced, W=Widow/Widower

1.10 Il=Illiterate, L=Literate (who can both read and write),
P=Primary, S=Secondary, M=Matric/S.S.C., D=Diploma, G=Graduate.

1.14 Describe legends or history about the origin of your caste/community.

1.15 When did the persons of your caste/community come to stay at this village?

(a) Who were the patrons of their craft?

(b) How old is this craft in this village?

(c) Is there any village in the neighbourhood where branches of this community live?

If so, give name of this village or villages and community.

2 Particulars Relating to Industry/Craft

2.1 In which industry/craft are you engaged?

Do you take any help in your industry from other craftsmen? (Answer Yes/No)

If yes, state number and caste. Of these, how many are family members and how many other hired workers?

2.2 Is this a traditional industry/craft in your family? If yes, since how many years?

2.3 If no, have you taken up this occupation for the first time in the course of the last five years?

If yes, why?

2.4 How many days in a year do you get work in this industry/craft? Mention the busy season of work (Give actual months).

2.5 For how many hours do you work in a day?

In season

Out of season

2.6 Give reasons for doing less work or getting less work.

2.7 From where and how did you get necessary instruction and experience for this industry/craft?

2.8 Have you adopted any improved techniques and tools during the past ten years?

Give details.

2.9 Who suggested the improvement in column No. 2.8 above and how adopted?

2.10 Do you consider further training in the industry/craft necessary? (Answer Yes/No)
If yes, describe the type of training.

3 Capital–Debt

3.1 How do you get the finances required for your occupation?

3.2 Have you taken any loan or any financial help for your occupation? (Answer Yes/No)

If yes, give the source.

How many rupees and in which year?

What are the terms of borrowing?

Mention the use made of this loan.

3.3 Is there any increase in production because of this loan? (Answer Yes/No)

If yes, why and how much?

3.4 What is your approximate income from this industry/craft?

4 Raw material, Designs, Articles produced

Name of articles produced, describe the articles and mention approximate sizes and heights 4.1	Main raw material used 4.2	Where do you keep the stock of raw material and how much? Other subsidiary raw materials 4.3	What are the main raw materials used? Whether raw materials is imported? If yes, from where? or, from which place the raw material comes? Describe the difficulties, if any, in obtaining the same. 4.4	Describe colours used. How are the colours obtained? 4.5	Who gives the designs, shapes? 4.6	Give the names of the designs or shapes. 4.7	Give the myth or history behind the designs or shapes, i.e., give details about what the designs/ shapes stand for or the purpose behind the decoration of objects. 4.8

5 Description of Production

Please describe one by one each stage of production and take photographs wherever possible. Photographs should be supplemented by pencil sketches of surface forms, designs and shapes with colours of articles produced, and line drawing of each process with techniques should also be drawn on paper, if necessary.

5.1 First stage:

5.2 Second stage:

5.3 Third stage:

5.4 Final and finishing stage:

Note: Give the nature of power/fuel.

6 Tools

Give names of tools used. Describe tools and give photograph and pencil sketches of special tools	Price of tools	Who makes these tools and from where are they imported?	Since how many years has there been an improvement in tools? State type and person or agency suggesting it
6.1	6.2	6.3	6.4
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

7 Workshop

7.1 General description of workshop and craftsman's house (use separate sheet of paper, if necessary), expenditure incurred, if it is owned; rent paid, if hired.

7.2 If the work is carried on in the house

(a) Area of the house (in sq. feet)

(b) Number of rooms in the house

7.3 Do you have separate arrangement for work in the house? If separate, in which part of the house. Describe its measurements, condition of ventilation, etc.

7.4 If the workshop is not in the house, how far is it? Describe its general condition, measurements and condition of ventilation.

8 Household Use, Demand, Market

8.1 Do you produce for your own use entirely? State whether for current domestic use or for ceremonial occasions in the family.

8.2 Whether you produce entirely for others in exchange for money or kind? If yes, who are the customers and to which communities do they belong?

(a) Do they purchase for own domestic use? or

(b) Do they purchase for ceremonial or ritualistic purposes? Describe the type of ceremony or ritual.

8.3 Do you produce both for sale and for household use?

(a) Give details about the types of objects for own, domestic or ceremonial use.

(b) Describe types of articles produced for sale with their height.

8.4 Do you produce for sale in open markets, *hats* and fairs? Mention the markets, *hats*, fairs and their occasions. What are the terms and conditions for sale in this way?

8.5 Do you make to the order of middlemen who advance money and undertake marketing facilities? If so, give the details.

What is the production during a year (value in Rs.)? How much do you sell out of it? And how much is utilised for household consumption?

9 Cooperative Society

9.1 If you are a member of any cooperative society, how many members are there in it belonging to one caste only or different castes? Give details about them.

9.2 How many families engaged in this craft, are members of the cooperative society?

9.3 What is the type of help provided for you by the cooperative society?

Whether providing capital, supplying raw materials and arranging for marketing facilities? Give details.

9.4 What are the benefits received on account of cooperative society?

10 Very Skilled Craftsmen

10.1 Give a list of at least five names of very skilled craftsmen for this craft of your community with their addresses.

1

2

3

4

5

11 For Tribal Communities Specially

11.1 Does every household of your tribe produce things mainly for its own domestic use?

11.2 Do the men of particular section of your tribe produce only particular things? If so, which sections produce which particular things? Mention names.

Name of the section of tribe	Name of the articles produced

11.3 Is your community semi-tribal and does it produce articles for neighbouring tribes? If so, mention the names of the tribes for which it produces and the names of articles produced.

Name of neighbouring tribes	Name of articles produced for them

11.4 Does your tribe produce articles for non-tribal or advanced communities? If so, mention names of these communities and the names of articles produced.

Names of non-tribal or advanced communities	Names of articles produced for them

12 Additional Notes

ANNEXURE III

SL. No.....

CENSUS OF INDIA 1961

Handicrafts Survey

FAMILY SCHEDULE

(For practising artisan families)

State ..... Sub-division .....

District ..... N. E. S. Block (if any).....

P. S./Taluk/Tehsil .....

Village/Town .....

Locality .....

1 NAME OF THE HEAD OF THE FAMILY .....

2 (a) Postal Address .....

(b) Since when living in this area .....

(c) If immigrant, migrated from which area and when .....

3 PARTICULARS ABOUT THE MEMBERS OF THE HOUSEHOLD INCLUDING THE HEAD

(Use separate sheet for each individual) SL. No.....

(a) Name..... (b) Sex M/F .....

(c) Age in completed years.....

(d) Relation with head of family .....

(e) Place of birth (i) Name .....

(ii) Distance from here .....

(f) Religion..... (g) Caste/Tribe .....

(h) Language..... (i) Education .....

(j) (i) Training in craft or crafts as home apprentice .....

(ii) Other private sources .....

(k) Training in craft or crafts in institutions .....

(l) Father's occupation .....

(m) Occupation (i) Main .....

(ii) Subsidiary .....

(n) Hours of work for each occupation

(i) Main .....

(ii) Subsidiary .....

(o) Place of work for each occupation

(i) Main .....

(ii) Subsidiary .....

(p) Remuneration for different occupations

(i) Main .....

(ii) Subsidiary .....

(q) If engaged in any craft, since when .....

(r) Physical conditions .....

(s) Marital status .....

(t) Age at marriage .....

(u) Marriage payments

(i) Received by household .....

(ii) Made by household .....

(v) If occupation is not the traditional one, state :

(i) Whether ever engaged in the traditional occupation? YES/NO

(ii) If yes, when given up; .....

(iii) and why? .....

(w) Hobbies and recreational activities .....

4 Additional Questions to be Asked for Members of the Family Living away from it

(a) Present postal address .....

(b) Since when living away from the family? .....

(c) Why living away from family? .....

(d) How many times did he visit home village in a year and why? .....

.....

(e) Remittance (i) Sent by him .....

(ii) Received by him .....

(f) Remarks .....

5 Particulars about Articles Produced

(a) Local names and English equivalents for the types of articles produced by the family; (put in serial order in terms of importance with reference to the value to produce)

(i) Before second World War;

	Local Names		English equivalents
1		1	
2		2	
3		3	
4		4	

(ii) Before 1947;

	Local Names		English equivalents
1		1	
2		2	
3		3	
4		4	

(iii) At present.

	Local Names		English equivalents
1		1	
2		2	
3		3	
4		4	
5		5	
6		6	

Details of articles produced at present (Use separate sheet for each article)

(a) Name of article

(b) (i) Total number of articles produced during 1961

(ii) Price of the same

(iii) Percentage of the value of all the produces during 1961

(c) Describe the approximate size, height, form of each part of the article as well as the article as a whole.

(d) Describe the functions (uses) of each part of the article as well as the article as a whole.

(e) Discuss how during use the different parts and/or the object as a whole is manipulated.

(f) Whether there is preference for production of a particular variety of the article? If so, why?

(g) Whether there is a preference for any particular article or group of articles? If so, why?

(h) (i) Has there been any attempt to standardise any aspect of the craft?

(ii) If yes, by whom and how?

(iii) To what extent has it been successful?

(iv) What has been its impact on the volume of production?

(v) What has been its impact on the economy of the craftsmen?

(vi) Has it involved any shift in the position of any particular craftsman or craftsman's family?

(i) (i) If there has been no attempt of standardisation, do you think that any aspect of the craft requires to be standardised?

(ii) If so, why?

(iii) How and by whom it should be standardised?

(j) (i) Do all the craftsmen's families have necessary tools, equipments, skill and capital to fall in line in case of standardisation?

(ii) If not, what has been/should be done in case of such families.

(k) Remarks

6 Particulars about Raw Materials

(Use separate sheet for each article produced at present)

(a) Name of the article with its parts (both local and english equivalents)

(b) Main raw materials

Names	From where obtained	Form	Price

(c) Subsidiary raw materials

Names	From where obtained	Form	Price

(d) Privileges enjoyed, if any, in obtaining raw materials

(e) Difficulties, if any, in obtaining raw materials

(f) Terms and conditions on which raw materials were obtained from different sources during 1961.

(g) Remarks

7 Particulars about Designs and Decorative Motifs

(Use separate sheet for each article)

(a) Name of article

(b) Date of manufacture

(c) Base material

(d) Name of design

(e) Decorative motif and other elements for the design and how they are combined in

  (i) the article under study

  (ii) and according to the craftsman, whether there are or were other combinations

(f) Brief description of design including colour schemes and aspects which are considered to be purely decorative and which are considered to be of ritual significance.

(g) Symbolic aspects associated with the design

(h) Legends connected with the designs

(i) Source of design

(j) Whether, according to the craftsman, the design is a traditional one/or whether it is a result of an innovation ?

(k) How frequently he makes use of the particular design ?

(l) Is there any section of the population among whom the design is more in demand ? If yes, give details.

(m) According to the craftsman, whether similar design is found in other types of crafts of the region?

(n) Is any design confined to certain families or certain recognised section of the population? Is there any taboo against adoption of other designs? Is there any sanction against copying of designs by others? If so, what is the nature of sanction.

(o) Whether the craftsman is acquainted with other designs which he wants to adopt? YES/NO
If yes:

(i) Name of the designs

(ii) Brief descriptions of designs

(iii) Sources of designs

(iv) Why he wants to adopt?

(v) Why he does not adopt?

(p) Remarks

8 Particulars of Tools

(a) Name of articles produced .....

(b) Base material .....

(c) Name of the tool (local and english equivalent)	Functions of the tool	Price	
		At the time it was obtained	Present market price

(d) Brief description of each tool (pencil sketches, photographs, etc., are to be supplemented)

(e) Who makes the tools, names, when and from where obtained?

(f) (i) Whether the tools are used to the full capacity?

(ii) If not, why not?

(g) (i) Is the craftsman satisfied with the tools?

(ii) If not, why not?

(iii) (a) What other tools he desires?

(b) Why is he not having those tools?

(h) Remarks (including whether the tool is imported from outside India)

9 General Description of Workshop and Organisation of Work

(a) Location .....

(b) Distance from household .....

(c) Physical structure (size and description)

(d) In addition to place of work, whether used for any other purpose; if yes, state the purpose.

(e) Environment and hygienic condition

(f) Number of persons working in the workshop

(g) Hours of work

(h) Types of operations

Type of operation	Names of tools used	Whether working individually	Whether working in groups

(i) (i) Number of persons engaged in each operation

Type of operation	Members of Family				Employed members				Remarks Including whether there is general division of labour
	Skilled		Unskilled		Skilled		Unskilled		
	M	F	M	F	M	F	M	F	

(ii) Wage rate for each type of operation and availability of labour

Type of operation	Wage Rate								Whether competent hands are available	Remarks
	Skilled				Unskilled					
	Male		Female		Male		Female			
	Adult	Minor	Adult	Minor	Adult	Minor	Adult	Minor		

(j) Nature of utilization of space in the workshop in respect of each operation and work group

(k) Nature of supervision

(l) Formation of work groups

(i) Operation wise

Name of operation	Number of persons	Basis of grouping

(ii) Object wise

Name of object	Number of persons	Basis of grouping

(iii) Other-wise

Name	Number of persons	Basis of grouping

(m) Observations of the investigator about the general atmosphere; relation between individual workers, groups, supervisors and workers, etc.

(n) Remarks

(o) Distribution of work in different stages (outside the household or the workshop of the establishment under survey)

Name of article	Stage of work	If not done in the household or workshop					Remarks
		Particulars of persons by whom done		Where done?	Reason for the particular type of distribution	Agency through which distribution and supervision is effective	
		Category	Number				

10 Particulars about Production

(Use separate sheet for each article)

(a) Name of article .....

(b) Seasons of production and approximate percentage of produce during each season .....

(c) If more than one technique of production prevails to produce the same article: .....

(i) How and when different techniques have been introduced?

(ii) Whether the different members of family follow the same technique or different techniques?

(iii) Whether there is preference of a particular technique? If so, why?

(iv) Stages of production beginning from preparation of raw materials to the finished product

(v) Describe operations involving Manipulotion of tools and pro cessing of raw material stage by stage.

(vi) Describe magic-religious performances and taboo associated with different techniques, tools and different stages of production or different aspects of the craft.

(vii) If particular tool, techniques, type of production or any aspect of the craft is considered to be distinctive of the community or group or to have symbolic significance in any manner, give particulars of the same.

11 Particulars about Storage, Marketing and Transport

(Use separate sheet for each article)

(a) Name of article .....

(b) Time gap between production and disposal

(c) In case of long duration, measures, if any, taken for preservation

(d) Storage: (i) Place

(ii) Distance from workshop

(iii) Container

(e) Percentage of total sale and disposal during 1961

Retail			Wholesale			On terms of processing raw materials supplied by		
From workshop	Outside		From workshop	Outside				
	To cooperatives	Others		To cooperatives	Others	Cooperative	Emporium	Businessman

(f) Sale Price

Retail			Wholesale		
From workshop	Outside		From workshop	Outside	
	Cooperatives	Others		Cooperatives	Others

(g) Terms and conditions of work in processing of raw material (operation-wise)

Name of operation	Cooperative	Emporium	Others

(h) Transport

Purpose	Place	Distance from workshop	Means	Cost

12 How Disposed (as per statement of the craftsman)

(Use separate sheet for each article)

(a) Name of article

(b) Percentage of the total used produce, in the family during 1961: for

(i) Ceremonial..... (ii) Domestic .....

(c) Percentage used in the community during 1961:

(i) Percentage of the total produce

(ii) On what terms

(d) Percentage used by patron clients during 1961:

(i) Percentage of the total produce

(ii) On what terms

(e) Sold in local market:

(i) Percentage of the total produce

(ii) Name of market

(f) Sold in fairs and festivals:

Name of fair/festival	Time of occasion	Percentage of the total produce

(g) Exported:

Place of export	Percentage of the total produce

(h) Statement of the craftsman about:

(i) who are main clients?

(ii) what is the main use (ceremonial, domestic, etc.)?

(iii) whether any change is taking place in the relative importance of different means of disposal and the nature of use?

(i) (i) If the craft is a new one in the family, why they have adopted it?

(ii) Is the craftsman satisfied with his/her job?

(iii) What are his/her main problems?

(iv) What he wants his/her son/daughter to be?

(j) (i) If the craft is a traditional one in the family, has any member of the family taken to any other occupation?

(ii) If yes, why?

(iii) Is the craftsman satisfied with his job?

(iv) If not, why not?

(v) If yes, what is the specific nature of the satisfaction?

(vi) Does he think that he is rendering a useful service to the society?

(vii) If yes, in what manner?

(viii) Do the neighbours think that he is rendering a useful service to the society?

(ix) If not, why not?

(x) Does he think that the society is doing all that should be done for him?

(xi) If not, why not?

(xii) Does he want his son/daughter to be in the same occupation?

(xiii) If not, why not?

(xiv) If he does not want his son/daughter to be in the same occupation what he wants his son/daughter to be.

(xv) (1) If he wants his son/daughter in the same occupation does the son/daughter reciprocate his feeling.

(2) How is he training up his son/daughter for the purpose?

(xvi) According to him, in addition to specific skill for the craft, what are the

(1) mental qualities required for successful pursuit of the craft

(2) physical qualities required for successful pursuit of the craft.

13 Estimated Cost of Production per Unit

Name of article	Description	Qty. of raw material	Price of raw material	Cost of transport	Rent of workshop	Wages paid	Other payment for processing	Interest on loan	Unpaid wages for the family members at market rates

14 Who does the Coordination of Work in case of Division of Labour and Work done on Labour rate basis at Different places?

15 PARTICULARS OF THE VARIOUS SOURCES FROM WHERE THE CRAFTSMAN OF THE VILLAGE HAVE RECEIVED FUNDS

Particulars	Source	When received?	Approximate amount	Terms and conditions (including rate of interest, security, mortgage, etc., manner of realisation, etc.)	Form (Cash/ kind)	Purpose	Remarks
(a) Grant-in-aid							
(b) Loan							
(c) Advance							
(d) Sale of assets (including land, jewellery, livestock, etc.)							
(e) Diversion of funds from other productive activities							
(f) Family savings							
(g) Others (specify)							

16 Family Budget Particulars

(income and expenditure)

Income			Expenditure		
Major head	Amount	Source in or outside village	Major head	Amount	Source in or outside village
(a) Cultivation			(a) Food		
(b) Livestock and products			(i) Cereal		
(c) Wages			(ii) Non-cereal		
(d) Arts and crafts			(b) Drinks		
(i) Craft under study			(c) Fuel and lighting		
(ii) Other crafts			(d) House rent and repairs		
(e) Fishery			(e) Clothing		
(f) Forestry			(f) Travelling		
(g) Trade			(g) Recreation		
(h) Transport			(h) Education		
(i) Profession			(i) Other services (Misc.)		
(j) Service			(j) Interest		
(k) Rent			(k) Remittances		
(l) Investments			(l) Hired labour		
(m) Remittances			(m) Purchases for production		
(n) Others			(n) Others		
Total			Total		
(o) Borrowing			(o) Purchase of assets		
(p) Principal received back			(p) Construction and Improvement of building and other structure		
(q) Sale of assets			(q) Land development		
Grand Total			Grand Total		

17 Unemployment

(Use separate sheet for each unemployed member)

Is there any member of household searching for a job ? YES/NO

If yes, give following details:

(a) Name

(b) Age

(c) Other proficiency

(d) Nature of previous employment, if any

(e) Academic Qualifications

(f) Date of cessation of previous employment

(g) Reasons for cessation

(h) Any subsidiary work at present

(i) Whether registered with any employment exchange ? YES/NO

(j) Nature of job sought

(k) Remarks

18 Sale and Purchase of Valuable Assets during last Three Years

(a) Sale

Type of assets	Time of sale	Buyer's address	Occupation of buyer	Area/No.	Sale price
(i) Land					
(ii) Livestock					
(iii) Machinery, tools, equipment					
(iv) Building, etc.					
(v) Jewellery and valuable					
(vi) Investments					
(vii) Other assets					
Total					

(b) Purchase

Type of assets	Date of Purchase	Seller's address	Seller's occupation	Area/No.	Sale price
(a) Land					
(b) Livestock					
(c) Machinery, tools, equipment					
(d) Building, etc.					
(e) Jewellery and valuable					
(f) Investments					
(g) Other assets					
Total					

GLOSSARY OF LOCAL TERMS

Akikiya	Agate dealer
Anguthia	Cotton bandage wrapped on fingers for protection against bleeding while chiselling agate
Ath Pahel	An oblong agate bead with eight edges
Badami	Almond shaped agate bead
Bawa Ghori or Mora	One of the types of Rajpipla carnelians named after Bawa Ghor
Bhajiya	A preparation of gram flour fried in oil
Bhalsal	Baking raw a gate stones by trench method
Bhangiya	Workers engaged in cutting and shaping of stones
Bhinthi	A crevice between two forks in a wooden clamp to keep the beads well-fitted
Bohra	Bohra, asect of Shia Muslims engaged in trade and business
Chakkar	A circular shaped agate bead
Chal	Outer skin of thin and rough layer of baked stones
Chamkali dol	Shining or lustrous agate bead
Charak	A wooden frame to which emery wheel is fixed
Chashmedar or dola	Cat's eye
Chhapaniyo	The great famine of Samvat 1956 (1900 A.D.)
Chhasai	An oblong shaped agate bead with six edges
Chhilo	A niche
Chopatia Modan	A square shaped agate bead with four edges
Dagholu	A small earthen pot
Dhandhodi	A bow shaped string fastened on a thin stick
Dholak	A drum shaped agate bead
Dol	A round shaped agate bead
Dolia	A polisher of round shaped agate beads
Doradar	Veined agate
Gabha	Beads not correctly holed and considered as waste at the time of sorting
Gar	Medium grade of chipped raw agate
Ghat-ni-saran	Lapidary wheel used for giving proper shape to the stone
Ghasiya	A worker on lapidary wheel
Ghodaveh	A bead which is not correctly holed
Ghol Jamadavu	To feast a particular circle of the community
Giloda or Kandora	Bead shaped like a giloda. i.e., (Coccima indica)
Gokhrudar dol	Agate bead shaped like long thorny plant
Gol Modan	An oblong shaped round agate bead
Goldana	A round shaped agate bead
Gulli	Circular and thin sized cylindrical beads
Halvasan	A kind of sweet made of flour, ghee and sugar which is a speciality of Cambay
Handla	Baking of raw agate stones by pot trench method
Jasper	Blood-stone
Kala Phatak	Jet or black stone
Kanku-ni-kanya	Bride taken in marriage without taking any dowry, the only consideration being a simple placing of a red mark on the forehead of the bride
Karela	An agate bead shaped like a karela, i.e., Momordica charantia
Karkhana	Factory
Karkhanedar	Factory owner
Kasbi	A skilled craftsman
Khadya	Inferior grade of chipped raw agate
Khamanu	A hollow crevice in the wooden frame
Kharal	Mortar
Khariyu, Agiyu and Ratadiyu	Chief varieties of Kapadvanj agate
Khondiya	A worker engaged in cutting and shaping stones
Kodra	An inferrior type of cereal
Lasania or Rori	Yellow half-clear pebble
Latodi	A small earthen pot
Loi	An agate bead having two thin ends with the middle portion bulging out

GLOSSARY OF LOCAL TERMS

Madalia	Locket
Malpuva	A kind of sweet pancake
Manek	Ruby
Maradia	Nail shaped hammer
Mehtaji	School teacher
Modan	A square shaped agate bead making four right angles
Nagina	Round and square ornamental pieces for setting them in rings or buttons
Naram Saran	Lapidary wheel used to make the surface of stone smoother
Opiya	A polisher
Otli or Otta	A small raised platform
Op	Shine or lustre
Opni	Polishing stone
Paheludar	Bead with angular edges
Panch	Executive body of the caste consisting of five members
Panna	Emerald
Paniyu	Cloth of short breadth
Pathar Khestra	Land of agates
Patti	Polishing board on which stones are rubbed
Pattimar	A polisher on wooden board or frame
Phala	Shaped and unpolished agate pieces
Pir	A muslim saint
Pokhraj	Topaz
Puri	A Bun
Rajavarat	Lapis-Lazuli
Rathia stone	Chocolate stone
Rati	Weight equivalent to 2½ grains
Samado	A mixture of lac and emery stone for preparing emery wheels
Samvat	Vikram era
Saran	Lapidary wheel
Saraneshwar	The patron deity of those working on saran or emery wheel
Saraniya	Worker on whet stone
Saravu	To drill
Sari	A driller
Shingadi	A horn-headed hammer for breaking agate stones
Sink	A pointed iron spike for chiselling stones into required shape
Sogta	Dice
Sphatik stone	Crystal Stone
Supda	A triangular agate bead shaped as a supda (i.e., winnowing fan)
Sutarfeni	Spaghetti (Sweet)
Suva Bhaji	Moss agate
Takia	A Cenotaph
Talavadi	A small pond
Tappa	Striking by hammer
Tasbi	Small rosary beads
Tavit	Talisman
Theka	Contract
Tukdi	Superior grade of chipped raw agate
Vaidurya Parvat	Mountain of Agate
Vajar	A strong cotton string or leather belt fixed to the bow shaped stick
Vindhar	Driller
Vindhar's Vadi	Agate powder falling out while drilling
Vindhavu	To drill
Wadh	To cut

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- Hindi Book House, 82, Janpath (R)
- Peoples Publishing House (P) Ltd., Rani Jhansi Road
- R. K. Publishers, 23, Beadon Pura, Karol Bagh (R)
- Sharma Bros., 17, New Market, Moti Nagar
- Aapki Dukan, 5/5777, Dev Nagar (R)
- Sarvodaya Service, 66A-1, Rohtak Road, P. B. 2521 (R)
- H. Chandson, P. B. No. 3034 (R)
- The Secretary, Federation of Association of Small Industry of India, 23-B/2, Rohtak Road (R)
- Standard, Booksellers & Stationers, Palam Enclave
- Lakshmi Book Depot, 57, Regarpura (R)

PATHANKOT—
- The Krishna Book Depot, Main Bazar (R)

PATIALA—
- Superintendent, Bhupendra State Press
- Jain & Co., 17 Shah Nashin Bazar

PATNA—
- Superintendent, Government Printing (Bihar)
- J. N. P. Aggarwal & Co., Padri Ki Haveli Raghu Nath Bhawan
- Luxmi Trading Co., Padri-Ki-Haveli
- Moti Lal Banarsi Dass, Bankipore
- Bengal Law House, Chowhatta (R)

PITHORGARH—
- Maniram Punetha & Sons (R)

List of Agents—*contd.*

POONA—

Deccan Book Stall, Deccan Gymkhana
Imperial Book Depot, 266, M. G. Road
International Book Service, Deccan Gymkhana
Raka Book Agency, Opp. Natu's Chawl, Near Appa Balwant Chowke, Poona-2
Utility Book Depot, 1339, Shivaji Nagar (R)

PUDUKKOTTAI—

Shri P. N. Swaminathan Sivam & Co., East Main Road (R)

RAJKOT—

Mohanlal Doccabhai Shah, Booksellers and sub-Agents (R)

RANCHI—

Crown Book Depot, Upper Bazar
Pustak Mahal, Upper Bazar (R)

ROURKELA—

The Rourkela Review (R)

REWA—

Superintendent, Government State Emporium U. P.

SAHARANPUR—

Chandra Bharata Pustak Bhandar, Court Road (R)

SECENDERABAD—

Hindustan Diary Publishers, Market Street

SILCHAR—

Shri Nishitto Sen, Nazirpatti (R)

SINNAR—

Shri N. N. Jakhadi, Agent, Times of India, Sinnar (Nasik) (R)

SHILLONG—

The Officer-in-Charge, Assam Government B. D. Chapla Bookstall, P. B. No. 1 (R)

SONEPAT—

United Book Agency

Government of India Kitab Mahal, Janpath, Opp. India Coffee House, New Delhi
Government of India Book Depot, 8 Hastings Street, Calcutta
} For local sales

Railway Book-stall holders

S/S. A. H. Wheeler & Co. 15, Elgin Road, Allahabad
Gahlot Bros. K. E. M. Road, Bikaner
Higginbothams & Co. Ltd., Mount Road, Madras
M. Gulab Singh & Sons. Private Ltd. Mathura Road, New Delhi

SIMLA—

Superintendent, Himachal Pradesh Government
Minerva Book Shop, The Mall
The New Book Depot, 79, The Mall

SRINAGAR—

The Kashmir Bookshop, Residency Road

SURAT—

Shri Gajanan Pustakalya, Tower Road

TUTICORIN—

Shri K. Thiagarajan, 18-C, French Chapal Road

TRICHINOPOLY—

Kalpana Publishers, Wosiur
S. Krishnaswami & Co., 35, Subhash Chander Bose Road

Palamiappa Bros. (R)

TRIVANDRUM—

International Book Depot, Main Road
Reddear Press & Book Depot, P. B. No. 4 (R)

UDAIPUR—

Jagdish & Co., Inside Surajapole (R)

UJJAIN—

Manak Chand Book Depot, Sati Gate (R)

VARANASI—

Students Firends & Co., Lanka (R)
Chowkhamba Sanskrit Series Office, Gopal Mandir Road, P. B. 8
Kohinoor Stores, University Road, Lanka

VIZIANAGRAM—

Sarda & Co. (R)

VIJAYAWADA—

The Book & Review Centre, Eluru Road, Governpet (R)

VEZEGAPATAM—

Gupta Brothers, Vizia Building
Book Centre, 11/97, Main Road

VELLORE—

A. Venkatasubhan, Law Booksellers

WARDHA—

Swarajeya Bhandar, Bhorji Market

High Commissioner for India in London, India House, London W. C. 2

Foreign

S/S Education Enterprise Private Ltd., Kathumandu (Nepal)

S/S Aktie bologat, C. E. Fritzes Kungl, Hovobokhandel Fredsgation-2 Box 1656, Stockholm-16 (Sweden)

List of Agents—*concld.*

(On S & R Basis)

The Head Clerk, Govt. Book Depot, Ahmedabad

The Asstt. Director, Extension Centre, Kapileshwar Road, Belgaum

The Employment Officer, Employment Exchange, Dhar

The Asstt. Director, Footwear Extension Centre, Polo Ground No. 1, Jodhpur

The Officer I/C., Extension Centre, Club Road, Muzaffarpur

The Director, Indian Bureau of Mines, Govt. of India, Ministry of Steel, Mines & Fuel, Nagpur

The Asstt. Director, Industrial Extension Centre, Nadiad (Gujarat)

The Head Clerk, Photozincographic Press, 5 Finance Road, Poona

Government Printing & Stationery, Rajkot

The Officer I/C., Extension Centre, Industrial Estate, Kokar, Ranchi

The Director, S. I. S. I. Industrial Extension Centre, Udhna-Surat

The Registrar of Companies, Narayani Building, 2-Erabourne Road, Calcutta-1

The Registrar of Companies, Kerala, 70 Feet Road, Ernakulam

The Registrar of Companies, H. No. 3-5-83, Hyderguda, Hyderabad

Registrar of Companies, Assam, Manipur and Tripura, Shillong

Registrar of Companies, Sunlight Insurance Building, Ajmeri Gate Extension, New Delhi

The Registrar of Companies, Punjab and Himachal Pradesh, Link Road, Jullundur City

Registrar of Companies, Bihar Jammal Road, Patna-1

Registrar of Companies, Raj & Ajmer, Shri Kumta Prasad House, Ist Floor, 'C' Scheme, Ashok Marg, Jaipur

The Registrar of Companies, Andhra Bank Building, 6 Linghi Chetty Street, P. B. 1530, Madras

The Registrar of Companies, Mahatma Gandhi Road, West Cott. Bldg., P. B. 334, Kanpur

The Registrar of Companies, Everest 100, Marine Drive, Bombay

The Registrar of Companies, 162, Brigade Road, Bangalore

The Registrar of Companies, Gwalior

Asstt. Director, Extension Centre, Bhuli Road, Dhanbad

Registrar of Companies, Orissa, Cuttack Gandhi, Cuttack

The Registrar of Companies, Gujarat State, Gujarat Samachar Building, Ahmedabad

Publication Division, Sales Depot, North Block, New Delhi

The Development Commissioner, Small Scale Industries, New Delhi

The Officer I/C., University Employment Bureau, Lucknow

Officer I/C., S. I. S. I. Extension Centre, Malda

Officer I/C., S. I. S. I. Extension Centre, Habra, Tabaluria, 24 Parganas

Officer I/C., S. I. S. I. Model Carpentry Workshop, Piyali Nagar, P. O· Burnipur

Officer I/C., S. I. S. I. Chrontanning Extension Centre, Tangra 33, North Topsia Road, Calcutta-46

Officer I/C., S.I.S.I. Extension Centre, (Footwear) Calcutta

Asstt. Director, Extension Centre, Hyderabad

Asstt. Director, Extension Centre, Krishna Distt. (A.P.)

Employment Officer, Employment Exchange, Jhabua

Dy. Director Incharge, S.I.S.I. C/o. Chief Civil Admn. Goa, Panjim

The Registrar of Trade Unions, Kanpur

The Employment Officer, Employment Exchange, Gopal