

**MUSEOLOGY AND
MUSEUM PROBLEMS IN
PAKISTAN**

EDITED BY: DR. SAIFUR RAHMAN DAR

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MUSEOLOGY AND MUSEUM PROBLEMS IN PAKISTAN

Edited by
Dr. Saifur Rahman Dar



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FOREWORD

Among the problems facing museums in Pakistan, the foremost, perhaps, is the complete absence of training facilities for those wishing to join museum service as a profession. New entrants are expected to acquire proficiency largely through trial and error. Contact with experts, occasional lectures and seminars and visits to organised museums help to some extent, but most of the entrants remain uneducated museologically till the end. It is heartening, therefore, that Lahore Museum has taken a lead in this respect, and successfully organised a useful training course for serving museum personnel. The carefully prepared syllabus, selection of best talent in the Country as speakers and the conduct of the course under the supervision of an expert of international repute, were guarantees for the success of the course. Willing and active participation of a number of museums and other institutions clearly shows the need for such training. I hope that other museums in the Country will follow the example and organise similar courses periodically. It would be a great help if the Museums Association of Pakistan and Pakistan National Committee for ICOM join hands to arrange short courses on specific museums problems, like Documentation, Security, Display, Storage, Conservation etc. Training of middle and low-level museum employees, should also receive attention.

There is very little written literature on museology and museum problems in Pakistan. The present volume, which consists mainly of lectures delivered during the First Museology Course in the Lahore Museum, will, therefore, remain for some time to come, a statement of significance on Museology in Pakistan. The organizers of the course and the publishers of this volume deserve to be congratulated for their pioneering effort.

(B. A. KURESHI)

President,

**Museums Association of Pakistan and
Chairman, Lahore Museum, Lahore.**

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PREFACE

When I first floated the idea of organising a Training Course in Museology in the Lahore Museum, there was a mixed reaction from concerned quarters : some encouraged the idea whereas others issued warning notes. However, determined efforts of my colleagues in the Museum and constant encouragement and guidance of my Chairman, Mr. B. A. Kureshi, enabled me to take up a path never tread before by any museologist in this country. When the programme was actually launched, the response from different institutions and individuals was exceptionally warm. Part of credit for the success of this Course goes to those whose harsh criticism only vetted the desire of my colleagues in the Lahore Museum to see this Course succeed.

The First Museology Course was attended by 38 participants (including 3 private individuals) from 20 different institutions from all over the Country. All the participants attended this course with great enthusiasm. Daily there were two sessions. The morning classes were attended only by the participants as the lessons were confined to the science of museology. Evening sessions were open to outsiders as well. The lectures delivered in the evening sessions covered a wider range of subjects covering all aspects of museology and museum problems in Pakistan. The Course was spread over 27 calendar days (2nd to 29th September, 1979) having actual 19 teaching days with an average of 4 hours daily.

With some people their profession is their mission of life. Dr. Grace Morley is one of them. She is a museologist of international repute and is presently working as Permanent Adviser of the ICOM Regional Agency in Asia. We were fortunate, thanks to the endeavours of the Ford Foundation, Islamabad, and their financial assistance, to get her as the main teacher for this Course. It was a joy to listen the discourses of this infatiguable lady and an honour to work with her. At our request she has written down all the lessons taught in this Course which form the basis of this volume. Another honourable guest during this Course was Mrs. Chiira Chongkol, Director General, National Museums of Thailand who delivered an interesting lecture on modern techniques of display in museums. Besides these two, 20 other reputed Pakistani scholars and museologists addressed the participants on various issues of culture, history, art and museology in the Country. Among them veteran colleagues like Prof. Dr. A.H. Dani and Dr. F.A. Khan, honoured us with their valuable discourses and numerous suggestions. The present layout of this book is largely due to numerous suggestions of my reverend teacher, Prof. A.H. Dani, for which I am greatly indebted to him. However, if there is any fault in it that is still mine.

Not all the lectures delivered in the Museology Course could be included in this volume for no other reason than that the written texts in many cases could not be made available to us till last day. A few of them, however, were too

important to be left out. So, I managed to get them written by others. In order to make this volume a real representative of various aspects of museum activities in the country, I have taken liberty of adding a few articles which were not originally delivered in the Course.

For successfully managing this Course and maintaining its tempo for about 29 days, entire credit goes to the untiring efforts, selfless devotion and ungrudging co-operation of my officers namely Mrs. T.A. Beg, Mrs. Nusrat Ali, Mrs. Z. Khurshid, Miss Humera Alam, Miss Salma Jaffery and M/S Shahbaz Khan, Waseem Ahmad, Muhammad Asghar, Tariq Masud and Salahuddin. They not only remained at my beck and call day and night but each of them treated the participants as their personal friends thus providing a homely atmosphere for all the guests. M/S, M. Latif, Shaukat and Mohmood, typed hundred of pages of lectures and articles and cyclostyled them for free distribution among the participants. Mr. K.A. Siddiqui, Accountant, never failed to provide us funds when we needed them. Sh. Ata-ur-Rehman, Stenographer has typed and re-typed several articles included in this volume. Mr. Shahbaz Khan, Research Officer, Miss Humera Alam, Research Officer and Miss Salma Jaffery, Tourist Guide, have helped me in proof reading. Particularly, Miss Humera Alam most willingly took upon her the responsibility of going through the entire book and prepare "Errata" given at page xiii below. I am greatly indebted to all of them for their assistance and cooperation.

Ford Foundation, Islamabad, have been assisting Lahore Museum for the last about 10 years in building up a Conservation Laboratory, updating our Library and training our curatorial and technical staff. The First Museology Course was a part of the Ford Foundation Programme of Staff Development for Lahore Museum under Grant-in-Aid approved by the Government of Pakistan, vide Economic Affairs Division letter No. 12 (12) TA-III-77, dated 1st October, 1977. It was liberally financed by the Ford Foundation who also took the responsibility of printing this book. Mr. Robert d'Arcy Shaw, Representative, Ford Foundation has always been most encouraging and helpful in this respect. We are greatly indebted to him and his staff, particularly Mr. Saleem Sufi of his office, for their all time help and cooperation.

In a book like this a certain amount of repetition is unavoidable. I have tried to reduce it to a minimum possible. However, opinions expressed in these articles are strictly those of the individual authors. These may not be regarded those of the Editor or of the Lahore Museum.

20th May, 1981
The Lahore, Museum, Lahore

SAIFUR RAHMAN DAR
EDITOR

ERRATA

SOME CORRECTIONS

<i>Page</i>	<i>Line</i>	<i>Read</i>	<i>In place of</i>
58	9	reductions	reducations
62	34	appendix	appennix
64	12	records were those	record was that
64	39	should	shoud
65	20	latter	later
68	S. No. 2	Gallery	Callery
69	2	Catalogue	Cataiogue
76	footnote	p.p. 77-86	p.p. 70-80
80	2	secured	pecured
83	2	poison	posion
83	22	ICOM	IOM
90	27	architectural	architectual
100	22	interdependence	interdepnedence
102	21	filming	fiming
102	22	feasibility	feassibility
102	23	efficiency	efficiency
103	5	size	side
110	1	laboratories	laborarories
110	24	laboratory	labotatory
116	36	effective	effeative
155	21	same	some
173	14	conditions	condititions
173	f. n., Line 1	libraries	librieries
173	„ 6	of its	its of
181	31	material	matetial
206	17	cultural	cultured
208	f. n., Line 1	1957	1857
215	27	exhibits	exhibtrs
217	3	Laboratory	Laborotary
222	16	for	far
230	36	acquired	acouired
240	14	insurance	insrance
243	14	Kashmiri	Kaskmiri
243	f. n	Bactrian	Bacctrian
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* Scholars enlisted here actually delivered lectures in the Museology Course but text of their lectures could not be made available for inclusion in this book. (Editor).

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INTRODUCTION

DR. GRACE MORLEY*

Introduction

A museum functioning in the contemporary world on an acceptable professional level from the international point of view has many obligations to its community and to the nation, as well as to the collections of whatever kind in its charge. Its primary function is to find means of making these collections serve the people.

The collections are expected to be as good as the circumstances of the museums's founding and of its growth allow. They represent a precious charge, but likewise a potent means of service. They must be kept safely, be well documented, and be exhibited with skill for the instruction and pleasure of a diverse public. They must also serve scholarship or scientific research, by the collections in reserve, as well as by those portions on exhibition.

These obligations are obviously not met automatically. Their satisfaction depends on the staff members of all categories working in the museum, from the "Director" or "Curator"¹ who sets the pace and establishes the standards, through all those who handle the objects, study them, exhibit and interpret them for public benefit, to those who guard the museum day and night and carry out physical task in connexion with its programme, and ensure its maintenance.

In the past it was usual for curatorial staff members concerned with collections to come to their responsibilities with the requisite academic background, and then learn their museum work while doing it. Ideally this was done under the supervision and in collaboration with an experienced senior specialist in the subject, in a sort of apprentice-like relationship. In the absence of such guidance, study, reading, consultation with such experts as were from time to time available, or with visiting experts, could provide steady growth of knowledge and competence. Both ways of learning curatorial skill necessarily represented a slow process and often overlooked at least some aspects of those techniques expected to be applied in a modern museum.

To meet an obvious need and to shorten the period of learning, while influencing improvement of standards of museum operation, specific training for museum techniques has been established in many countries. In some countries professional training is a prerequisite qualification for appointment to a museum post. In many, courses of various types and of differing durations are provided at intervals by some appropriate organization for those working in museums, as in-service training and up-grading of knowledge and practice of museum skills.

* Leader of the Museology Course.

¹ 1. The terms 'Director' and 'Curator' in this book stand for an Officer-Incharge of a museum be he a Director, a Superintendent, a Custodian, a Curator or a Keeper by designation as is the actual case in Pakistani Mussums [Editor].

The First Museology Course held in the Lahore Museum, in collaboration with the Ford Foundation, Islamabad, during September, 1979 represents such an effort at in-service training. It was planned in the first instance for the Museum's own staff, comprised of both experienced members and others recently recruited, eager to gain the skills required as quickly as possible. But the Museum invited to participate personnel of other museums, of archives and of similar institutions of the country, sharing the requirements of collecting and caring for material and using it for the public benefit. The response was good. All types of museums, including the National Museum of Science and Technology, Lahore, and various cultural institutions were represented.

The Lahore Museum, with such important collections as the large group of Gandhara sculptures and of fine miniatures of many periods and schools, together with the varied representation of the arts, of archaeology and of ethnography offered us as an ideal setting for the Course. Pertinent material was at hand to illustrate application of museum principles in a good variety.

The Director of the Lahore Museum had drawn up the syllabus, based not only on his own broad knowledge of museology, and of courses offered elsewhere, but on his intimate understanding of his own Museum, its needs, and its responsibility as a leading cultural institution. He had taken into account as well the role of museums in the country at large and museum prospects there for the future.

The leader of this Course, invited to conduct the Course, and secured through the Ford Foundation, experienced in the organization and operation of museums in accordance with modern practice, whatever their special field, both in Asia and the West, had known museums in Pakistan and many of their leaders for almost a quarter of a century. Periodic visits had permitted following closely growth and improvement of older museums and the founding of new ones. It was possible, therefore, to give to the subjects of the syllabus suitable emphasis and amplitude, so that those morning sessions of one and a half to two hours constituted a series of what might be considered technical "lessons" on basic museum techniques, tailored to what seemed most pertinent. They constituted a review, of museum techniques, an introduction to the broad subject of museology, and provided discussion and recommendations for the principal aspects of modern museum practice. For many in attendance the "lessons" of the Course certainly represented a review of familiar tasks, rather than an introduction to a fresh experience. However, it may be hoped that for every one such an attempt at a systematic survey of museum professional and technical routines had some value. For the staff of the Lahore Museum the Course was intended to complement the steady process of developing research and writing skills instituted by the Director on the conviction that a museum's quality depends on the competence of its staff.

Fortunately the Director, Lahore Museum, had foreseen the need to provide some inspiration and instruction on a level above the somewhat pedestrian factual review of basic principles of museology that the "lessons" provided. He had accordingly organized for the afternoons the series of lectures by eminent

Pakistani scholars on subjects which museums serve. These lectures illustrated well the reasons for learning those routines of meticulous documentation, careful handling and preservation of collections, exhibition organization, services to the public, and the other responsibilities of modern museum operation. They, as well as the "lessons", are presented in succinct form in the pages that follow.

The concrete application of the theory of museum operation furnished by three exhibitions organised by the participants on "The Raga and Ragini Themes in Pahari Miniatures" 'Lithic Tools of the Soan Valley" and "Punch-marked Coins" can unfortunately be presented only in form of brief explanations and descriptions of the exhibitions and views of the participants at work.

The points touched on in this general review of museum services and the personnel and techniques required to carry them out, must not be considered complete. They are quite frankly an introduction. Reference material on every aspect of museum operation has been produced in considerable abundance. For detailed information and further study it is recommended that the brief bibliography given at the end of this volume be consulted. In most cases, books and articles on specific subjects have more detailed references, which, in their turn, may provide useful bibliographies. Museum techniques have developed greatly in recent years, but basic principles and practices such as have been emphasized here remain valid.

Sincere appreciation of the faithful attendance and encouraging interest of all the participants of the Course, as well as warm thanks to the Director of the Lahore Museum and to his staff, who collaborated so effectively to ensure the success of the Course, it is a pleasure to record here.

**HISTORY OF MUSEUMS
AND THEIR ROLE
IN DEVELOPING COUNTRIES**

DR. GRACE MORLEY

Brief History of Museum Development in Asia

Museums in the western world, as collections open to the public, intended to contribute to general education as well as scholarly and scientific research, are a modern concept.

From the renewal of interest in learning and the arts from the Renaissance period in Europe, collections of antique and contemporary sculptures and paintings had been made by monarchs and nobles. Similarly for the sciences, the "cabinets of curiosities", of natural history specimens and of strange artifacts, also a result of this period of the revival of learning in the 16th century, reflected the interest of Europeans in the exotic objects from distant lands brought back by explorers from their voyages, following Christopher Columbus' discovery of the New World in 1492. However, these collections were made and used for the private enjoyment of the collectors and their friends. Only much later, by the early 19th century, were some palaces, the LOUVRE, Paris, for example, opened to a limited public. Eventually some became museums in the contemporary sense. The "cabinets of curiosities" likewise led to natural history museums in a few instances.

The British Museum, which like the museums of today, had collections on which research could be based, was founded in 1753. It was only approximately a century later, however, about the middle of the 19th century and during the latter part, that a general movement for founding museums developed both in Europe and in the United States. This trend has continued. Museums of arts, including archaeology, and ethnology and of natural history have multiplied in almost all countries of the West, and specialized and new types of museums have developed. An example, specially adapted to the needs of contemporary industrialized society, is the museum of applied sciences and technology. All the museums founded since the mid-19th century state almost without exception in their charters or statements of aims that they are intended to contribute in some way to public enlightenment and education.

In Asia the great 8th century collection of the Shoso-in Treasure House, comprising personal possessions and ritual objects, dedicated as a memorial in a great Buddhist Shrine, Nara, Japan, is often referred to as the oldest museum in the world. It is true that now the collection is used for a short annual exhibition in the Nara National Museum, but that was not its original intention. It was to be preserved as a memorial and so hardly fits our conception of a museum today.

In China collections were made at an early date according to references in literature, but the scrolls and other forms of paintings and calligraphy did not lend themselves to exhibition and were treasured and appreciated privately at the Imperial court and among scholars.

Similarly for ancient periods on the sub-Continent the "Chitrasalas" or painting halls, referred to in early Sanskrit texts, sometimes possibly open to all, even if offering enjoyment of art, did not serve the broad purposes of the modern museum. Nor did the temples, decorated with sculptures and also often with paintings as well, though they provided a rich art setting for the general population.

For the Indian sub-Continent the history of museums in the contemporary sense begins with the foundation of the Indian Museum, Calcutta, in 1814. From the middle of the nineteenth century museums were founded in increasing numbers, and they continue to be founded, though not to be considered in sufficient numbers, nor in distribution adequate to serve such a vast area and such large populations. The majority are devoted to archaeology and the arts. Many originally started as natural history collections, or included natural history originally, but soon the volume of archaeological material increased so rapidly and to such an extent that more and more attention and space were given to it. Some museums added ethnographical collections. Only in a few instances did older museums maintain equable balance between natural history, archaeology and the arts. The Government Museum, Madras, founded in 1861, is the most distinguished example of this type of general museum from the early period. It continues upto the present vigorous growth and activity in all the subjects which it includes in its numerous buildings: prehistory, protohistory, archaeology, especially of the South, arts, decorative arts, coins, arms, ethnography, natural history and some aspects of regional industries.

In Pakistan the first public museum, the Victoria Museum, founded in Karachi in 1851, reported to have had collections of natural history, archaeology, coins and arts and crafts of the region, was closed in 1947 and the collections were dispersed¹.

The Lahore Museum was founded in 1864. Its present building, occupied in 1892, had additions from 1965, and plans further expansion and improvements, while maintaining the historic structure recognized as a monument of distinction in the city.

The Peshawar Museum, founded in 1907, and its building expanded from 1965 is notable for its large collections of Gandhara sculptures, of tribal ethnographic material, of coins and of inscriptions and its gallery of Islamic arts.

The National Museum of Science and Technology, Lahore, was inaugurated in 1976, and offers exhibitions and activities in a field not previously served by a public museum in the country.

The other important public museums in Pakistan are administered by the Archaeological Department, and include the National Museum, Karachi founded in 1950, its present building inaugurated in 1970, and fine well arranged museums

1. For a comprehensive report on the development of museums in Pakistan see pp.13—26 below. Also see Dr. S R. Dar, *Archeaology and Museums in Pakistan*, Lahore, 1976, and *Ibid*, *Repositories of Our Cultural Heritage: A Handbook of Museums In Pakistan*, Lahore, 1979.

at major sites, such as Mohenjodaro, Harappa, Taxila and Banbhore. The National Museum exhibits objects from the prehistory and protohistory periods, illustrated effectively by reduced scale dioramas, Gandhara and Brahmanic sculptures in a manner to suggest their original architectural settings, Islamic arts with photographic illustrations of outstanding architecture, and costumes, on naturally posed manikins with their arts and crafts around them. The Swat Museum at Saidu Sharif is still being developed. There are also the Armoury and the Mughal and Sikh Galleries in the Lahore Fort.

Though not yet served by a proper museum, but already organizing exhibition from its carefully documented collection of ethnographic specimens, from most parts of the country, the National Institute of Folklore and Cultural Heritage, Islamabad, points to the future possibilities of presenting integrated exhibitions in which costumes, artifacts, pertinent illustrations and even musical accompaniment, when appropriate, can be organized to provide a more significant experience for visitors.

This cursory review of at least the principal museums of the country provides some insight into their present service to the public and their potential for future growth and development. The excellent installations at the site museum at Taxila provide a distinguished example for this category of museums. The endeavours of the National Museum, Karachi, at presenting collections attractively, and at the same time instructively, suggests techniques which are likely to be developed still further as installations are renewed and refined here and elsewhere. It is to be noted that the tendency of some larger museums (the Lahore Museum, the Peshawar Museum and the National Museum) to include ethnography of the country or of a region, with its archaeology exhibitions, is being continued and developed by some other smaller museums such as the Swat Museum, the Bahawalpur Museum and the Dir Museum.

From the technical point of view the organization of the first Museum Conservation Laboratory, headed by a chemist, trained and experienced in the additional skills required for the conservation, repairs and restoration of objects of archaeology, arts and ethnography, in the Lahore Museum, represents a significant advance in museum development. The Peshawar Museum and the National Museum, Karachi, plan likewise the creation of conservation laboratories. These scientific additions represent a most valuable increase in the facilities for scientific conservation of cultural property previously available only through the Conservation Laboratory of the Archaeological Department, in the Lahore Fort.

The programmes of education for students and young people, respectively in the arts and history, and in the sciences, for which especially active and effective programmes have been devised by the National Museum, Karachi, the Lahore Museum, and the National Science Museum, Lahore provide excellent examples. Other museums also, in some instances, offer educational programmes, based on their resources and appropriate to their communities. In general, however well they now serve schools, programmes for adults, especially in innovative kinds, are still needed.

The well planned initiative for in-service training of museum personnel, launched by the Lahore Museum, with its month-long course in museology, in 1979, represents a serious contribution towards professional and technical training of museum personnel. This effort can be expected to be continued in the future. Possibly shorter periods of training or seminars on particular professional or technical subjects will be offered at other museums. Already the revival of the Museums Association provides a forum for museum workers, while the ICOM National Committee ensures a link with the international museum community.

In short, prospects for museum development in Pakistan are exceedingly encouraging, with competent leaders available to give guidance, an increasing number of skilled professionals, both in scholarship and technical fields, on museums' staffs rapidly gaining experience, and collections of high quality and considerable variety to serve as a source for exhibitions and a basis for research, public service and education.

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DR. SAIFUR RAHMAN DAR
Museums in Pakistan
Potentials, Prospects and Problems

Museums and museology are, no doubt, things of slow growth. In Pakistan, however, this retardation is extraordinary. Within a period of about 125 years we have been able to establish only 47 museums (see Appendix at pages 24-26) out of which three are now defunct and hardly half are truly public ones.

History of Museums

In Pakistan, museum activities started soon after the British people put their feet on the soil. The ever-first museum was built in 1851 by Sir Bartle Frere at Karachi under the name of Victoria Museum. It was followed by the Lahore Museum in 1864, MacMahon Museum at Quetta in 1900 and Peshawar Museum in 1907¹. Except the Peshawar Museum, all these museums were meant to house and display specimens of arts, crafts, industries and agricultural & forest products as well as specific archaeological collections. Peshawar Museum was, however, in the main a museum of Gandhara Art. The first purely archaeological museum, was established in 1918 at the ancient site of Taxila to house the Hellenistic material discovered there after some fruitful seasons of excavation. This example was soon followed by two more archaeological site museums, one each at Mohenjodaro (1925) and Harappa (1926) after the surprise discovery of a highly urbanized chalcolithic period Harappan Civilization (circa 2500 BC to 1500 BC). In 1928, a small Armoury Museum was established in the Old Fort Lahore and till now houses mainly the armoury of 18th and 19th century. In between, some other smaller museums of limited scope were established by educational authorities in some colleges. Thus, a Botanical Museum was established in 1909 in the Agriculture College (now University), Faisalabad. This was followed by a Natural History Museum in the Government College, Lahore in 1910, a Zoological Museum in the Islamia College, Peshawar and another Botanical Museum in the Gordon College, Rawalpindi in 1934. All these museums were primarily meant for students of some particular trade and as such even today not many people in the country are aware of their existence.

In 1937, the first private museum was opened in Lahore under the name of "Faqir Khana". It was more or less a family museum and among its collections were objects of considerable historical and artistic significance. No exact date is known as to when the Sultani Museum at Dera Nawab Sahib near Ahmadpur

1. Sir Alexander Cunningham has mentioned the existence of a museum at Peshawar as early as 1872 (Sir Alexander Cunningham, Archaeological Survey of India, Annual Report, Vol. II, P. 125). But nobody knows where it was.

East was installed. But it definitely existed as early as 1938. This museum used to contain one of the most valuable collections of manuscripts, coins, paintings and other objects d'art as well as objects pertaining to the ruling family of the former Bahawalpur State. Unfortunately, this museum has now been closed down by the family. Another private museum is the Talpur House Museum in Tando Nur Muhammad near Hyderabad housing the private collection of the renowned Talpur family of Sind. The collection started when the Talpur House was built in 1860-64. Unfortunately, it too is not open to public. Meanwhile the MacMahon Museum, Quetta had got to be closed down permanently due to the devastating earth-quake of 1935.

The former Amir of Bahawalpur also founded a (Natural History) Museum in 1945 within the premises of Bahawalpur Zoo. Then it used to contain mainly stuffed beasts, animals, birds, fish and certain reptiles. In 1960 some 30 Gandhara Sculptures, a few arms and some ethnological objects were added to it. All these objects have at present been removed to the newly built Bahawalpur Museum. The Zoo Museum still retains its original character. This is the only Natural History Museum (in a limited sense though) in the country open to public.

In 1947, the country was declared independent. Then there were only 16 museums in the country : among them only 8 were public museums. Soon after, the Victoria Museum, Karachi, incidently the oldest one, was abandoned for reasons not all justifiable today.

Admittedly, this was too meagre a number for country then having a population of about 50 millions. Even those few museums were established just as repositories of certain collections. Their educative potentials were never exploited properly. The new Government of PaKistan gradually became aware of this problem and decided to establish more museums of varied nature and finance them somewhat liberally. Since then 30 more museums have been established in different parts of the country whereas a few others have been proposed.

As one single organization, the Department of Archaeology, Government of Pakistan, had been most active in the past. In 1950, it established a nucleus of the National Museum of Pakistan and housed it in the rented Frere Hall, Karachi now shifted to its permanent house in the Burns Garden. As it stands now, besides having separate galleries for prehistoric, Proto-historic, Hellenistic, Buddhist, Hindu and Muslim periods, there is an impressive ethnological section in this museum. In 1959, an Archaeological Museum was started at Saidu Sharif (Swat) in order to house the Buddhist and Iron Age material excavated by the Italian Archaeological Mission working in that area. This was followed in 1960 by another Archaeological Site Museum at Banbhore (near Karachi). Material displayed therein throws interesting light on the impact of first muslim conquest of Sind in the 8th cent. AC. Later on, in 1964, the small Mughal and Sikh Galleries were established in the Lahore Fort. The Sikh Gallery houses the famous Bamba Collection, which, inter-alia, includes a large collection of oil-paintings done in the 18th cent. by some European artists. The

Mughal Gallery, on the other hand, has on display some beautiful manuscripts, coins and miniature & oil paintings. In 1968 a small one-room museum was built at Umar Kot where the great Mughal Emperor Akbar was born. In 1968, the Department of Archaeology planned to convert two small rooms of Harem (حرم) (Private Section) of Talpur family in the new Fort at Hyderabad into a small museum devoted to the history of this family. The work is yet incomplete. During the later years of 1950's, the Department of Archaeology also converted the Birth Place of Quaid-i-Azam, the Father of Nation, into a museum-cum-library and, in 1960's converted the McLeod Road, Lahore residence of Allama Iqbal, the poet-philosopher of the East, into a Public Library (now closed). In December 1977, the Government of Pakistan purchased Javid Manzil, Lahore from the family of Allama Iqbal, converted it into Allama Iqbal Museum and handed it over to the Department of Archaeology, for upkeep and maintenance.

This is not all what the Department of Archaeology in Pakistan has done in the field of museology. The first and foremost preoccupation of the Department had been to rebuilt, renovate, reorganize and expand all the existing museums under its control. Thus during the years 1960-67 a new large double-story museum was constructed at Mohenjodaro, to the design of two French architects Mons. M. Ecochoro & Mons. M. Lechowski. This new building is only part of a larger archaeological complex which has been build up there. This includes an Air Port, a Tourist Hotel, an air conditioned Rest House, (now turned into PIA Hotel) a Bank, a handicrafts centre, a telephone exchange and a Tourist Information Centre. Similarly, in place of the small one-room museum at Harappa, a new medium size museum has been built and was inaugurated in 1967. During the years 1965-68, Taxila Museum was thoroughly reorganized by thinning out its collection and improving display therein under the supervision of the writer. Even the three-room Swat Museum was enlarged in 1969 by adding six more halls. Its scope has also been enlarged from a purely archaeological museum to an archaeological-cum-ethnological museum. The new display work is not yet complete. In 1970, a new multi-story building was completed to house the collection of the National Museum of Pakistan, Karachi which, till then, was housed in a hired building. A proposal is in hand to revive the now defunct MacMahon Museum at Quetta and to resurrect its derelict collection. The Department of Archaeology also established 5 museums in East Pakistan (now Bangla Desh), one each at Chittagong, Mahasthan, Paharpur, Mainamati and Lal Bagh Fort, Dacca. The only one purely Ethnological Museum in united Pakistan was established in Chittagong which is now lost to Pakistan.

Besides the Department of Archaeology, some other official, semi-official and private organizations are also active in this field. Thus :—

In 1950 the Industries Department established an Industrial and Commercial Museum in Lahore whereas the Forest Department established a Forest Museum at Abbotabad in 1952 (later shifted to Peshawar in 1966). The Geological Department established a Geological Museum at Quetta, the Irrigation Department

arranged a Barrage Museum at Guddu Barrage and the Water and Power Development Authority built a Dam Site Museum at Mangla Dam in 1967. Similarly, Karachi University ventured to establish an Archaeological Museum at Karachi, in 1956, followed by an Educational Museum at Hyderabad in 1959 by the Sind University, an Archaeological Museum at Peshawar in 1966 by the Peshawar University, and the National Museum of Science and Technology, Lahore in 1969 by the Federal Ministry of Education. A Natural History Museum was established by the Karachi University during 1950's whereas two more, one each by the Peshawar University and Pakistan Science Foundation, are in the making.

In 1961 the Defence Department established an Army Museum at Rawalpindi followed by an Air Force Museum at Peshawar in 1964. Land has been earmarked in Islamabad for building the new National Museum of Pakistan, to supplement the one at Karachi.

Besides, in 1976 the Pakistan National Council of Arts, has converted the Lahore residence of late Shakir Ali (artist) into Shakir Ali Museum. Similarly, the National Institute of Folk and Traditional Heritage, Islamabad, started in 1973 building up a nucleus of the Folk Art Museum which in 1979 was housed in a proper museum at Shakar-parian, Islamabad.

Provincial Governments are also not lagging behind. The whole sale renovation and expansion of the Lahore Museum was started in 1965 and ended in 1969. It now contains 16 galleries as compared to only 6 in 1965. Six of its galleries now represent a sequence of the history of the country from prehistoric times down to 1947. The remaining galleries are reserved for fabrics, armoury, modern paintings, Sikh collection, ethnological sections, donations, postage stamps, numismatics etc. Besides, the Lahore Museum, Government of the Punjab has also established an Archaeological-cum-Ethnological Museum at Bahawalpur, with the writer being its Project Director. It has not yet been officially inaugurated. Besides this, a cultural complex is being built up around the grave of the great Punjabi poet Waris Shah. It is expected that this Cultural Complex will include, inter alia, a museum as well. In January 1977, the Chughtai Trust, Lahore inaugurated Chughtai Museum in memory of the great artist Abdul Rehman Chughtai. But for all intents & purposes, it is not truly a museum. It casually organizes one day exhibitions of art-pieces from artist's collection. That is the only time when it is open to public.

In 1962, the Sind Government established a Cultural Museum at Bhitshah, the burial place of the famous Sindi poet Shah Abdul Latif Bhitai. In 1971, an anthropological and archaeological museum was established at Hyderabad under the name of the Sind Provincial Museum.

The Frontier Provincial Government is also alive to this problem. In 1968, scope of the Peshawar Museum was enlarged considerably by adding a Tribal Hall and an Islamic Gallery to its already existing matchless Gandhara Collection. Since then, two more halls have been added to the museum. An

archaeological-cum-ethnological museum has been built up at Chakdara under the name of Dir Museum. It was inaugurated in May, 1979. In 1972 the Government of Baluchistan established the Archaeological Museum of Baluchistan, Quetta. It is still housed in a temporary building at Tola Ram Road.

This is a very brief account of history of museums and museology in Pakistan. These increased museum activities over the last 32 years have brought a lot of healthy changes in various fields of museology. A new approach is building up to regard museums basically as educational institutions. Consequently, museums of wider scope and varied types are coming up. New experiments have been made in museum architecture, in their show cases and in light conditions. Museum's exhibits are being presented to public in a much better way and under more favourable conditions. Public facilities have also increased and service conditions of museum personnel, at least of provincial museums, have improved tremendously.

If we look at the appendix provided herewith, it will be clear that majority of the museums have been constructed or reconstructed, renovated and reorganized during 1960's. This was due to the dynamic personality of the former Director of Archaeology, Dr. F. A. Khan who not only built new museums but also improved the lot of older museums under his charge. Outside the Department of Archaeology, the greatest name in the field of museology in Pakistan is that of Mr. B.A. Kureshi. He is the person who saved Lahore and Peshawar Museums from extinction and expanded them to unprecedented limits. He is also responsible for establishing the Dir Museum, Bahawalpur Museum and Hyderabad Museum. It is his desire to make museums at every divisional head-quarter of Pakistan. Still another great name associated with the field of museology and archaeology in Pakistan is that of the late lamented Dr. Mumtaz Hasan. It was through his efforts, energies and contacts that the Department of Archaeology was able to establish so many museums in one decade during 1960's.

Museum Architecture

The architecture of Pakistani museums is still hodge-podge. It varies from an oriental house structure (Faqir Khana) to a multi-storey American style building (National Museum). The existing museum buildings mostly reflect the taste of the time when they were built. The still most impressive buildings are those of Lahore and Peshawar Museums. These buildings reflect an interesting combination of Islamic and European traditions of late 19th and early 20th centuries. Insides of these museums consist of large halls with roofs supported on pillars, arches etc. The Taxila Museum building, on the other hand, with its tapering blank walls of dark limestone blocks and covered with colourful bougainvillea and china rose creepers presents a look of a medieval period fortress. The inside of this museum is divided into three halls by two beautiful Greek entablatures supported on Corinthian pilasters—all cut in 'teak' wood. Architecture of all site museums reflect a sort of

lack of imagination on the part of their planners. These ultra-modern museum buildings stand in painful contrast to the ancient remains just close by. Banbhore Museum consists of a large hall slightly bent in the middle with a verandah in front. The same design is slightly improved at Harappa where a protecting Central porch and a high central sky-light break the monotony of the building. The square box-type building of Swat Museum is without any architectural interest. The face-lifting of this museum, done just recently, has failed to improve its look. Mohenjodaro Museum, however, marks a slight departure from this monotonous architecture of site museums. Here, because of recurring floods, the architects have provided some open space on the ground floor whereas the upper story i.e. the museum proper, hangs on about 20 feet high solid pillars and two blank side walls. Dir Museum is a real bold experiment in museum architecture of Pakistan. Here the fortress like appearance has been created by providing tapering bastions, merloned sky-lines and windows. This type of architecture is common in the area and reflects the strength and vigour of local Pathans. The multi-storey building of the National Museum, Karachi is just an antithesis of Dir Museum. Here everything 'local' has been sacrificed for 'modernity'. With four of its floors reserved for offices, stores, auditorium, workshop, canteen etc., practically only one floor is reserved for five different galleries. From outside, the museum prepares visitors to see much more than what it actually presents.

In all older museums separate glazed wooden show-cases of varying sizes, shapes and depths, have been provided. Originally, natural light was admitted through clerestory windows, sky-lights and large sized openings. Now all such show-cases have been provided with internal fluorescent lighting. These attempts are not always successful. In case of narrow showcases, there is always a great problem of diffusion of light. Moreover, in a country like Pakistan, where power break-downs are quite frequent and prolonged, use of artificial light without an alternative arrangement is not without inconvenience. This problem has been partly solved in new museums like Mohenjodaro, Harappa etc. Here, new box-type built-in showcases with natural lights falling from a narrow slit provided high up in the back wall (and not visible from inside) have been provided. This type has eliminated the need of artificial light—at least it is not indispensable now. However, there is one great drawback in this type. The strong natural tropical light, during specific hours of each day, comes in direct contact with museum exhibits and thus obviously damages them.

Reserve collection is an indispensable part of a modern museum. However, in Pakistan, except the National Museum of Pakistan, no museum has paid much attention to this point. In Peshawar, Swat, Taxila, Harappa, and Banbhore Museums, there are separate structures for Reserve Collections. In Lahore and Mohenjodaro Museums there are improvised arrangements whereas in the Army Museum there is none. Only in the new Bahawalpur Museum space for Reserve

Collection has been foreseen as an integral part of the museum architecture. Similarly, except in two cases (Lahore and Taxila Museums), in no museum there exists a basement where valuable museum objects can be stored in time of emergency.

There is now a genuine realization that all museums are to educate people. Consequently, there are conscientious attempts to provide in them all sorts of facilities such as proper labels and lights to see and understand museum exhibits. Besides, in quite many museums now there exist public toilets, drinking water, public telephones, tourist post-offices, snack bars, restaurants, comfortable seats inside and spacious grassy lawns outside the museums. All museums attached with archaeological sites have rest houses and even Youth Hostels. At Taxila for examples, there are three Rest Houses, one 'A' Class Tourist Hotel, a Youth Hostel, a Dak-bungalow and a Retiring Room at the Railway Station. One of the Rest Houses at Taxila is air-conditioned. The charges for archaeological Rest Houses are very nominal¹. Generally, these Rest Houses are neat and clean and service is prompt and efficient.

There is no uniform system of observing weekly holidays: National Museum closes on Friday, Lahore Museum on Saturday and Peshawar Museum on Wednesday. Site museums remain open throughout the month except the first Monday of each month for cleaning. Besides, all museums observe at least four national holidays—one each on the actual days of Idul-Fitr, Idul-zoha, Eid Milad-un-Nabi and Muharram.

Almost all public museums open daily from 8.00 A.M. to 4.00 P.M. during winter and from 8.00 A.M. to 5.00 P.M. or 6.00 P.M. during summer. Certain museums, have lunch breaks of varying lengths during summer.

All public museums have an admission fee ranging from paisa 50 to Rs. 2/- for adults and half of that for children. At some museums bonafide students and soldiers-in-uniform are admitted free. At Taxila and Mohenjodaro a separate fee is charged for visiting excavated remains.

Use of camera is free in all except the Lahore and Peshawar Museums where a nominal fee of Rs. 3/- is charged for this purpose. Only Lahore Museum accepts requests for supplying photographs and slides of its exhibits.

Administrative set-up of Pakistani museums varies considerably; there is neither uniformity in designations nor in functions and duties of museum officers.

1. Charges per private person per day are :

Room : about Re. 15/00 or 1.50\$. **Bed** includes bed-sheet, blankets, towels and soap. **Air-conditioner (if used) :** Re. 5/- or 50 cents.

Meals : at no-profit and no-loss basis. The rates can, however, be changed without any prior notice.

For example ; whereas incharges of Lahore, Dir and Peshawar Museums are designated as Directors (of varying status), that of the National Museum is known as Superintendent, those of site-museums as Custodians and of other smaller museums as Curators. Museum personnel in junior positions have a wide range of designations of varying statuses such as Assistant Director, Keeper and Research Officer (Lahore Museum), Research Officer (Peshawar Museum), Assistant Superintendent and Museum Assistant (National Museum) and Assistant Custodian and Gallery Assistant, (all site-museums). Similarly, whereas all museum officers of the Department of Archaeology attend their duties according to museum' hours, officers of certain other museums (Lahore museum for example) remain on duty during office-hours only. There is no proper arrangement for training the museum officers within the country. Either they learn by themselves or wait for their turn to go abroad for this purpose.

Problems and Prospects

'Museums' are institutions of slow growth. For obvious reasons this growth is much slower in developing than in developed countries. Keeping this fact in view when we judge our efforts, the case is not hopeless. Here, as compared to 16 museums established in the past over a period of about 100 years (1849 to 1947) we have been capable of establishing 31 new museums, re-building, renovating and expanding six museums of pre-Independence and three of post-independence days (in all 40 museums) in a short period of about 32 years. This is an encouraging thing. But we should not forget that museums, as educational institutions and as part of cultural life of a nation, have been recognized all over the world only very recently. Today, everywhere in the world museum activities are out of proportion as compared to earlier efforts. Thus, when we compare the number of museums built in western countries during the last quarter of a century with those built in Pakistan during the same period, we are left high and dry. For example, at the end of 1974, in the Federal Republic of Germany (area 9470 square miles and populations 50 millions) there were 1400 museums of varied nature, scope and sizes. Similarly, a small country like Greece has more museum than those in Pakistan.

Pakistan's difficulties in this regards are not far to seek. Ours is a developing country and as such more attention is being paid to the establishment of industries and communications, development of agriculture and education rather than on purely cultural matters like museums. Besides, in Pakistan cultural programmes have suffered a lot on account of political instability, internecine wars, internal disruptions, natural calamities etc.

But the question is not of number of museums alone : the present set-up of museums organization in Pakistan has many other draw-backs as well. The greatest draw-back is the lack of a centralized organisation which should plan and recommend to the Government where and what type of museums are to be established. At present there are many federal, provincial, autonomous, and private organizations

responsible for planning, establishing and maintaining varied types of museums without any co-ordination and co-operation between them. The result is that the museums are being established at random, and as a result of endeavours of certain individuals only. Sometimes back, the Museums Association of Pakistan was doing some service in the field of museology by bringing all museologists of the country on one platform at least once a year. But, for sometimes now, this organization has become dormant. It has recently been revived but it has not yet announced its programme. Except for a limited number of trained personnel available in the field, majority of the museum officers in all organizations hardly qualify for the job. Their only experience is the length of service rendered in one particular museum. Even the Department of Archaeology, which has ten museums and libraries under its control, has no cadre for museologists. There, a museologist may shuttle at times to become an explorer, an excavator, a conservator, and even a librarian or vice versa. Museologists working in other museums have very little scope of vertical rise and no scope at all for lateral moves. Their lives are still and stagnant. This has created a problem for museum organizations to attract talents. If there is some Central Directorate of Museums, there can be a wide scope for museologists in the country.

Distribution of Museums

One result of this lack of central organization is the ill distribution of existing museums. There is concentration of museums in certain areas whereas some other more potential areas have been totally neglected for one reason or the other. Similarly, some cities have a good number of museums, whereas many other potential cities have been provided with none. Thus out of 44 museums enlisted here, excluding those proposed or now defunct, there are only 21 museums in Punjab, 14 in Sind, 7 in the N.W.F. Province and only two in Baluchistan. Still poorer is the city-wise distribution of these museums. Among 44 museums, 33 are situated in nine cities i.e., 11 in Lahore, 5 in Peshawar, 3 in Rawalpindi/Islamabad, 5 in Karachi, 2 each in Quetta and Bahawalpur, 3 in Hyderabad and one each in Faisalabad and Sialkot. The remaining 11 are situated in small towns and isolated sites of various provinces: six in Sind, one each in Mohenjodaro, Umarkot, Banbhore, Tando Nur Mohammad Khan, Bhitshah and Guddu Barrage; 3 in Punjab, one each at Taxila, Harappa and Mangla; two in the N.W.F. Province, one each at Chakdara and Saidu Sharif and none in Baluchistan. This is very poor distribution. Whereas a city like Lahore is relatively well provided with 11 museums, the biggest city of Pakistan (Karachi) has only five museums out of which only two are for general public. Many historic cities of Punjab like Multan etc., have no museums at all. Similarly, Baluchistan, which has great archaeological, historical, and ethnological potentials, has only two museums both in its capital and only one for public. Similarly, the Frontier Province, where medium size museums can be established in several cities and towns with a little effort, has museums only in three of its cities and towns namely Peshawar, Chakdara and Saidu Sharif. There is relatively better distribution of museums in Sind where 14 museums are

situated in 8 cities and towns (eight in urban and five in rural centres) as compared to Punjab where 21 museums are concentrated only in 8 cities and towns (i.e., 18 in five urban and only 3 in rural centres). In the N.W.F. Province all the three museums are situated in urban centres. Similarly, rural centres of Baluchistan are without any museum. This clearly indicates that there is great scarcity of provincial and local museums both in urban and rural areas.

Typologically too, we are greatly handicapped. Out of 44 museums enlisted, 27 are art, archaeological and historical museums (with great emphasis of course on archaeology), or what we should call general museums, 9 are science museums¹, 6 are technical museums² and only 2 are folk art, ethnological and cultural museums. Among these only 24 are truly public museums.

Moreover, in the existing museums, there is no big variety. There is no true Natural History Museum, History Museum, National Museum and Ethnological Museum worthy of the name. There is no museum at all in the whole country with such titles as Anthropological Museum, Children's Museum, Contemporary Arts Museum, Fine Arts Museum, Mercantile Museum, Crafts Museum etc. Similarly, there is great scarcity of museums built at the birth places and residences of great historical personalities. There is only one private museum (Faqir Khana). Even this is now threatened to be closed down to public. There are many individuals in Pakistan who have great collections of arts, crafts etc., each worthy to be converted into a small private museum, but till now these collections are not accessible to public. There is no one single museum which can be called "*Period Museum*" such as those devoted to Muslim, Buddhist, Hindu, Jaina, proto-historic or prehistoric periods. Similarly, there is no "*type museum*" in the country such as museums devoted to the history of ceramics, metal-wares, fabrics, textiles, rugs, sculptures, wood works etc. There is no museum worthy to be called Folk Art Museum. The one, very oddly located in Islamabad, is still in its embryonic stage. Similarly, there is great dearth of departmental museums in universities and colleges of the country. Our museums are also suffering from one other great set back. Except Lahore Museum, there is no other museum in the country which has its own Conservation Laboratory where the objects can be periodically checked, repaired, consolidated and preserved. All the museums under the Department of Archaeology are being looked after by a well-equipped Central Archaeological Laboratory situated in Lahore. Two more conservation Laboratories, one each in the National Museum, Karachi and Peshawar Museum are in the offing. Modelling section is a necessary adjunct of a modern museum. In Pakistan it has been neglected and kept aloof. Moreover, it is not an essential adjunct of all museums. Except in the National Museum of Pakistan Karachi, Lahore Museum and Peshawar Museum, no other museum in Pakistan has its own modeller. No museum, except the National Museum and Lahore Museum has its own auditorium. Except Lahore Museum no other museum has permanent places for temporary exhibitions.

1. Such as Natural History, Botanical, Agricultural Technology, Geological Museums etc.,

2. Such as Army, Air Force, Armoury, Industrial and Commercial Museums etc.,

The existing museums are greatly handicapped from some other aspects as well. They are short of staff, specially of trained personnel. Talented people are not easily attracted to this career because there are not many openings in majority of the museums, pays are ridiculously low and works enormous. This is why all of our museums are lagging behind the development programmes. No museum has a satisfactory publication programme. With the exception of four¹, no museum in the country has its own satisfactory guide book, what to speak of handbooks and catalogues. Educational and School Services are practically nil. No museum has recreational facilities, except restaurants at few places. Within museum there is no pre-taped guide service. There are no authorised and well trained guides except in a few places. Except the Lahore Museum, Peshawar Museum and the Taxila Museum no other museum has a well equipped library of its own.

These are the ills afflicting today majority of our museums. Many of these short coming will be removed gradually with the passage of time. But many will haunt us for a long time unless the whole system of museums organization is improved. The key to such improvement is a centralised organization which should plan, organize and later check the working of various museums in the country. It is very fortunate that the Government of Pakistan is fully alive to the problems enumerated above. Finances are no big difficulty. Talents are available. It only requires initiative and drive. We also need more personalities like M/s. B. A. Kureshi and late Mumtaz Hasan. Without mentioning their names, no account of Pakistani museums can be concluded.

1. These are : Lahore Museum, National Museum, Karachi, Peshawar Museum and Dir Museum, Chakdara.

Chronological List of Museums in Pakistan

(a) EXISTING MUSEUMS*

Sr. No.	Name of Museum	Place and Province	Founded in	Enlarged/ Renovated/ Inaugurated in	Scope
1.	Lahore Museum	Lahore (P)	1864	1967	Archaeology, History, Fine Arts, Applied Arts, Crafts and Ethnology.
2.	Peshawar Museum	Peshawar (F)	1907	1908	-do-
3.	Agricultural Museum, Agricultural University	Faisalabad (P)	1909	...	Botany.
4.	Natural History Museum, Government College	Lahore (P)	1910	...	Natural History.
5.	Archaeological Museum	Taxila (P)	1918	1928 & 1968	Archaeology.
6.	Archaeological Museum	Mohenjodaro (S)	1925	1967	Archaeology.
7.	Archaeological Museum	Harappa (P)	1926	1967	Archaeology.
8.	Armoury Museum, Old Fort	Lahore (P)	1928	1980	Old Arms.
9.	Islamia College Museum	Peshawar (F)	1934	...	Zoology.
10.	Botanical Museum, Gordon College	Rawalpindi (P)	1930	...	Botany.
11.	Faqir Khana Museum	Lahore (P)	1937	...	Arts, Applied Arts, Crafts, History.
12.	Talpur House Museum	Tando Nur Mhammad Khan near Hyderabad (S)	Built in 1860-1864		History.
13.	Zoo Museum	Banawalpur (P)	1945	1960	Natural History.

*Name of provinces are given in brackets : 'P' stands for Punjab : 'F' for North Western Frontier Province, 'S' for Sind and 'B' for Baluchistan.

Sr. No.	Name of Museum	Place and Province	Founded in	Enlarged/ Renovated/ Inaugrated in	Scope
14.	National Museum of Pakistan	Karachi (S)	1950	1970	Archaeology, History, Ethnology.
15.	Industrial and Commercial Museum	Lahore (P)	1950	1979	Industry and Commerce.
16.	Pakistan Forest Museum	Abbottabad/ Peshawar (F)	1952	1966	Forest Products.
17.	Archaeological Museum, Karachi University	Karachi (S)	1955	...	Archaeology.
18.	Natural History Museum, Karachi University	Karachi (S)	1950's	...	Natural History.
19.	Education Museum, Sind University	Hyderabad (S)	1959	...	Education.
20.	Swat Museum	Saidu Sharif (F)	1959	1963, 1969 and continues	Archaeology, Ethnology.
21.	Archaeological Museum	Banbhore (S)	1960	1967	Archaeology.
22.	Army Museum	Rawalpindi (P)	1961	1967	Arms and Armoury.
23.	Bhittshah Cultural Museum	Bhittshah (S)	1962	...	Arts and Crafts.
24.	Air Force Museum	Peshawar (F)	1964	...	History of Air Force in Pakistan.
25.	Sikh and Mughal Period Galleries, Old Fort	Lahore (P)	1964	1965, 1980	Art and Archaeology.
26.	Archaeological Museum, Peshawar University	Peshawar (F)	1964	...	Archaeology.
27.	Dam Site Museum	Mangla (P)	1967	...	Natural History, Geology.
28.	Umar Kot Museum	Umar Kot (S)	1968	...	Archaeology.
29.	National Museum of Science and Technology,	Lahore (P)	1969	1976	Science and Technology.

Sr. No.	Name of Museum	Place and Province	Founded in	Enlarged/ Renovated/ Inaugurated in	Scope
30.	Talpur Gallery in Talpur Harem, inside New Fort	Hyderabad (S)	1960's	1972	History.
31.	Dir Museum	Chakdara (F)	1970	1979	Archaeology and Ethnology.
32.	Sind Provincial Museum	Hyderabad (S)	1971	...	Arts, Crafts, Archaeology, Anthropology.
33.	Bahawalpur Museum	Bahawalpur (P)	1971	Extension in 1980	Archaeology and Ethnology.
34.	Archaeological Museum	Quetta (B)	1972	...	Archaeology.
35.	Folk Heritage Museum	Islamabad (P)	1973	1979	Folk Arts and Crafts.
36.	Shakir Ali Residence Museum	Lahore (P)	1975	...	Modern Art.
37.	Allama Iqbal Residence and Library	Lahore (P)	1960's	Now closed	History and Literature.
38.	Geological Museum	Quetta (B)	...	...	Geology.
39.	Guddu Barrage Museum	Guddu (S)	...	...	Barrage.
40.	Quaid-i-Azam Birth Place Museum	Karachi (S)	1953	...	History.
41.	Quaid-i-Azam's Relics Museum	Karachi (S)	1976	1977 (under organization)	History.
42.	Allama Iqbal Museum	Lahore (P)	1977	1977	History and Relics.
43.	Chughtai Museum	Lahore (P)	1977	...	-do- Paintings.
44.	Iqbal Manzil Museum cum-Library.	Sialkot (P)	1977	...	History and relics.
(b) NOW DEFUNCT MUSEUMS					
45.	Victoria Museum	Karachi (S)	1851	1948	Archaeology, Arts, Crafts.
46.	MacMahon Museum	Quetta (B)	1900	1935	-do-
47.	Sultani Museum	Dera Nawab Sahib near Bahawalpur (P)	1938	1958	History, Arts, Crafts.

DR. F. A. KHAN

Museums and their Functions in Developing Countries

All countries take pride in the preservation and presentation of the cultural heritage. The traditions of the past inspire the present generation to plan for the future.

The rich heritage of Pakistan starts from the humble beginnings of man back in the Stone Age. It continues into the Bronze Age when human settlements in cities and towns grew and man developed his skill in industries and crafts. The remains of these periods are wide-spread throughout Pakistan. A new urban pattern was introduced when the Muslims began their historical role. Our link with the neighbouring countries of the west right upto the 'Fertile Crescent' was emphasised again and again.

In a developing country like Pakistan, with glorious traditions, its museums have to play an important role in the field of museology. The responsibility of displaying relics affectively and objectively according to high museological standards rests with its museum.

It is, therefore, natural that the success of the museum services in a developing country depends on the efficiency of this essential national service which should be placed on a well organized footing. Although there has been some achievement, the museum service in Pakistan is still not fully organized. In a technical discipline like museology, high academic and technical qualifications are a prerequisite for the members of the museum profession and for the promotion of intensive research.

All developing countries should be brought into line with the other great nations of the world in respect of their museum service. Their museums have to discharge two primary functions :—

- (i) to provide instruction and rational enjoyment to the masses of the people ; and
- (ii) to afford scholars all possible means of examining and studying the material collections.

The first purpose cannot be served without lectures and film shows ; the second objective cannot be fulfilled without a self contained and growing library and a well documented and properly arranged reserve collection. The museums have to provide the means of inspiration in regard to technical assistance to the staff. There should be well equipped chemical laboratory for the treatment and preservation of museum specimens in addition to working rooms and storage space.

Leaving apart sciences and natural history which must also be organized in well equipped museums in developing countries, which have their own particular problems, here, we would restrict ourselves to the functions and services of museums of art, archaeology, history and ethnography. Their problems are alike.

For the proper dissemination of the history and culture of developing countries it is not enough if there is a single museum at any spot containing all the phases of their art. There should be as many museums as possible with sufficient material for presenting a bird's eye view of country's art and culture as a whole.

There should be more than two museums in a developing country which should be conceived on a national basis for the acquisition and display of material. In Pakistan, with a rich legacy from the past, this objective should not be difficult to achieve.

The museums in developing countries fall into four main categories :—

- (i) The National Museums.
- (ii) The Regional Museums.
- (iii) The Site Museums.
- (iv) The University Museums.

A. FUNCTIONS

The National Museums.

The main functions of the National Museum of Art, Archaeology and Anthropology in the developing countries may be tabulated as follows :—

- (i) To maintain and display a representative collection illustrating the arts, crafts and cultures of developing countries from the earliest human occupation down to recent times.
- (ii) To provide the necessary materials and facilities for appropriate research.
- (iii) To set an international standard of presentation and general museum technique.
- (iv) To provide authoritative guidance to the local general public and foreigners in matters relating to the country's heritage.
- (v) To provide guidance and technical assistance to regional and local museums.
- (vi) To produce publications for the information of both the general public and scholars.
- (vii) To maintain and circulate loan collections amongst the educational and other appropriate institutions, particularly in those districts and towns lacking a museum of their own.

- (viii) Generally, to represent a country to the local and outside world in matter relating to its material contributions in the sum-total of human civilization.

These functions are self-explanatory. In the developed countries, even with their numerous learned institutions of high standing, the greater part of humanistic research converges upon their national museums. The man in the street who wants to know something, goes or writes as a matter of course to the Curator of a National Museum ; the scholar has constant recourse to it.

The National Museum in developing countries should properly be administered by the Ministry of Education/Culture through a Curator, its general control best be vested in a Board of Governors, as in the case of the National Museums in the developed countries. The Board should appropriately be under the Chairmanship of the Minister of Education/Culture or some other high dignitary, and include representatives of the regions, universities and public life as a whole. It should meet normally once a year and function mainly through a standing committee, which should meet twice a year, or more often as required. The Board and its committee should receive reports from the Curator, consider policy, make recommendations either through the Curator, or immediately to Government, and act generally as a link between the Museum and the public. Its functions should be mainly advisory, but its prestige be such that its advice be carried out into effect, again as in the case of the National Museums in the advanced countries.

The Regional Museums

The Regional Museums, however excellent some of them may be, cannot fulfil this need. Their primary function is of a different kind ; they collect and represent in detail the civilization of a limited area, with such efficiency that a small staff and modest equipment can achieve.

Their task is not to amulate a central, comprehensive institution, rather it is complimentary to such an institution amplifying its work regionally and providing facilities for the collection and classification of local cultures and variations beyond the scope of the central body. In this task they, like the regional museums in the developed countries, will have constant recourse to the National Museum with its more ample and specialized equipment and staff. The lack of this centralized assistance and cooperation is reflected in our country at the present time.

Unlike other countries, Pakistan does not yet have properly constituted museum service. The great heritage of material culture for which the country is known throughout the world remains, as far as its movable relics are concerned, dispersed in the various museums, in inaccessible collections or in the unrecorded museum godowns. There is no institution where the students and the public can obtain anything approaching a general conspection of the development of country's

civilizations during the many thousands of years in which man has inhabited this country. There is no strong organization which can maintain and correlate the museum activities, organize preservation of art objects and set the high international standard which modern scholars demand.

This great gap in the museum service of Pakistan has been a standing demand. Unless there is radical change in the near future, proof of Pakistan's cultural greatness in terms of museum wealth will remain disorganized. The role of our museums to preserve for prosperity our priceless relics and to present and interpret them more adequately to the world can no longer be postponed. The urgent need for a well-organized museum service on a scale commensurate with the prestige of the country and the high quality of our cultural achievements is manifest.

The Site Museums

In the developing countries, where large scale excavations are planned and executed on important ancient sites, the small and movable antiquities which cannot be preserved insitu, should be kept in close association with the remains to which they belonged, in order that they may be studied amid their natural surroundings and original associations and not lose focus by being transported. Systematic excavation of any large site, running over several years of work, produces a harvest of small antiquities, which no single museum, however large, can afford to display in its galleries. Even after distributing representative sets of antiquities to various museums, the collection normally is so large that special arrangements for housing the same are required. On an excavated site of any importance, a field laboratory for the immediate preservation of objects and storage space for the housing of objects thus becomes essential. It would, therefore, be reasonable to put up a planned museum building, no sooner the potentiality of the site is established for the education and recreation of the general public, students and scholars, who visit the site in large numbers during the period the excavation is in progress and after it is closed when the remains are conserved for posterity.

The University Museums

These are used solely as teaching collections for students and are not generally accessible to the public.

B. MUSEUM BUILDING

The latest museums have had better luck in their buildings, than the earlier ones, for the latter are much at a disadvantage in having housed in buildings quite antiquated judged by modern museum standards. In the earlier days any easily available building was usually considered fit for housing a museum, and this had often greatly jeopardized the effective display of even the best material. In the case of some of the museums of recent origin it is indeed gratifying to note that

the new buildings have amply compensated the few years of cramped existence in readily available old buildings.

A proper planning for museum buildings is most essential, and without well lit suitable galleries even the best material cannot be effectively presented. Again, museums that started their existence in crowded centres without allowing sufficient space around for expansion are bound to get cramped. A museum is essentially a growing institution and requires ample facilities for growth.

C. MUSEUM SERVICE

A museum is like an organism. It is a complex whole of interrelated organs and services. The exhibition rooms, although a most essential part of it, can hardly, be considered as the most important part, since in a modern museum they occupy between 30 and 35 per cent only of the total surface. We now review the different organs and services of the museums.

Exhibition

The objects on display should be envisaged, not as an unrestrained accumulation of curios invading all the space available, but as a suitable collection of objects selected and displayed according to a plan, in order to convey an intended meaning. In that sense no exhibition is absolutely permanent. It should change with the progress of our knowledge, with the increase in the collections (which allows a better or a different selection of objects), with the special 'message' that any exhibition is meant to convey. However, we should consider two kinds of exhibitions :—

- (i) the permanent exhibition, which consists of the best and most significant pieces of the collections ; and
- (ii) the temporary exhibition, made of objects selected from the reserve and or borrowed from elsewhere for the purpose, and assembled according to a plan. Special rooms for temporary exhibitions with great flexibility of space, partitions, having their own sale-desks, will have to be designed.

Reserves

Since the objects on display are only selected ones, it is essential that the others which are not less valuable than the former should be kept in reserve collections well preserved and easily accessible to interested persons. The only difference is the display which is here concentrated without regard to educational and aesthetic purposes.

Storage

Considerable space should be provided for storage purposes : temporary show cases, panels, timber, glass, jute, textiles for displaying objects, electrical fittings for temporary exhibitions, reserve equipment of all kinds, packings cases and material etc. must be safely stored and easily accessible when needed.

Recording

This is an important function of the museum. It concerns the reception of objects, either those acquired by the museum, or those received on temporary loan. The objects when received may have to pass through a disinfection chamber in order to get rid of them of pests, fungi or ordinary dirt. They have to be registered, marked (permanently for museum's property and temporarily for loans) and directed to their destination.

This service deals also with the despatch of objects, either for their being returned to their owners if they are on loans or for their being sent for temporary exhibition out of the museum premises. This despatch service also entails registration, eventual cleaning, careful packing and actual despatch. The entrance to this service should be a special one, providing easy access by trucks and vans.

Preservation

Science plays a very important role in cleaning and preserving relics and works of art. Most of these methods are chemical, others are physio-chemical, electro-chemical or electro-lytic. A well equipped laboratory and an experienced and resourceful chemist are integral part of a museum service anywhere in the world.

This service is essential for three main purposes :—

- (i) For preserving and restoring the objects ; this concerns the simple treatment of the objects ; the more complicated and difficult ones being carried on at the principal preservation laboratory where ever it may be located.
- (ii) When simple pedestals cannot be used, the laboratory will undertake special mounting of certain objects, this is sometimes necessary for embedding objects in plastic sub-stances, or when holes are to be drilled in the objects.
- (iii) The laboratory will prepare plastercasts of certain objects either for sale or for study : casts of small objects are very often required by scholars, especially from abroad¹.

Photography

The photographic branch of a museum should include two different sections :—

- (i) A photographic laboratory, well equipped with cameras, enlargers etc., and
- (ii) A photographic archives, where not only the photographs of the museums' objects but also photographs of thousands of objects in other

1. The works of mounting of exhibits & preparation of plaster casts are normally done by the Design & Display Deptt. or by the Modelling Section of a museum —the latter at times is independent and at times an integral part of the Laboratory. The former, however, is independent of the Laboratory. (Editor).

museums and private collections be kept. These are necessary for reference and comparative study.

Educational Services

In the modern conception of museums great emphasis is given to the educational services. Not only has the exhibition of objects in the galleries to convey a "message" to increase the culture of the visitors, to enrich them by a spirited and aesthetic display and this with the help of labels, diagrams, photographs etc., but also the museum has to organise guided tours, to contact schools, college and university teachers, to attract them to the museum and to explain to them how the museum can help in their mission of imparting knowledge to others. Similarly students must be attracted and shown round, eventually allowing them to handle replica as or original objects. Civilization, art and technology can thus be made more easily understandable than by mere lectures and lessons.

An important aspect of the educational services is the organization of touring exhibitions in the country, towns, villages, schools, colleges and universities. An exhibition van, or even an exhibition train-wagon, are most useful in this regard.

In Pakistan, school services are provided in the National Museum, Karachi and the Lahore Museums. In these museums, school children, by frequent visits with their teachers, gather knowledge of several things that they may have read in their text books. University students, specially of the post-graduate course, can make the best use of the material in a museum, for it is impossible for students of art, iconography and numismatics to dispense with the first-hand study of the material in the museums. In this respect the Lahore Museum is a great source of inspiration to the students and teachers in general and art students & art teachers, in particular, of the local colleges and the university.

Aesthetic Value

Increasing interest is being taken in the task of improving museum service in the developing countries. With the development of tourism, monuments and museums have become *raison d'être* purpose for tours. The existence of well preserved monuments and well constituted museums in any country is a priceless cultural heritage and is often responsible for placing the name of the country on the map of the world. They are the attraction to the local, foreign, curious and casual visitors. As the monuments and museums in developing countries form part of their history and traditions, they are also links between the past and the present. They should be presented effectively.

Publications

Publications of a museum form an important parts of its activities. These record its work and collateral research and thus are the basis of its reputation throughout the world. It is one of the best media by which a museum can get

into touch by exchange in thought and material with other museums for mutual benefit. It is most heartening that the Lahore Museum has recently started a series of new publications of its own.

Picture post-cards, guides and pamphlets have their own value for the public.

Library

The dearth of books dealing with museum objects, tends to give an excessive exclusiveness to research in a museum. It is, therefore, necessary that a museum should develop an extensive reference library under a trained librarian, and it is essential that this work be continued systematically.

Auditorium

An auditorium well equipped with sound-projector, still-projector, epidiascope, large size screen and well designed from the acoustic point of view, is an indispensable adjunct to a museum. There, illustrated lectures, courses on various subjects related to the museum exhibits, film or still shows, eventually spectacles of ethnographical dances and songs could be given, and will strengthen the relations between the museum and the public.

Care & Custody

It is of course impracticable to conduct physical verification of every specimen in the national and regional museums every year, but there should be an annual examination of valuable small specimens, such as gold and silver jewellery and coins, objects made of precious stones etc. Whilst it will not prevent thefts, it will at least reveal them and also keep the museum incharge on the alert. A physical check of many of the collections, would reveal surprising discrepancies.

Thefts of museum objects are on the increase. This may be due to several reasons :—

- (i) Buildings in some of the developing countries are not as secure as those of Europe and America.
- (ii) Watching is of a sleepy kind than operates in the advanced countries.
- (iii) The show cases themselves are poorly made and consequently, a theft can easily be effected.

Any museum which suffers a series of losses in a few years should consider whether its incharge is sufficiently alert. Moreover, Government Departments and museum committees seldom hold a physical check of specimens, with the result that a theft may go unnoticed for years. In countries where huge expenditure is incurred on watch and ward it should be possible to avoid thefts in museums.

Strong Room is indispensable for the precious objects either belonging to the museum or temporarily in its possession. It is also essential for the coins & medals collections.

Law and order inside the museum and an adequate protection against fire and thefts are indispensable. For the most essential service a well organised permanent guard and an energetic, hardy and well contented band of attendants should look after the security of a museum.

It is absolutely essential for the security of a museum that the guard and the attendants should live in the museum premises. In case of fire or burglary the guards and the attendants should be ready at hand to face the situation. It would also be most desirable that the Curator should live in the museum premises.

Foyer and Commercial Section

At the entrance the visitors should find, apart from the sales-desk, all necessary facilities for visiting the museum, information desk, guides, panels showing the plan of the museum. At the sales-desk Guide Books, picture post-cards, photographs, transparencies, casts etc. be sold to the visitors.

Workshops

Several workshops should be in a museum :—

- (i) A workshop for carpentry, joinery and cabinet making. Its services are required in order to prepare pedestals for mounting most of the objects ; to prepare for temporary exhibition show cases, panels, boards which have to be changed or at least altered for every new exhibition : to unpack and especially to pack the objects sent out of the museum for temporary exhibition or for being returned to their owners.
- (ii) A workshop for electricity. In most of the modern museums liberal use is made of artificial light. It is necessary in this respect to have at hand all the means for supervising and repairing the electric installations. Again for each temporary exhibition a new system of lighting will be required, well adapted to the display, of objects.
- (iii) A mechanical workshop is also necessary for a museum. All sorts of mechanical devices are needed for effective display, especially studied and fabricated on each occasion.

Notwithstanding what has been achieved in a developing country like Pakistan it must be admitted that the progress has left much to be desired and on the whole, the country has not kept abreast of the museological developments in the advanced countries. Lack of adequate funds, suitable building and trained curators may sum the causes of this and have collectively and individually contributed to the general defects in the majority of our museums, viz : the over congestion of the exhibits and the absence of properly arranged reserve collections for study and exchange, of proper labels, charts, diagrams, dioramas etc. of

laboratory facilities, of children sections and of the numerous other factors which enliven the good museums of the West. In recent years there has been at least a growing consciousness about these shortcomings, and this will no doubt eventually bring with it a healthy development of museums.

The Director or the Curator is a living force in a museum. But nowhere else is he more neglected than in Pakistan, though prodigious knowledge and enormous achievements are expected of him. Proper facilities for visiting museums at home and abroad for widening his horizon and ample funds should be provided to him, without which it is idle to expect better results in display and exposition.

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MUSEUM AND ITS FUNCTIONS

DR. GRACE MORLEY

The Museum and its Functions

After lengthy consideration and debate, the International Council of Museums (ICOM), in its present Statute, adopted in Copenhagen in 1974, defined the museum in Article 3 as "a non-profitmaking, permanent institution in the service of society and of its development, and open to the public, which acquires, conserves, researches, communicates, and exhibits, for purposes of study, education and enjoyment, material evidence of man and his environment." Article 4 broadens this definition to comprehend every conceivable institution exhibiting material of any kind, aquaria, botanical gardens, zoological parks, planetaria and nature reserves, of which the purposes may be understood to conform broadly to the same lofty ideals of public service and instruction as museums.

A collection or collections of whatever kind may generally be considered fundamental to a museum in the strict interpretation of the ICOM definition, through the inclusion of "Science Centres", Article 4 (e), understood generally to be institutions emphasizing the function of teaching science, rather than collecting specimens, either to illustrate the history of science and technology or its principles and practices as developed and applied today, suggests that the educational role of the contemporary museum is recognized as of major importance.

Collections may, according to the ICOM definition, represent the entire range of "material evidence of man and his environment", comprising in general terms his own creations, as in archaeology, arts, ethnography, history and technology, and every aspect of the natural world, including living things, among which he has his place. In all cases, the value of the collection depends on the information gathered about each item and kept carefully by the museum in a way to be easily and quickly accessible for the purposes of "study, education and enjoyment". Thus recording and documentation of objects possessed by a museum are implied, but the ICOM definition does not probably emphasize sufficiently these procedures considered indispensable today to sound museum operation.

Registration is the first step essential to keeping track of items in a museum's collections undertaken immediately when an object enters the museum. It includes entry in a register of some type, possibly in card form, but usually in a book, assignment of an accession or catalogue number, and a brief identification with essential details observed and known at the time, precise enough to serve to distinguish it from any other item, even of its own kind. This registration record constitutes legal evidence of the museum's ownership of an object. Generally it is recommended nowadays that the written record be supplemented by a clear photograph, likewise kept on file.

Documentation in museum understanding is a more elaborate process. Obviously it may contribute information to the registration procedure, but it is far more elaborate and voluminous and usually continues indefinitely as more data relevant to the object becomes known, more research is done on it and more publication results, either in outside learned journals or books, or in the museum's own publications. The object gains increasing value in terms of its contribution to scholarly and scientific knowledge as more is known and recorded about it. This importance of documentation suggests how necessary it is to obtain as much information as possible about the museum object even before it enters the museum. If acquired as a result of field work by the museum's own staff members, or its agents, full and accurate data can, by planning, be obtained. Similarly, if it be the result of a scientific archaeological excavation, every detail concerning it has been noted and is of value. If the object is purchased from a dealer or acquired, either by purchase or by gift, from a private owner, securing accurate information about its prior history may be more difficult, as it may have passed through numerous hands, without any record being made or remembrance of its origin or earlier associations being preserved. This would be the case of many miniatures, for example, and assembling documentation about them would then depend, after their acquisition, on the expert knowledge of comparable items and on the research of the specialists of the museum's staff.

Conservation, if needed by the condition of the object at the time of registration, is the next step. After suitable conservation treatment, preservation, that is care in handling, whether the object is kept in the reserve collection, or storage, or is put on exhibition, is the responsibility of the curatorial staff in charge of it.

Exhibitions are the most general manner of giving information, instructions and enjoyment to the casual visitor. To make exhibitions as interesting and attractive as possible, while making sure that the material suffers no damage while shown — from light, for example, which causes deterioration of organic materials, unless controlled according to scientific knowledge — represents a broad-based efforts at popular education. All the various means of education by its collections, which a museum devises for all segments of the population of its community — school pupils, teachers, secondary school and university students, and research scholars — follow. They will necessarily differ from one another according to the needs of individual communities and the scope and character of each museum, its staff and the facilities it has.

**MUSEUM ADMINISTRATION
AND
STAFF**

DR. GRACE MORLEY

Museum Administration and Staff

Museum may be operated under a considerable variety of administrations, such as central, state, district or municipal governments, universities, learned societies, business concerns, private individuals. Sometimes control by governments and other authorities is direct ; in other cases a Board of Trustees or Governing Board provides guidance and advice, at least, and frequently considerable administrative control intermediary between the authorities supporting the institution and the museum's director and staff.

The organization of the museum depends on its size as well as on the scope and importance of its collections. The number of its staff members will differ accordingly, but some general description of those required to operate a museum of some size and variety of collections can be indicated.

Normally a museum has a central administration responsible for its general functioning in all respects. The officer-in-charge is generally given the title of Director, if the museum is a separate unit. In some countries, where museums are grouped together under a national administration, individual museums may have in overall charge of them, a principal officer designated as a Chief or Senior Curator.

The principal officer in overall charge of a museum, whatever the title, is usually assisted by an administrative officer, supported by the necessary accountants, clerks, stenographers, typists and other office workers required to carry on the business aspects of museum operation.

The principal officer may have an assistant or a Deputy, empowered to exercise the day to day tasks of supervising operation of the museum in the absence of its head, but it is the head of the museum who has the responsibilities of carrying out policy and exercising ultimate authority over the staff and the collections of the museum.

The principal officer is expected to be competent in managing a public institution, in giving leadership to his trustees or other authorities, whose policy decisions he influences and carries out, and in guiding his staff of experts, scholars, scientists, technicians and workers. Normally he has some distinction himself in some field of scholarship or science included in the museum of which he is the head. It is useful if he speaks and writes well and can establish good relations with the various categories of the public in the community in which the museum is located.

Curators (or Keepers, as they are sometimes called in museums) are heads of departments or collections of some special kind in the museum. They are in principle scholars or scientists, specially trained and experienced in caring for the material in their charge, in studying and writing about it, in interpreting it and its significance, when called upon, for the benefit of those the museum serves. They are assisted, according to the size of the museum and of the collection for which they are responsible, by an assistant or Deputy Curator (Keeper), and also sometimes by younger assistants who are similarly trained in the subject of the collection and gaining experience by their work with the material of the department.

Other staff members fall into groups according to functions and responsibilities.

Museum education and public relation staff generally may be considered the "interpreters" of the museum, for its collections, its exhibitions and its activities of every kind. They are in direct contact with its visitors and the public in general in the course of their regular duties. They have usually educational background similar to that of curatorial personnel, but instead of specialization in one subject or field and studying it in depth, as curators do in regard to the collections for which they are responsible, they are expected to be broad and somewhat general in their knowledge of the museum and its collections and to interpret them for the benefit of those whom they are specifically expected to serve. In the case of educational staff they deal with the citizens at all levels, including teachers, pupils in schools, students of colleges and universities as well as the casual visitors.

Keeping the journalists, representatives of the mass media and the public informed about the museum, its collections and its activities, is the duty of the Public Relations Officer. Both educational staff and Public Relations Officer may be called on to arrange events and programmes of different kinds, each one, for this purpose, expected to draw on his or her specific connections with the local community.

These staff members may carry on study, research and writing, in accordance with their specific functions: the educational specialists to compose lectures, to write informative and instructive brochures on the museum, its collections, activities and services on a sound, but popular level; the Public Relations Officer to prepare press releases, background information for journalists and representatives of television and radio, and publicity, such as advertising. Sometime the Public Relations Officer has in his or her charge the museum's information desk, and the general publications programme of the museum.

The educational staff is often responsible for training teachers in the use of the museum for the improvement of their teaching. They should study the curriculum of various classes and endeavour to be guided by it in planning educational programmes of the museum for the service of the schools. They receive and guide school visits, and normally are in charge of the appointment calendar for such

visits. They sometimes assist in preparing the classes for them, by lecturing before hand in the classroom. They lecture and may carry on various types of extension work. If the museum conducts educational programmes for adults, cultural and educational programmes, like public lectures, are in their charge.

The extent to which a museum reaches out into its community often depends to a significant degree on both educational and public relations personnel. What relationship they establish and maintain with the educational system, with the public at large, as represented by visitors, and with the mass media are most valuable for the museum.

The Security Officer bears a heavy responsibility for the safety of the museum's collections against theft, vandalism and fire. A large museum normally has a post for such an officer, who is frequently a retired officer of the Armed Forces or of the Police. A small museum may have to depend on the Assistant Director or a Curator who will share security responsibility with other duties. In any case the security assignment often includes some supervisory role in regard to building maintenance as well as to watch and ward personnel. This officer's duties normally include supervision of discipline, neatness of uniforms and smartness of the personal appearance of guards, attendants and watchmen, as well as of their alertness in caring for the museum's premises and of their courtesy and patience towards the museum's visitors. His influence and example are pervasive, and such an officer, experienced and competent in his duties, is of great assistance.

Technical staff, which includes the specialists in the various skills required by the museum, the scientific conservation personnel, the library staff, photographers, modellers, artists, designers, cabinet-makers, taxidermists, are all highly trained in their special fields, and in their respective ways make the museum effective in caring for its collections, and assisting the curators to present them for public pleasure and instruction.

The office staff referred to above carry on the business side of the museum's operation.

Finally there are the service staff of varying ranks and categories and responsibilities, too often dismissed in considering museum organization and operation, though on them depends the important task of guarding the galleries day and night, keeping the museum neat and clean, staffing ticket sales and information desks. Instilling in them pride in their tasks, alertness in their watchfulness, due respect for the public and helpfulness towards it, is necessity, in which the Security Officer takes the lead, but to which all members of the museum staff should contribute.

DOCUMENTATION

DR. GRACE MORLEY

Documentation

The importance of accurate keeping of record in a museum cannot be emphasized too strongly. It is basic to all aspects of museum work.

In regard to the collections, recording must begin just as soon as an item enters the museum, whether to be added to the permanent collection or to be a temporary responsibility as a loan, or perhaps an object under consideration for acquisition. This procedure is Registration.

Some large museums have a special department to carry on this process of Registration and such other tasks as may be associated with it, like arranging insurance, supervising packing and unpacking, keeping track of location of objects, whether on exhibition or in storage, and in general taking responsibility for the collections' safe handling.

For some types of museum objects documentation must begin before the item comes to the museum. This applies above all to ethnographic material and natural history specimens collected in the field, specifically for the museum, and preferably by the museum's own curatorial staff members, expected to keep complete and precise record. If such material comes to the museum from other sources, great care should be taken to secure precise data about it.

This effort to secure as much information as possible about a museum acquisition for its permanent collection, even before it enters the museum, actually applies also to all categories of material—archaeological or art objects, for example—and systematic inquiry about their earlier history should always be carried out. However, as this type of material often passes through a number of hands between its source and the museum's eventual purchase of it, or its acceptance of it as a gift, ascertaining the facts of its previous history may prove difficult or impossible. In that case, the knowledge and experience and research of the curatorial staff concerned must be relied on to assemble relevant information about it.

Museum must have documentation for all aspects of operation : catalogue cards for the library, for slide collections and for various types of reference and educational material ; careful notation of conservation work on items of the collection ; records of stores ; inventory of gallery and other furnishings, and the like. Systems of record keeping in use for comparable material by other institutions may be employed by the museum. It is in regard to its Registration procedure that the museum of every type has special requirements.

REGISTRATION

Museums in different places have devised various systems for carrying out their indispensable procedure for recording the entry of an object into their collections. Probably the most widely practised method is the use of an *Accession Register*. This is a book, a type of ledger, of which the pages bear headings deemed useful in recording the details about each object acquired and entered in this *Register*.

This *Register*, for full protection of its listings, should have numbered pages, and a statement of certification signed by a responsible officer of the museum on the total number of pages contained in each volume.

Normally an *Accession Register* intended for a museum having a variety of different types of material in its collections has these column headings :

1. *Serial Number*, for the order in which the item is entered in the *Register*.
2. *Catalogue Number* : an individual number given to each object when it enters the collection which it will bear throughout its museum existence.
3. *Other Numbers*.
4. *Name*.
5. *Maker* (or artist) if known, his dates, and tribe or community, or "school" if an art work.
6. *Material*.
7. *Dimensions* (height preceding width).
8. *Date*.
9. *Description*, brief, but sufficiently full and precise to serve as an identification.
10. *Source of acquisition*.
11. *Price*, if purchased, or estimated value if otherwise acquired.
12. *Condition*.
13. *Remarks*.

Perhaps it is in order to explain briefly these column headings. The serial number indicating the order in which items are registered is not always used. Its advantage is that of providing a running total of the items in the collection, either for each year, if started afresh annually, or for the collection from its beginning, if carried on without interruption. The Catalogue Number given to each object when it is entered in the museum's *Accession Register* remains with it as long as it continues to be a part of the collection ; it is discussed separately below. It should be inscribed on the object in an inconspicuous place so that it will not interfere with its visual attraction when exhibited. If too small, it may be noted on a tag attached, or the object can be kept in a transparent box or envelope.

The column for 'Other Numbers' allows recording of any number or numbers which at any time have been attached to the object and which never must be lost, because of their potential reference value. This would apply to an excavated object, usually given a number at the time of discovery, which may be referred to in an excavation report, or in publications based on it. It would apply also to ethnographic objects collected in the field, which usually bear numbers referred to in a report, or to an item from another collection of which it was a part, previous to acquisition by the museum. If there had been a published catalogue, the reference to this earlier collection and the catalogue with the number could have significance in tracing back the history of the object.

The column for 'Name' of the item is obvious, and so are the columns for 'Maker' (or 'artist'), 'dates' if known, 'tribe or community', 'school of art or style', 'period'.

An exact notation of the material (for example, gouache painting on paper, oil painting on linen canvas, sculpture of red limestone or grey-blue schist, or a specific wood, etc.), and its dimensions (following the usually adopted order of height, width, depth), and an approximate period (as 10th-11th century, or c.5th century AC or equivalent dating system), represent important details for identification of an object.

The 'Description' called for in the next column should in the general *Accession Register*, be brief, precise, aimed at producing an 'identification' description, which will serve to distinguish the piece from all others and make its distinctive characteristics of subject, colours, setting so clear that it can be confused with no other object. The assistance of a good photograph is obvious. Some museum leaders have advocated attaching a small reference photograph to the entry in the *Accession Register* itself, but as this adds to the bulk of the *Register*, it has not generally been considered practical. However, a photograph, or in the case of an important three dimensional object, several different views of it, is usually part of the supplementary card index system, that many museums using *Accession Register* have as well for convenience.

The 'Source' notation is useful in procuring information on previous history. 'Price' if purchased, or 'estimated value', may be of assistance in fixing an insurance valuation, should one be needed, for a loan, for example. The 'Condition' column should receive as precise an entry as possible, perhaps with the assistance of the conservation laboratory if the museum has one, and reference could be made in it to the conservation laboratory report, if special treatment or repairs are required at the time of registration.

The heading 'Remarks' allows for any notation about the object useful to record, and is usually an entry made by a responsible officer and signed and dated. It might record the fact that the item was included in a loan exhibition, for example

or that it was stolen, later recovered on such and such dates, or that it was so badly damaged or deteriorated that it had been decided to delete it from the collection.

Some museums add a column for 'Location', where an object's place of exhibition or storage is indicated, usually in pencil, so that it may be easily erased or changed. However, it is more usual to enter the "location" in one of the index card files.

It should, of course, be understood that specialized museums require an *Accession Register* with other precise headings. An art museum, especially of the modern period, when the artists' names are known, would have precise information about them, including their dates and, if possible, the date or approximate date of the individual work of art. Collections of miniatures, for which individual artists are rarely known, would have the school and period indicated as accurately as possible.

An ethnography museum, while following the same general pattern for its general *Accession Register*, should have some additional columns, notably for the vernacular name of the item, its particular use, which might have special significance, its source in a place or from a particular ethnic or cultural group.

The needs of a natural history museum, a history museum, a personalia museum, a museum of technology and industry would each have precise requirements in regard to registration practice.

The Catalogue or Accession Number is a major concern of a museum. There have been in the past, and there continue to be, many systems of numbering items in museum collections. The essential thing is that each item have number which it continues to bear throughout its museum existence, that whatever system may be adopted be clearly understood by all members of the museum staff, that if be applied to the collections in a coherent and consistent way. Provided that the system is understood and is followed consistently and makes proper allowance for whatever may be the characteristics of the collection, it makes little difference what system is used. However, many museums throughout the world today follow what may be termed the 'international' system which consists of the last digits of each year, plus the number indicating the order in which the item was entered in general *Accession Register*. Thus 61.5 would designate the fifth item entered in the *Register* in the year 1961.

Each object must have its own number. What then should be done with objects having several parts, all of which belong together and do not have a recognizable identity in their own right? A coffee pot with a filter attachment and a lid might be cited as an example. Most museums use the same number for all three adding (a) and (b) to the two subordinate parts, and of course, making clear in the 'Description' column that the number covers three items. A silver punch bowl with a ladle and a dozen cups presents a more complex issue. Should it

appear as a group under one number, with the required indication of the subordinate parts designated by a letter or a separate number, perhaps a Roman numeral in lower case, as 61.6 for the bowl and 61.6a or (i) for the ladle and 61.6b or (ii), for the first cup, continuing thus to indicate each cup? Or should each item of the set have its own number? This would be at the discretion of the museum concerned, but whatever numbering is adopted should be followed consistently throughout the registration process.

Some museums find it convenient to add to the registration number some code indication of the type of material or the department in charge of the material. Thus P, might indicate painting; SC, sculpture; DA, decorative arts, etc. At least one museum having an art collection, which included the major cultures and periods of the world, is known to have devised a registration numbering system by which the part of the world from which the art object came was indicated, as well as the usual information. Obviously a registration system is designed for security and convenience and a museum must adopt a system safe and practical for its use. It is in order to note that accurate registration, as well as photographic recording, are invaluable in recovery of a stolen object.

Departmental Accession Register

Large museums possessing collections of various types of material usually have a number of different departments. In that case, in addition to the general *Accession Register* serving the museum as a whole, the separate departments may each have its own *Register*. The columns of information would correspond to those of the general *Accession Register*, and they would use the accession number assigned to each object of their collection. The columns of factual information would be repeated as in the general *Accession Register*, unless, on further study carried out by the competent curatorial staff members of the department, it were discovered that some error had occurred, a mistake in indicating dimensions, for example. In that case, the error would be corrected and the corrected information, under certification of a senior officer, would be entered as a correction in the general *Accession Register*. But for the *Department Register* the column of 'Description' would be much more detailed and complete, as the result of careful study and research by the curatorial specialists of the Department, based on their intimate knowledge of the material in their charge.

A *Register for loans* is sometimes kept to provide a separate record of material in the museum temporarily, either for an exhibition or for consideration for purchase or other method of acquisition. However, documentation of this kind is commonly cared for by loan forms and receipts, the original supplied to the lenders, and the copies carefully filed by the museum.

Index Cards. Card files listing museum objects commonly supplement *Registers*. They may have multiple copies which may be organised in various ways, according to convenience of reference. Usually one set has reference photographs attached, and one set may be used as an index of location of the objects of the collection. A card index, with reference photographs attached, is especially useful for collections of miniatures, of textiles and of other fragile objects.

Scholars may use them to decide on the original they need to see and can request, thus eliminating a large amount of handling for what are especially easily damaged materials.

In some western countries cards are used for the registration record instead of the *Registration* book. One set is in that case arranged according to the registration number and it serves the same purpose as the book *Register*. Other sets would be arranged according to materials, to chronological periods, to artists, or in any other convenient way to serve the reference purpose of using them. Security is not as well served by the cards, used as a record of accessioning, as compared with the *Accession Register* in book form; a card is easily misplaced or taken from the file; and its absence is not easily detected. To overcome this security problem a file of the cards recording the accessions is usually put aside in a place of safety and is not used by the staff for its daily work. Approximately the same headings as used in the *Register* in book form are used by the cards.

Documentation for field collecting. Material of whatever kind, collected in the field of the museum's own staff members, or by agents commissioned by it, should be meticulously documented from all relevant points of view at the time it is collected. This information will be incorporated in part at least in the general *Accession Register*, but probably more fully in the departmental *Register*, if there is one, but it should, in addition, constitute a reference file on the objects collected and be kept carefully.

Thorough documentation while collecting is particularly necessary for ethnographic museum or ethnographic departments, because the rapid changes at present taking place everywhere are affecting profoundly traditional societies; and destroying the long established ways of life in villages and in settlements of ethnic and cultural minorities, even in remote areas. Essential data is likely to be lost unless museums record it, in descriptions, but also, if possible, in photographs.

Whether purchased or otherwise acquired, each object should be the subject of careful inquiry from those from whom it is obtained, in order to record its vernacular name, its specific use, its approximate date of fabrication, its maker, if possible, and any other significant facts. Supplementing the descriptions with photography, stills or motion pictures, and recording of sound-songs, music, recitations, and the like — has great value and provides information for later study and should be held in mind as an ideal for this type of museum documentation, even though beyond the means of most museums.

Reference Files. Many museums maintain a collection of folders in which photographs of the object, references to its reproduction or to articles which refer to it, clippings, records of comment about it by eminent authorities, or any possible reference to it and information about it are accumulated. This is invaluable material for study, research and eventual publication of a catalogue or of articles.

Computers for Registration. Many countries are studying the possibilities of employing computers for the task of registration of museum objects. In some countries considerable progress has already been made in working out formulas for use of computers for various types of museum material. Usually it

seems necessary to reduce the amount of information commonly recorded in the conventional *Accession Register*, or on index cards. Computers promise to be particularly helpful for collections of large amounts of material, such as sherds for an archaeological museums, or multiple specimens for a natural history museum.

Plans are being studied for linking a number of museums of a city, or even of a region, or of a whole country, together on a computer system in such a way that information on the holdings of any member of the group, which it was desired to have, could be made instantaneously available. Ways to ensure that confidential information would be protected have also been discussed. Both UNESCO and ICOM are greatly interested in developing use of computers for servicing and control of museum collections. But computers have the possibility of other use in museums as, for example, maintaining records of memberships.

Conservation Records. The condition report, made at the time an object enters the museum's collection and is registered, is reflected in the column under 'Condition' provided for registration, either in the *Accession Register* or equivalent record of acquisition, but it should be filed and kept carefully by the department concerned. If a museum has its own conservation laboratory any treatment made at the time of acquisition, or at any later period, should be thoroughly recorded, including photographs as usual evidence, a copy of the report being furnished to the department responsible for the object, as well as being retained by the laboratory. If a museum, lacking its own conservation laboratory, must have conservation treatment carried out by some other laboratory, it should make sure that the department concerned secures and retains for its reference a report on the treatment carried out.

Movement Register. Some museums keep a Register in which is recorded every change of location of an object of the collection. Thus when an object is taken from storage to be put on exhibition, or is removed from exhibition to be placed in storage, or if an object is moved from one exhibition area to another, or is sent to the conservation laboratory for treatment, or is lent to some institution outside the museum, the fact is recorded with use of the accession number, and the name of the object and the relevant date.

Gallery check list for security. Some museums have a separate list for the objects on permanent exhibition in each gallery and require the gallery guard to review the list and sign it on assuming duty, and his relief to do likewise, when taking over the responsibility from him. If the gallery is large, with many cases and there are many items in each case, this is a laborious and time consuming process if carried out conscientiously. It serves to emphasize the need to verify the contents of an exhibition gallery at frequent intervals, of course. However, it seems practical only when applied to a relatively small exhibition, and perhaps one of particularly precious objects. A photograph of each case, at a sufficiently large scale to make every item in it readily recognizable at a glance, can be of assistance if such a method of security checking is used.

TARIQ MASUD

Registration and Documentation in Pakistani Museums

Museums began by collection and that still remains their primary function. A collection, however, should not indeed, be an end in itself. If it is to take place it must be systematic and recorded in a way which provides the kind of information likely to be helpful in future.

So, whenever an object enters a museum, it is obvious that it be identified immediately by some clear and ready means and that its entry and subsequent disposition must be accurately recorded. This is called *Registration* or *Documentation*.

Documentation is a sort of bibliographic control of museum collections by using such tools as indices, abstracts and traditional methods classification and cataloguing in order to make necessary information accessible.

By whom and how this record is to be maintained? In general, registration, documentation and the physical handling of objects, as they move in and out of the museum, are the responsibilities of a 'Curator' or any other Official/Officer authorised to do so. This responsibility includes not only the making and keeping of records, but also other works related to the entry, exit, safe keeping and cataloguing of the museum objects. All well organized museums of the West today have their own Registration Departments each under a Registrar. The Curators supply the information to the Registrars of their museums who prepare all the necessary records for them. However, in all museums, the basic procedure for registration is almost the same wheather it is handled by a Curator or a Registrar.

So far in no Pakistani museum, big or small, a separate Registration Department could be set up. In almost all our museums, registration work is actually done by the Curators concerned or by some other Officer specially assigned to do so. Only in the National Museum of Pakistan, Karachi, there exists one post of *Indexer* for this purpose.

Any registration or recording system is necessarily based on the following aspects :

Collection. The collections are essential part of a museum. They are administered in accordance with special rules, namely

- (a) bearing on various operations like acquisition, alienation, deposits, incoming and outgoing operations, registration, internal and external movements of the objects, archaeological explorations and excavations, gifts, bequests etc.

(b) varying according to the type and level of the museum.

These collections are constituted by what is called acquisitions.

Acquisition. Museum acquisitions are made by purchase, donations, gifts, bequests, expeditions, archaeological explorations and excavations. A museum Curator, however competent, should not himself decide on an acquisition. His role is to select object whose authenticity and inherent value seem to him such as to make them useful additions to the collection under his charge. It is his duty to use all available means of study and comparison. He must also discuss the price asked, if it is unreasonable and secure necessary reductions. In short his powers are limited to the making of proposals for acquisition.

The effect to be given to such proposals depends exclusively on the Acquisition Committee, which is constituted by the Government concerned or governing bodies concerned as the case may be. In some cases in emergency even the Director of a museum, has been given powers to make purchases upto a certain amount. The collections of site museums are usually static and fixed. This is particularly so in Pakistan. Seldom any acquisition is made by the Curators of our site museums except by means of fresh excavations, explorations and seizure under Antiquities Act. But this is rare.

Inventory. Acquisitions to be incorporated permanently into collections must be inventoried. The inventory is the instrument which safeguards the patrimony of a museum and the objects deposited with it. It provides the Curator with an exact picture of the objects acquired, deposited or alienated. It is an effective means of combating disorder and depletion of resources. It is an indispensable aid to research. As the Late Edouard Michel aptly remarked, it is the 'basic' book.

Any delay in the inventory of objects may lead to disorder as well as to confusion in identifying an object. The inventory should therefore be kept strictly upto date with acquisitions. The inventory should also not be confused with the cataloguing. In principle, the former is administrative and the later scientific in character.

There are different types of inventories like Accession Register, Movement Register, Card records, Photographic records and Computer record etc. These are as under :

Main or General Accession Register. A register, by definition, is an official written record and it is the first firm record made for permanent acquisitions. Neither all the details concerning objects can be put on a label nor they are needed for the showcases. They are kept in one or more large and bound registers. It shows the whole collection in chronological order of its acquisition. This kind of register is called Main or General Accession Register. The leaves of this Register must be paginated continuously in indelible ink, with a certificate on the first page as to the total number of pages therein. A rough draft of all enteries may be made before they are written in it, so as to minimize corrections. The essential

feature of the inventory of acquisition is that the object once entered in it cannot be struck out unless they are recognized as having been lost or alienated. No addition, alteration and deletion is accepted unless countersigned by the highest authority with reasons recorded.

The records are listed or filled in the order of their acquisition as shown by their accession number, year of acquisition, date, name of article and its description. The records thus become accumulative. All entries in the Accession Register must be written in hand. This is a laborious process. Though the description of an object entered in the Main Accession Register may not necessarily be lengthy, but information in respect of other aspects such as source, cost, and final disposal of an object, must be exhaustive. The columns mentioned in the Main Accession Register of a big museum like the Lahore Museum etc are given in Appendix A. But not all the museums in Pakistan maintain such detailed record of their collections. In some other museums, like the Science and Technology Museum, Shakir Ali Museum and Commercial and Industry Museum, all in Lahore, inventories are maintained in the form of stock entries in a Stock or Index Register.

In smaller museums, this Main Accession Register may suffice. But not so in larger museums having several galleries of varied collections. There it is necessary to maintain, beside the Main Accession Register, *Section Registers*. Section Registers, obviously, record more details about a particular object than done in the Main Register. All museums in the country, except the site museums, maintain such Section Registers in which entries are made in chronological order of receipt of object in a particular gallery.

Where both the Main Accession Register and the Section or Gallery Registers are maintained simultaneously, a particular entry in our registers bears reference to entry in other registers. This makes cross-checking possible. A Section Register also shows the precise location of an object entered therein be it on display or in the reserve. Maintenance of a Section/Gallery Register is the direct responsibility of the Officer Incharge of that particular section. Specimens of the Museum Section Registers is given at Appendix B.

The Department of Archaeology has recently introduced a new Accession Register in all the Archaeological Museums, including National Museum of Pakistan, Karachi and Islamabad. In this register entries of various columns are as Appendix A₂.

Normally an Accession Register intended for a museum having a variety of material in its collection, has the following columns: (The value of registration depends upon correct filling of these columns).

Serial Number. The serial number indicates the order, in which the objects are entered in the register. Its advantage is that it provides a running total of the items or group of items in the collection, if carried on without interruption or for each year, if started afresh annually. The Lahore Museum has adopted the later procedure.

Date of Receipt or Acquisition. The 'date' column shows the entry on which it is accepted, received or acquisitioned by the museum.

Accession Number. Each object in a museum is identified by its number. The number must be scribed in indelible ink on such a part of the body of an object which is not to be viewed if displayed. In case of extremely small objects, such as beads, bangles or coins, number should be written on a tag fastened to or placed below an object. If accession number changes every year, the number on the object must be succeeded by an oblique and last two *numerals* of the year, viz. "80" in place of "1980" followed by a dash, then the abbreviation for the Section and the section number. Thus an object acquired in 1976 and entered in the Main Accession Register at s.no. 100 and then recorded in the Painting Register at s.no. 150 will receive its number as 100/76-Pntg. 150¹.

Supplementary Number. The column for 'Supplementary Number' allows recording of any number which at any time have been attached to the object and which never be lost because of their potential reference value. This would apply to number given to an excavated objects given soon after its discovery or an ethnographic objects given in the field, etc. The supplementary Number Column is being used in all the Archaeological Museums and Peshawar Museum. It is a good practice, and is recommended for all big museums.

Name and Description. The column for 'Name' of the item is obvious. Description under this column in the General or Main Accession Register should be brief, precise and be aimed at producing an identification.

Material. The same materials are used for such a variety of objects that it seems best to proceed first to identification of the material. Usually it is relatively easy to determine into what broad category the material falls. For example sculpture of red lime stone, table of wood or metal etc. If the particular material is not recognized, describe its physical properties as 'hard' dark green stone, highly polished, porous, grey stone, soft wood, very hard etc. With a little practice, however, one can be much more definite. In describing stone objects, say how the stone was shaped—by chipping, flaking, grinding and wheather the surface is polished or not.

Dimension. For all registers, a column for size of objects is a must. Dimensions are an important part of the description of an object and always are maximum unless otherwise noted. They are given in the following order: height, length, width; or length, width, thickness. Diameter may be substituted for length or width wherever necessary.

Price. The column should refer to actual price of an object purchased, or an estimated one, if the same has been received as donation, a gift, or on loan. It may be of assistance in fixing an insurance valuation which is needed for loan objects.

1. See a slight variation of this practice at pp. 52-53,

Condition. Unlike the condition of an object in an art museum, archaeological and ethnological pieces in absolutely perfect condition are relatively rare. So except for an especially fine piece, minor cracks and chips are not noted. Serious damage and completely missing parts are noted and a distinction is made, in measuring between complete and incomplete piece. A specimen may have been broken and mended in antiquity or a piece may have been broken and refinished. If so, it is always to be noted.

In almost all Pakistani museums, condition of an object is described as part of the description. However, it is recommended that a separate column should be introduced for this purpose.

Source. The 'Source' notation is useful in procuring information on previous history. Source of acquired material or records are of great importance in every museum. This column should not content with simply recording the name of an expedition or a dealer/seller, or a donor who makes the bequest, gift or loan an object or a collection. Instead, information obtained under this column should attempt at determining the ultimate source of an object or a collection acquired. It is an important factor in ascertaining the authenticity of an object. Therefore at the time of acquiring an object it is necessary to know how and when it came into the custody of the present owner. All organized museums in the world keep a separate file of the history of each object in their collection. But no such practice exists in Pakistan.

Sketch or Photograph. Photographs or Sketch drawings of each object, if possible, be on the registers. These are necessary and helpful in determining the object easily. It is very helpful in assistance of good registration. This column is in practice in the Lahore Museum though with less regularity. For this service, a photographer or a good hand in drawing is necessary which is not always available to the majority of museums in Pakistan.

Location/Disposal. Each museum register dealing with its collection must indicate in one of its columns where a particular object is to be located *i.e.* whether on exhibition or in storage. It should be usually in pencil so that it can be easily erased in case the location is changed. It is a practice in almost all museums though rarely a correction is marked in pencil.

Remarks. The heading 'Remarks' is for any notation about the object useful to record. It might record the fact that the item was transferred, included in a loan exhibition, or stolen, or badly damaged or deteriorated that it had been decided to delete it from the collection or written off and destroyed.

It is understood, that some large museums, having a wide variety of collections, required Accession Registers, with different columns required for specific materials. Coins and Manuscripts Accession Registers, for example, require some additional columns, notably for weight, dynasty, mint, monogram, legends (obverse and reverse) etc, in case of coins, and date, type of paper, language, title,

script, pages. illustration, author, and subject etc. in case of manuscripts. The art gallery or painting gallery of the modern period, when the artist's names are known, would have precise information about them including their dates and if possible, the date of the individual work of art. Collections of miniature for which individual artists are rarely known, would have the school and period indicated as possible. For ethnographical material some additional columns, notably for the name, its particular use, which might have special significance, its source, particular ethnic or cultural group, etc.

Catalogue Number. It is a major concern of the museum. The purpose of this number is therefore, to put order into a collection of objects so that these can be located easily. It is a card record of information on each object in the museum arranged in an order most useful to the institution. It reflects the fields represented in the museum and allows for the growth of the collection as well as for changes in classification. The flexibility of it is counterbalanced by the presence of the accession number, which should never be changed. If the number is based on classification, it too would be subject to change and there would be no fixed point of reference in the system.

"After many years' pioneering experience of classification and cataloguing, at the Museum of Popular Arts and Traditions in Paris, Miss Oddon, (now of the ICOM Training Unit), went to the Centre for the Training of African Museum Technicians at JOS, in Nigeria, and in the course of her work there, drew up what she called a guide for cataloguing and analysis of collections in General Museums. This is a remarkable document which explains in considerable details, how the standardised ICOM Catalogue Card is to be completed. The card contains twenty three items. If this procedure is adopted or followed, the museum will have a full description of every object in its collection, with its origin, condition, appearance and purpose meticulously and concisely described." (These lines have been taken from "Museums for the 1980s. A Survey of World Trends" by Kenneth Hudson, published by 'UNESCO' in 1977. p. 27.) See Appendix C.

The method used and recommended by the National Museum in Delhi is considerably simple than Miss Oddon's, but for the same reason provides a good deal less information. Eleven categories of detail are required covering much the same ground as the ICOM list, but in a much shorter space. See Specimen at appennix D.

(Both the specimens have been taken from the book "Museums for the 1980s. A Survey of World Trends - by Kenneth Hudson, published by 'UNESCO' in 1977. p. 35).

Movement Register. When an object is removed temporarily from display or reserve for cleaning, repair, treatment, photography, study, exhibition or temporary loan, its movements and particulars are recorded in the Movement Register. This register is used in almost all museums of the country. In a smaller museum the Curator himself should be responsible for the maintenance of such records. In larger museums, however, the practice of maintaining this record can differ

from institution to institution. In museums where there exists a separate Department for Registration or Documentation, it is the responsibility of the Registrar. No such Department so far exists in any Pakistani museum. In other cases, as in Pakistan, the movement of museum objects in larger museums is recorded by the Gallery Officers concerned but only after obtaining permission of the Director on the Movement Register itself. The columns of the registers are as per Appendix E.

Card Records. Card records in a museum are intended to convey information about the collections to the Museum Staff. They are only tools and subordinated to the collection, they serve. The cards have four basic kinds of information to furnish concerning the objects to which they pertain. What it is, where it is, when it was acquired and from whom or how ?

To provide this basic information, following different systems may be set up, such as Location Cards, Punched Cards and Photographic records etc.

Location Cards. The recording of knowledge about any object nearly always demands more than a description in words. The Location Card is used for the location of each object in a museum collection, either on display or in the reserve. In this way, it is easy to locate the object. This system is being used in the National Museum of Pakistan, Karachi. In Lahore museum this practice has been started in some of its many galleries.

Punched Cards. Punched card system is increasing in science, business, industry etc. This system is not the final answer to all problems of record searching. However, it can open up vast stores of accumulated knowledge for the use of those who need it. The first step in setting up a Punched Card System is the writing of a clear declaration of intent. Precisely, this register is meant to accomplish what sort of information is to be extracted from it. The second step is the preparation of the coding scheme. These are the two essential steps upon which the success of the mechanical operation of a Punched Card file depends. This system can be supplemented but do not replace conventional system. This kind of system has not so far been adopted in any museum of Pakistan.

Index Cards. The Index Cards have been developed to deal with those aspects of an object which do not appear in the material breakdown of the classification systems in the catalogue. These are commonly called Supplement Registers. They may have multiple copies which may be organized in various ways, according to convenience of reference. A card index, with reference photographs attached is especially useful for collections of miniatures, textiles and other fragile objects. Scholars may use them in spite of original records. This index is an alphabetical card containing entries for artists and makers, subject matter, titles, ex-collections and provenance.

In some Western countries cards are used for the registration record instead of the Registration Book. Security is not as well served by the cards when, used

as a record of accessioning as compared to the Accession Register. A card can easily be misplaced or taken from the file, and its absence is not easily detected. This kind of system has not been introduced in any of our museums. Only in Lahore Museum this system has been introduced for collection of miniature and modern paintings as a compliment to the Bounded Accession Register system already in vogue.

Photographic Record. Photographic records of museum acquisition should, if possible, be introduced on registration or catalogue cards or the relevant registers. Though this system is much costly but it is needed for the museum record. Before 1947 all important museums of Pakistan had their complete photographic records. Large size registers containing photographs of all exhibits were prepared and maintained. Best record was that of the Taxila Museum and Lahore Museum. The catalogue of negatives of photographs of some of the collections of the Lahore Museum was available in printed form. Unfortunately, now this sort of record is rarely available in any museum.

Computer System. Computer indexing has for a long time been desired by the museum profession and now it seems to have reached a point of development at which it has become a practical proposition. In some countries considerable progress has already been made in working out formula for use of computer for various types of museum material. Usually it seems necessary to reduce the amount of information commonly recorded in the Accession Register. Computers promise to be particularly helpful for collections of large amount of material.

The computer system lacks the complete information as recorded in the Accession Register. The computer gives us only such information which we feed to it. If there is some mistake in feeding it, it will give us wrong information. It depends upon the human hand, as we feed it right we will get right results, if we are wrong we will get wrong data. As regards Accession Register, we can check the information and mistakes can be corrected. But in the computer, it is impossible. So the importance of Accession Registers is there and cannot be ignored as basic form of the Museum Registration. It is an important document of any museum. It is a permanent and safe record.

Documentation for field Collections. Materials of whatever kind, collected in the field should be documented from all relevant points. This information should be at least in the Main Accession Register and more fully in Section Registers. Thorough documentation is necessary for ethnographic materials because rapid changes are taking place everywhere. It is destroying all established ways of life in villages and settlements of ethnic and cultural minorities. Essential data is likely to be mentioned in the museum record, and if possible in photographs.

The material of Archaeological explorations and excavations should also be documented from all points which are necessary like name of object, layer, depth, period, condition, site etc. If this is not recorded at the time of digging we may lose an essential data which can be more useful at the time of writing a report.

Numbering System. Since each object in a museum is identified by its number, the first step, therefore, in planning of registration is the determination of numbering system. A sequence of simple numbers (1, 2, 3, 4) may be satisfactory for a small homogeneous collection under the care of one person. Use of letters preceding the numbers to designate the material or location, (P-painting, C-ceramics, A-arms) etc. makes it possible for each group to be marked. This system has been used in almost all the museums from early times to the present times.

The simplest and the most general use today in most of the countries for registration is composed of the year of acquisition and number assigned to an object during one particular year in which it is officially accepted as a permanent accession. The first part of the number is usually the year and changes annually, the second part begins with '1' each year and seems consecutively through the number given to the final accession for the year within the year of acceptance i.e. 76.100, 76.102 etc., is generally satisfactory. Reverse of this process is also right i.e. serial number should precede the year by an oblique. Thus 76.100 can also be given as 100/76. The advantage of this compound system is however, that the accession number or year digits may be extended as required after a dash by the additional decimal points followed by further number or letters. For example, if hundredth object during the year 1976 was a Miniature Painting (MP) and in later register, it is entered against s. number 1215. Then a complete number of this painting will be 100/76-MP 1215.

The Lahore Museum is using this system. since 1974. It is composed of a year of acquisition and number assigned to the object in that particular year, both changing every year. Other museums are using the old system of continuous numbering system so far.

The main number is followed by Section number which consist of abbreviation for the Section, GA for Gandhara Art, MM for Muslim Gallery, etc, and a continuous number of the Section Register. For abbreviations used for a large varieties of objects in the Lahore Museum, see Appendix B₂. As classification of museum collection vary from museum to museum each museum can adopt its own abbreviations for sectional numbering.

Marking. Marking of numbers on museum objects is obviously an important task in all museums. An accessioned object can easily be identified in the records, if it carries its accession number on its body. Marking on the objects in the permanent collection should be clear, permanent and readily accessible. Numbers of all large or even sizable objects should be scribed on the body of the object itself, but on such a part of it which can conveniently be concealed from view if it is to be put on display. In case of smaller objects or objects too fragile or delicate to allow numbers to be scribed on them, numbers can be written on separate pieces of paper, sticker or tags and then tied on the object.

In case of coins, medals, postage stamps and un-threaded tiny beads, the number written on a small tag be placed under the object in an album or a trans-

parent tiny box. All numbers must be written either in Indian black ink or oil colour or even a black marker. These are permanent and indelible. Numbering in no other colour of ink is permissible.

However, in case of objects of dark or black colour like armoury, wood carvings, machines, metals, sculptures etc., white colour is permissible. Sometimes stamps have also been used on the objects like textile, carpets and papers etc. Marking numbers in ink on back of a miniature painting or a water colour may usually show off on the other side, thus marring the painting. In such cases marking of number is permissible in copying pencil.

In summing up this brief account of documentation methods in Pakistani museums, it is once again pointed out, that there is no one standardized pattern of documentation being followed by our museums. Each museum, or a small group of museums has devised its own pattern—each pattern having its own advantages or disadvantages. It is high time that the Museum Association of Pakistan and the National Committee of ICOM should join hands and devise a formula or a set of formulae of documentation for all the museums or groups of museums in the country. But simple adoption of a pattern does not help. In many museums in the country, the pattern followed is quite good, but the actual maintenance of record is far from being satisfactory. Many important columns in a Register are left blank for want of interest on the part of officer concerned. It is therefore necessary that all big museums must have an independent and separate Registration Department, as is the standard practice in all modern and well maintained museums of the world. Only with the establishment of a Registration Department in a bigger museum, we can introduce more improvements in our documentation, like Computer system, Filing system, Card Index System, Punch Card System as already established in the western countries like America, Germany, England etc.

It is also necessary that all museum Curators must get proper training in documentation techniques. Without this, our documentation system will ever remain defective.

APPENDIX A

Specimens of the Main Accession Registers maintained in various Museums of Pakistan

1. Lahore Museum, Lahore.

S. No.	Date of Receipt	Name of article with description	Quantity	Price	Source	Full address if donated	Bill No.	Voucher No.	Stock entry No.	To whom given or location	Remarks

2. Standard Proforma of Accession Registers for all the museums of the Deptt. of Archaeology and Museums.

Name of Museum	Date	Accession No.	Supplementary No.	Source	G.P.E.* or L	Price or Value	Object	Locality	Remarks

3. Peshawar Museum, Peshawar

S. No.	Date	Accession No.	Supplementary No.	Source	G.P.E.* or L	object	Locality	Price or value	Size	Remarks.

*Here 'G' is used for Gift, 'P' for Purchase, 'E' for Exchange and 'L' for Loan.

APPENDIX B

Specimen of Gallery or Section Register

1. Lahore Museum, Lahore.

Main Accession No.	Gallery or Section No.	Date	Material of Manufacture	Donated by/ Purchased from	Cost	Provenance	Description of the object	Sketch or Photograph	Remarks

2. Abbreviations of different sections adopted in Lahore Museum.

1. Pre and Proto-Historic Gallery.	PP	6. Sikh Gallery	SKH	11. Ethnological Gallery	ETH
2. Gandhara Art Gallery.	GA	7. Miniature Painting Gallery	MP	12. Pakistan Postage Stamps Gallery	PPS
3. Jaina Art Gallery	JA	8. Arms & Armoury Collection	AA	13. Numismatics Gallery	NM
4. Hindu Gallery	HU	9. General Gallery	MISC	14. Manuscripts	MSS
5. Muslim Gallery	MM	10. Pakistan Movement Gallery	PMG	15. Reserve collection	RC

An object for example purchased at S. No. (say) 439 in the year 1978 and entered in the Muslim Gallery at S. No. (say) 690 will be marked as 439-78/MM-690.

APPENDIX C

APPENDIX C

Specimen of ICOM Catalogue Card as proposed by Miss Odden of ICOM

1. Name of object.	7. Classification.	13. Name of collector or of expedition.	19. Style, School or influence represented.
2. Name of the Museum.	8. Geographical origin of the item.	14. Cultural or ethnic group.	20. Historical background of the item.
3. Name of the Administrative Body or Department.	9. Name of the author, artist or craftsman.	15. Function or use of the object.	21. Condition and preservation of item.
4. Location in the Museum.	10. Manufacturing or transformations.	16. Character, traditional value or significance attached to the item.	22. Museographical Notes
5. Nomenclature or designation of the object.	11. Date, Method, source and place of acquisition.	17. Ownership at the time of acquisition.	23. Bibliographical Reference.
6. Material of item.	12. Price paid or estimated value.	18. Chronological date.	

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APPENDIX D

Specimen of National Museum of India Delhi Catalogue Card

1. Accession No.	2. Subject or Title.	3. Provenance.	4. Period.
5. Medium.	6. Negative No.	7. Mode of Acquisition.	8. Description.
9. Published.	10. Location.	11. Exhibition.	

APPENDIX E
Specimens of Movement Register

1. Peshawar Museum Movement Register

S. No.
Date
Accession No.
Catalogue No.
Name of object
Almirah No. or place of Removal
Signature of Recipient
Purpose of Removal
Sanction for Removal
Signature of the Director
Date of Return
Signature of Director Authorising the return
Remarks

2. Lahore Museum Movement Register

S. No.
Date
Accession No.
Name of object
Show case No. or Place of Removal
Reasons of issue
Whome Issued
Signature of Recipient
By Whose order
Date of Return
Signature of Recipient
Signature of Director

3. National Museum Karachi Movement Register

S. No.
Accession No.
Date of issue
Description
Purpose of Movement
Signature of Recipient
Issuing Authority
Signature of Superintendent
Date of return with initial
Remarks

**CARE AND STORAGE
OF
MUSEUM OBJECTS**

DR. GRACE MORLEY

Care and Storage of Museum Objects

It is generally agreed among museum experts that careless handling of museum objects, lack of understanding of the materials of which they are made and the resulting insensitivity to how they must be treated to be preserved in good condition, do more harm to them than any amount of aging, the attack of insects and micro-organisms and such other causes of deterioration as climatic conditions.

Study of materials of museum objects, an effort to understand their properties, and to follow common sense methods of avoiding overstraining and damaging them are recommended to all museum staff, but particularly, to curators and their assistants who are in charge of collections. Thus no object should ever be lifted by a protruding, possibly weak member, like an arm of a sculpture or a handle or rim of a vessel ; no sculpture should be moved without adequate padding under the ropes used ; no tall object should be set upright on a trolley lest it falls over ; no heavy object should be moved without an adequate number of persons available to lift it easily and with full control ; touching any object with bare hands should be avoided ; cotton gloves or a soft cloth around an object to protect it from bare hands are advised. Any small object moved should be supported by a hand beneath it.

In installing exhibitions, care should be taken always in handling to avoid any strain on the exhibited material or any means of fastening that would entail a risk of damage. Textiles, for example, are very delicate, even when relatively recently made, while old ones are extremely fragile. One has to take care in exhibiting them by hanging, even over a rod, that they do not tear from their own weight. Fastening them against a background by means of nails or pins or staples must never be done. Besides risk to the fabric by forcing threads apart or bruising them, the material is certain to rust and will leave a stain on the cloth. Small tabs can be sewn carefully on borders and can be sewn to a background or the pieces can be placed flat, or on a gently sloping shelf. Costumes, or portions of costumes, may be exhibited on softly padded clothes hangers or a padded form, roughly approximating a silhouette of a human body.

Books having illuminations or illustrations often make attractive exhibits, if shown open. Care must be taken to avoid undue strain on the binding, and the pages may be held open by a soft tape on either side. Again, any metal fastener, like a paper clip, would be a danger.

For miniatures, examples of calligraphy, books and, indeed, for any organic material exhibited, light from any source is destructive. Sunlight, and even the

reflection of a north sky, are destructive, but light from florescent tubes is almost as dangerous, and a protective film should be used to eliminate the dangerous ultra-violet rays. Light from a tungsten bulb is less deteriorating, but should not be too strong, nor exposure be too long. This should be remembered when planning exhibitions. For miniatures and textiles 50 lux is recommended ; 150 lux for other organic material.

As for storage, crowding, piling one piece on other, placing delicate objects like enamels or ivories against hard surfaces without padding, and exposure to dust, no matter what the material, should be avoided. Textiles should be stored on rollers and not folded ; miniatures and drawings should be mounted in "window" mounts hinged to a rigid back, of rag stock cardboard, and the surface covered with acid-free tissue papers and placed in solander boxes. Light should be kept away from objects in storage. Storage areas should be kept clean and no discarded packing material or other inflammable refuse should be allowed to accumulate. Storage areas should be watched both for dampness and excessive dryness. The first should be prevented for all types of material ; the second can be destructive to some material, palm leaf manuscripts, for example, but also other organic material. Such material should be stored in safer conditions unless there is means of correcting the situation.

Obviously controlled air-conditioning for twenty-four hours a day all year round is ideal for storage, but seldom is possible. Only care and watchfulness for possible damage are the remedy, but a completely attainable one if the dangers are recognized. If there is a scientific conservation specialist attached to the museum, his advice should be sought. Sometimes it is possible to improve conditions for storage in a restricted area, just as there are now going on studies to find ways to control conditions in exhibition cases. In an air-tight case, for either storage or exhibition, silica gel can be used to overcome humid conditions ; similarly an uncovered shallow container of water can correct excessive dryness.

Insects are a major menace to organic materials, especially in hot and humid climates. All organic material should be fumigated before it is added to the museum's collections. Insecticides, like paradichlorobenzene, or repellents, like naphthlene balls or flakes, should be used to protect organic materials in storage, such as textiles, manuscripts and books, furs and similar items vulnerable to insect attack. They should be kept in air-tight cabinets, which should be inspected at regular intervals to make sure insects have not appeared. If storage is systematic and a register of the location of different kinds of objects is kept so that they may be found easily, unnecessary handling is avoided and appropriate watch over their condition can be carried out. This will be helpful in protecting museum material.

Dangers and Precautions

Most museum workers sensitive to the properties of museum materials will recall seeing common practices which are damaging to museum objects.

Sweeping the exhibition galleries, for example, raises dust which settles on any museum object exhibited outside a glass case. It often even enters the glazed cases for it is almost impossible to have a completely dust-proof case. This dust, even if very fine, is abrasive and, often, in contemporary conditions of air pollution from petrol and industrial fumes, it may interact with humidity in the air, to become corrosive and dangerous to many materials. Using a dampened cloth on a wide long-handled brush is a simple way of ensuring absence of dust when sweeping floors in a museum.

Slapping objects outside show cases with cloths to remove the dust has been a common practice in many places. It should be avoided in the museum although the cloths are soft, cheese cloth, for example, because even stone sculpture eventually will be worn down by such treatment.

Similarly rubbing a surface, even a metal sculpture, is ill advised. The small bronzes from domestic shrines, with noseless faces, polished smooth as a result of ritual ablutions, now-exhibited in museums, are proof that metal loses its form and becomes quite smooth with the frequent pressure of rubbing. Use of a soft brush is preferable to a cloth for dusting all such objects. Also, a cloth is likely to catch on rough surfaces of a wooden architectural ornament, for example, and pull off fragments, or leave loose threads hanging down.

Sometimes painting of galleries is done and some free standing exhibits, too large or too heavy to remove, are splashed with paint. Covering the exhibited pieces, with plastic sheets or even sacking is recommended. Paint gets into the pores of stone and wooden exhibits. Even careful removal of paint splashes erodes the surface, while it causes extra work that can be avoided if forethought for protection against the painting can be given.

Miniatures, manuscripts and textiles are especially important in museum collections of the sub-continent. All three categories of art objects are delicate and require great care and handling and for exhibition and storage. Painted surfaces should never be touched with fingers, whether they are illuminations of manuscripts or miniatures. Miniatures and drawings should be affixed at their two top corners only, with "hinges" of acid free paper and flour paste, between a rigid back and a "window" front mount of acid-free rag stock card board. They may then be safely handled, may be framed or exhibited in a glazed wall case. Manuscripts bound in book form often have bindings matching in quality of workmanship the illuminations and calligraphy. They must be handled gently, never crowded too tightly on shelves when stored and held open gently with soft tapes when exhibited. Textiles must never be packed tightly together nor folded in a way to have sharp edges. The folds should be padded. If possible, textiles should be stored either flat unfolded, or on rollers. They must not be stretched tight when exhibited, nor fastened, nor have identity tags attached with metal pins or staples. And, of course, nails of all kinds must be avoided.

Particularly damaging to all materials is scotch or cellulose tape. It deteriorates and leaves stains. Avoid its use under all circumstances.

Bare hands should never come in contact with museum objects of any kind. Finger marks in most cases are difficult to remove. But more serious still is the corrosive effect of perspiration. Always handle objects with clean cotton gloves or a soft cloth wrapped around them.

Place small objects in trays, with padding between them, when moving them from one place to another.

Abrasion, that is rubbing or even touching one item by another, can mar a delicate surface. In storage, leave space between objects, and use pads, preferably of soft tissue paper wrapped around cotton wool. It is wise to avoid wrapping in cotton wool as it may stick to small rough areas and even detach pieces from a rough delicate object, carved ivory, or enamelled jewellery, for example.

Security¹. Limiting the numbering of entrances and exits of a museum building to the minimum, and ensuring stricts guarding and control over them is very necessary. Careful training of guards in the galleries during open hours, to emphasize the need of continuous and attentive observation of museum visitors and alertness to their actions is required. But, however, strict the guarding may be, courtesy to the visiting public should never be overlooked. In a sense, the guards, like those staff members at the information, ticket and sales desks are the immediate hosts of the public. The impression they make on visitors is important for the museum's image.

Guard service at night presents other problems. Various devices to make sure that a regular patrol is carried out by means of check-posts located at strategic places, exist. More recently various types of burglar or intrusion alarms have been invented, and some, at least, have become available even in countries not yet highly industrialized. However, no matter how well planned the building, how sophisticated the equipment and how well organized guarding and other security measures are, in the last analysis protection depends on the human factor and constant vigilance to prevent any neglect or failure in alertness is needed.

¹. For fuller treatment of this subject see *Infra* pp. 70-80

DR. SAIFUR RAHMAN DAR

**Security Arrangements in Pakistani Museums
Practices Problems and Proposals**

Security arrangements in a museum should always be in direct proportion to the size and significance of its collection on the one hand, and the rate of museum thefts and fire incidents in the country on the other end. Security of museum property is a wide and complex problem. Proper and prompt documentation is the first, and guarding at night is the last in a series of steps which must be taken simultaneously in order to ensure the safety and security of museum objects. An object may be damaged due to improper storage, undue exposure to light, unfavourable temperature, mis-handling, etc. Similarly, it may be lost due to accident, fire, enemy activities, pilferage, theft and even armed dacoity. No security system so far devised for any museum has proved hundred per cent fool-proof. But with suitable planning, proper staffing and strict vigilance much of the damage can be averted.

Security arrangements in a museum vary according to the location of its building in relation to other buildings in the area, the architecture of the building itself, interior lay-out of galleries, types of show cases adopted, climatic conditions of the country as a whole and conditions inside the gallery and show cases specifically, categories of people/officials responsible for security and their training etc.

‘Security’ in the context of a museum and its exhibits is a comprehensive term. It includes security of museum property against :

- (1) Theft, pilferage and mis-placement.
- (2) Mis-handling by staff or/and visitors.
- (3) Fire hazards.
- (4) Improper control of light and temperature.
- (5) Dampness, termite, rain and dust.
- (6) Unsafe and improper display and storage of museum objects.

All these aspects of security of museum property are discussed below with specific reference to the practice in Pakistani museums. A few hints as how to improve existing security arrangements in our museums may not find approval at an international level but these have been proposed keeping in view our own socio-economic background gathered as a result of about two decades practical experience of the writer in our own museums of varied sizes and nature.

Security against theft, pilferage etc.

It is fortunate that in our country, museum thefts are very few and seldom organised ones as compared to those in the western countries. This is why our approach to the security of the museum property is still heckneyed. According to the old practice, the entire museum premises is left to the care of an un-educated and un-equipped person. With the gradual increase in the appreciation of museum objects, number of museum thefts in the country is increasing day by day and is becoming of serious nature. An armed dacoity in one of the museums, which occurred a few years back, is a clear indication of growing interest on the part of museum thieves.

While talking about security of museum property, security against theft is the foremost. Security arrangements in our museums vary from place to place and from institution to institution. There is only one museum in the country which has been equipped, though very recently, with electronic devices, for detecting burglary at a time when the museum is closed. It is a welcome step. It is hoped that other museums, particularly the bigger ones, will sooner have these arrangements.

There are only a few museums in the country whose charge is handed over to the Police Guard when it is sealed after working hours. Presence of the armed Police Guard on the Campus keeps many unwanted elements away from the museum at night. Moreover, it gives lesser worry to the authorities when the museum is closed. However, in all these museums, they also employ their own Security Guards to supplement the security of the premises, particularly the buildings other than the museum proper.

In all other museums, it is the museum Night Guard himself who keeps a watch at night. Usually, these guards are un-armed. At times, they do not even possess an ordinary torch. But this is usually due to administrative lapses. To give the guard a lantern, where there is no electricity in the campus, is to invite trouble because it becomes easy for the thieves to locate the Guard whereas the latter fails to locate the thief. Torch is the best thing provided it is always in working order. It is, therefore, recommended that wherever such regular guards are employed, it is the duty of the concerned authorities to equip them with some sort of licenced arm and a torch even if the area is well lighted. In one of the museums, the practice of arming the Night guard is already in vogue.

The museum authorities should also take care not to employ too young people for this job because young ones are always more careless and cannot resist sleep at night. Similarly, too old people should also not be employed for this purpose because they are physically weak to provide any resistance to intruders. An ex-military man of mature age with proven integrity and fit physique is usually considered best for this purpose.

The practice of keeping night watch men inside the museum building, as in one of the museums, has its own good points. It is the practice in most of the

museums in the West. The presence of Guard inside the building provides a deterrent effect on the thieves who may not dare to break in when it is known that the Guards are in. Besides, if the guards inside the museum are vigilant, in case a fire breaks out due to any reason, they can control it or raise timely alarm. Moreover, the Guards remain out of reach of a miscreants. But so are they out of reach of any one who wants to make a surprise check at night. Therefore this practice in Pakistani museums should be adopted with great care. There is every possibility that the Guards inside the building may simply sleep the whole night behind the closed doors because they know nobody can check them. Checking them by telephone calls, if one is close at hand both of the Guards and the Curator, is also no sure test of their vigilance. Moreover, the Guards staying inside the museum building must have keys of the main gates with them. It is tempting and risky. The keys cannot be left with the Guards unless they are of proven integrity and honesty. Otherwise they themselves become a source of gradual pilferage if not associates in regular thefts. In no case less than two Guards be allowed to stay in.

As late as 1969, in one of the museums, where I happened to be the Incharge, the practice of providing Guards' Watches to the night watchmen was in vogue. Such special watches had a paper tape inside. When a key was put in the key-hole to wind, the specific number of the key and the exact time was recorded on the tape. Such a watch was carried on the body of the night watchman on duty whereas four or five numbered keys were fixed at specific points around the museum building. A chowkidar was supposed to take 15 minutes or so to go from one key to another. Each time he reached a key he must record the time. An examination of the tape in the morning by the duty clerk used to reveal whether or not the night watchman slept during his duty hours and, if he did, at what time. Such an excellent system of keeping the watchmen alert was disrupted when one of the watchmen, tired of his daily explanations, damaged the watch beyond repair and no replacement has ever since been made.

A Night Watchman or the Police Guard can safeguard actually the point where at specific time he is standing. He cannot be at all the points at one and the same time. It is, therefore, necessary that the building of the museum should not have weak points. A museum building should never be contiguous to other buildings in the locality. If it happens to be so, as it often does in case of old buildings converted into museums, then special security arrangements have to be made for checking access from the side buildings. If possible, a joint security system for all contiguous buildings be adopted.

Too many windows, ventilators, down pipes for rain water and sewerage, water pipes and even a tall tree just near the wall, are always considered as security hazards. Therefore, in all modern museums attempt is made to keep such openings to the minimum possible number and wherever these are provided, these should be properly secured in order to make entry from outside next to impossible. Wherever such openings are inevitable, the staff responsible for

secured closing the museum should take all possible steps to see that such openings are properly secured at closing time. A certificate to this effect from the person responsible for closing a museum be obtained daily as it may keep him alive to the gravity of the situation lest he makes a mistake not to check such things. The down pipes for sewerage and water pipes, wherever unavoidable, should be kept away from the windows and ventilators. Skylights should also have proper arrangements to check entry from outside.

Closing time of a museum is a crucial point in the security arrangements. Staff is usually in a hurry. They leave their galleries in haste and checking is done half-heartedly. The officer/official responsible for closing the museum must be very strict at this time. The staff must have 10 to 30 minutes—depending upon the size of the museum—to check all the galleries after the last visitors is out. All relatively dark places, isolated corners, basements, etc. should be thoroughly checked. Public toilets, if provided inside the museum, must be peeped in in order to check if any body is concealing therein. In any case, these toilets should be locked from outside. All windows, doors and even ventilators should be checked daily and closed firmly from inside. When the museum gates are closed, the Main Gate should always be sealed in presence of a responsible officer especially deputed for this purpose. The sealing should be done in presence of the Guards on duty and signatures obtained in token of their presence there.

Security against pilferage, mis-placement and mis-handling.

While talking about security in a museum the most important thing to decide is "who is responsible for the security?" In advanced countries, Security Staff is separate from the Curatorial staff. But it is not so in Pakistan and many similar sister countries of the area. Here from the Curator down to the Gallery Attendant, and every body in-between, has a share of responsibility in the security of museum property. Therefore, in case of actual loss of an object the responsibility has to be pin-pointed converging on one person or a group of persons. In smaller museums, the Curator himself is responsible for devising ways and means of security arrangements and ensuring, day and night, their effectiveness. In larger museums, however, the actual functioning of the security arrangements is so often left to the Officer Incharge of the administration especially after the museum is closed. At day time, besides the supervisory staff under the above mentioned officer, Gallery Officers are also responsible for the security of the collection under their respective charge. This is particularly true in case of pilferage, mis-handling and mis-placement of a museum object from a gallery. It is the duty of the Gallery Officer to check the collection under his/her charge periodically and, if possible, daily with the help of photographs of objects on display in each show case.

Museum Attendants in uniforms should have their Changing Room somewhere outside the main museum building. Early in the morning, they should put on their uniforms and leave their civilian clothes and all personal belongings in the Changing Room. Each of them should preferably get a locker or an almirah

for keeping his belongings. In any case nobody should be allowed, while on duty, to keep with him any of his personal belongings such as an overcoat, an umbrella, a bag, a tiffon, etc. This will check to a greater extent the possibility of pilferage at the hands of Museum Attendants.

At all the site museums in Pakistan, the Curator himself is the highest official living on the premises of the museum. But in case of bigger museums and even smaller museums located within bigger cities and towns the situation is quite different. In majority of cases, no provision exists to accommodate the Curator within the premises. As a matter of principle, all museums, big or small, must have their curators at all the times available in the campus. In any case, atleast one responsible officer must have its accommodation within the museum premises. The keys of a museum must always be kept by the senior most person residing on the premises. As a security measure, the brass seal with which the main gate is sealed at the closing time be always kept by a person other than the one keeping the keys. The museum cannot be opened or closed unless both of them, beside the security staff on duty, are present. This provides effective checks and balances.

In smaller museums, the keys of show cases should be kept by the Curator himself or his Assistant. When an Assistant to a Curator keeps the keys, the duplicate set of these always be kept with the Curator. He should be advised to use his duplicates very sparingly and only in presence of others. But in larger museums officers holding charge of a gallery keeps a key-board in his/her office. All the keys duly numbered should be kept in these key-boards in a numerical order. Only the main key of the key-boards is kept by the officer. Unfortunately, this practice of keeping keys in key-board, does not exist in any of the museums in the country except one. Similarly, if a museum has many galleries, each gallery having a separate lock, the key of each gallery be left in the key-board kept in the office of the Curator or the Administrative Officer, if there is one. These keys are collected in the morning by the Head Attendant whose duty it should be to personally open the doors of all the galleries. Even this practice is seldom seen in any Pakistani museum except one. All duplicate keys duly numbered/marked be deposited with the Curator or the Administrative Officer. These should be used only in emergency and only in presence of atleast two officers.

The best protection of museum at night, besides of course a vigilant armed Guard, is its proper illumination. Normally, most of the museums ensure some light points, scattered here and there, put on poles or fixed on walls. Such lights are often found insufficient and provide patches of darkness as shelter to the miscreants. It is better that the building, particularly all the vulnerable points, should be illuminated with flood lights. Such a strong light keeps the thieves away from the entrance points. If a moving search light can be provided, nothing is like that.

Today is the age of technology. Once a thief manages to get into the building with modern gadgets and electricity at hand, he can break into any part

of the building. It is, therefore, necessary that electricity within the museum should be supplied in such a way that when the museum is closed, electricity supply can be cut off from outside. This will certainly deter a thief from using modern gadgets of burglary. Moreover, cutting of electric supply after museum hours provides an added benefit particularly in old buildings. It avoids any short circuiting at night and thus saves the museum building and its entire collection from fire hazards. At least in one museum this has been successfully done. But there is a word of warning. This practice should not be adopted without special precautions. If in emergency, the museum is required to be opened at night—and there can be many reasons for this—the hall(s) should be illuminated as soon as a door is opened. But such light points should always be arranged in such a way as to make them invisible as far as possible and, in any case, the power supply should be out of any body's reach.

As a matter of rule, no show case be opened by any body other than the Gallery Officer. Whenever it is done the fact, together with the purpose, must be recorded in the register kept for this purpose with the Head Attendant. The same procedure be followed in case of an object added or removed from the gallery. This should be done by the Gallery Officer. But since the case of detection of loss of an object from the gallery, the Gallery Attendant is always the first to be interrogated, it is in his own interest to ensure that the Head Attendant records all movements of exhibits.

No Gallery Officer should take out an object from a show case to any place outside the gallery for the purpose unless he has been authorised to do so by a competent authority. For this purpose each officer should keep a Movement Register. This Register must record full particulars of an object "moved out" and "moved in", the purpose of its movement and the date. For any object moved unauthorisedly and then subsequently lost or damaged, the officer concerned must be held responsible. Similarly, the Gallery Officer must be held responsible for any damage occurred due to careless display or theft occurring due to the fact that the show case was left unlocked even through an oversight. Similarly, the Gallery Attendant who leaves his gallery unauthorisedly must be held responsible for any loss or damage occurring during his absence from the gallery. For the same reason, one Gallery Attendant should be posted permanently in one gallery as far as possible. This will render him accountable and more responsible in respect of museum exhibits in the gallery given under his charge. However, there are museologists who prefer to change Museum Attendants from one gallery to another for ensuring that they do not become too familiar with the contents of a gallery. This is desirable only when the loyalty of the museum staff is not at all reliable.

Majority of our museum objects displayed within the show cases are kept out of reach of visitors. Therefore, the possibility of their being mis-handled by visitors is quite infrequent. But in case of objects kept in the open—large statues, inscriptions, carpets, modern paintings, etc.—temptation of visitors to touch them

is irresistible. Written warnings—"Do not touch", "Beware", "Smearred with posion", etc.—seldom desist our visitors from going near an object and touching it. Only vigilant attendance can ward them off. But what, if a Gallery Attendant himself is not attentive? And, in case of a crowd of visitors in his gallery, he simply cannot keep an eye on each and every visitor. So, in majority of cases we have to resort to other measures. The most effective one is to create a physical barrier between the objects and the visitors. These barriers can be of several types—a chain, a rope, a knee-high screen,—a glass pane, etc. for example.

Quite often the damage to the exhibits is done by the museum staff itself while lifting, dusting or cleaning an object. Nothing can help it except a proper and thorough training of all such staff members who are permitted to handle museum exhibits. Each category of museum objects requires different degree of care and precaution to handle. For example, a fragile manuscript, an old piece of textile or a painting must be handled with all the more care than when a wooden object is being handled. On the contrary, a cloth dropped on the floor causes less damage than a glass tumbler or a pietra-dura dish. It is, therefore, the duty of a Curator to train all the staff members working under him. The tragedy of museum personnel in our country is that a curator himself is seldom properly trained. There are no regular training programmes in the country. Therefore, he learns whatever he can, while in service, through his practical experience. It is necessary that the Museums Association of Pakistan and the Pakistan National Committee for IOM should join hands in organising such training programmes for museum personnel in the country. Till such programmes are arranged we have to leave our valuable museum exhibits to the mercy of these half-trained—at times even ill-trained, museum personnel. The degree of security against mis-handling depends upon how much a Gallery Assistant and even a Curator himself has picked up as museologist and how willingly he has been able to impart training to his subordinates.

Security against Fire

Among all the security hazards, the one quite rare but, when it occurs potentially most devastating is 'Fire'. There are more chances of fire in an old building than in a new one. Material of construction also plays a significant role in checking or spreading fire. A building having more lavish use of wood and other combustible material, such as chipboard and thermopole sheets, is more vulnerable to fire than the one built in RCC and steel fixtures. Loose electric wiring, mal-maintenance of electric equipment and over-loading of electric circuits is also a potential danger of fire in a museum. The museum collection itself determines the degree of vulnerability to fire. Wood carvings, manuscripts, paintings textiles etc. are susceptible to fire more than the collections of stone, stucco, terra cotta and, to some extent, metallic objects.

In Pakistan, majority of the museums are housed in such old buildings which are fitted profusely with wooden accessories. The cases of Lahore Museum, Peshawar Museum and Taxila Museums are chronic examples.

Short circuiting of electric wires is one of the major fire hazards today. This is due to a craze to provide in all the museums artificial lighting within the show cases. As far as I am aware, seldom a conscientious attempt is made to calculate the full load or to bring a workable ratio between the supply and actual load in a museum. Still more serious is the problem of proper distribution of load between various galleries in big museums. Examples are on record where even in a newly built museum the agency responsible for construction failed to calculate a proper ratio between the supply and the total required load. Fortunately, no serious damage has so far occurred in any of the museums due to short circuiting, but the possibility is always there. The museum staff has to be alert at all the times. Periodical checking by the Electricity Department with regard to the total load and supply and the internal distribution of the load is a must. Similarly, all electrical equipments must be checked periodically. Crowding of objects in store near the source of electricity be avoided. As far as possible wiring on or even near wooden fixtures or exhibits should be avoided. When it is inevitable, loose wiring should be done within a flexible pipe. A fire caused due to short circuiting during museum hours can easily be controlled. But, what, if it happens after the museum is closed? To avoid such a catastrophe, it is recommended that the control room for electric supply should be housed outside the museum building proper. As soon as the museum is closed, all live wires going inside the museum should be switched off. This has already been done atleast in case of one major museum, as referred to above. In all such cases, all external light points, however, must remain in tact for security reasons.

To beautify an old museum building, or renovate it, is quite natural. Many such buildings are being provided with mosaic floors, false ceilings and new show cases. Mosaic floors are harmless. So too are the show cases if built with non-combustible material such as steel and aluminium. False ceilings are, however, not without danger. These usually consist of combustible material such as a wooden frame fitted with chipboard, hardboard and thermopole sheets. Wooden frames can easily be replaced with aluminium ones whereas thermopole sheets, etc. can be replaced with slabs of plaster of Paris. But so far no museum in this country has done so. So, in case of false ceiling, utmost care should be taken not to leave any fire source near the combustible material used in any form within the museum.

Be it as it is. Take whatever care you can, but the danger of fire in a building is always there. We have always to be ready to fight fire. For this purpose all museums must be provided with proper fire-fighting equipment. Unfortunately, in all our museums only rudimentary fire-fighting equipment has been provided. Most of the museums content themselves with the provision of a set of Soda Acid Fire Extinguishers. In quite a few museums, buckets of water and pales of sand, together with other fire-fighting equipment, have also been provided. Invariably due to carelessness of supervisory staff, the buckets are without water and sand pots are used as ash-trays and spittons by visitors. Similarly,

ordinary fire extinguishers do not get regularly re-charged. Besides, very few Curators realise that the usual type of Soda Acid Fire Extinguishers are useless in case of fire due to electric short circuiting. As in almost all the museums in this country, there is electric supply, the Curators are, therefore, advised to keep a good number of Co₂ Type Fire Extinguishers, besides the usual type, and other fire-fighting equipment. The Co₂ Type is not so expensive. There are other types as well which are more effective for extinguishing fire caused by electricity such as those which spray chemical. (Foam Chemical Type and Dry Chemical Type). But such Fire Extinguishers, whereas fully recommended, may prove too expensive to purchase and too costly to maintain by majority of our museums.

Similarly, in most of the modern museums in advanced countries, there are installed, in each case, 'Fire Censors' and Fire Alarms and automatic Fire Extinguishers. Perhaps, in the present state of affairs, it is too much to recommend such gadgets for our old museums. But all the new museums must have provision for such an automatic machinery. Therefore, for all museums it is emphasised that :

- (i) they should always keep atleast a few CO₂ Type Fire Extinguishers for combating fire caused by electric short circuiting. These should be periodically re-charged.
- (ii) Ordinary Soda Fire Extinguishers be kept ready and duly charged periodically for combating ordinary fire.
- (iii) Buckets of water and pales of sand should always be kept ready on proper stands.
- (iv) Other fire fighting equipment such as spades, picks and axes, etc. should always be kept ready.
- (v) Items at Sr. (i) to (iv) above be properly distributed in all galleries and other potential areas within the museum.
- (vi) Fire-hydrants should be kept close to the building and always in working order. 24-hours water supply should be ensured.
- (vii) Telephone numbers of the nearest Fire Brigade Stations be hung at permanent and appropriate points.
- (viii) Museum staff should have an elementary Civil Defence training including fire-fighting.

!Security against undue exposure to light.

Museum objects are also liable to be damaged due to excess exposure to light - natural or artificial, dust, dampness, rain, water and by termite. An object can also be damaged due to unfavourable temperature within the museum galleries and particularly within the show cases. Control of lighting and temperature can be judiciously done if some technical hand is available. The damage caused due to other reasons are usually bye-products of old buildings. All these require

precautions and preventions which will drag us into technicalities beyond the scope of this article. So I leave this for more suitable persons to discuss.¹

Security against illicit traffic in museum property.

The country also loses many priceless museum exhibits and other items of cultural property due to illegal and illicit traffic in the commodity at national and international levels. This can be checked only by strict and effective regulations enforced by the Government. Here, in our country, as in many other countries, such regulations are affected only by the Federal Government through the Department of Archaeology and Museums. The Curators of various museums have very little say in it. What a Museum Curator can and is expected to do is, to take all possible steps to avoid any object from being stolen. At the same time, while making purchases of new objects, they should ensure, as far as possible, that the objects offered for sale do not belong to other museums in the country or from abroad.

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1, See below two articles by Mr. Waseem Ahmad,

DR. SYED M. ASHFAQUE

**Problems of Display and Storage
of Archaeological Material in a Museum**

The term 'archaeological material' includes a wide variety of objects of antiquarian value in both organic and inorganic substances collected as surface finds in archaeological explorations or recovered from excavations at archaeological sites, retrieved from caves of ancient human habitation, or salvaged in operations of under-water archaeology from ships sunken or settlements submerged beneath the sea or lake in ancient times.

The definition of antiquity adopted in Pakistan, includes anything of historic or cultural importance from as late as the War of Independence in the South Asian Subcontinent in 1857. This definition, however, fails to differentiate the archaeological from the historical material, except and unless we imply the condition of some pains taken and scientific planning done for collection of the material from its place of origin, either from the exposed surface or from excavated trenches in archaeological operations. An object even of a date much earlier than 1857, found from grandfather's junk in an attic in our old country house has no claims to be dignified as an archaeological, though it may be historically as important as the club used by Mahmud of Ghazna.

As we are concerned here only with archaeological material for display and storage in a museum, we may safely leave aside monumental remains even if dug out from seven fathoms deep of the cultural deposits, and take into account only the moveable material, which may be as large and heavy as the Zamzama Cannon to as small and light as a tooth pick of herring bone found from some pit dwelling.

The organic part of the archaeological material may comprise pictures or inscriptions on bones, ivory, birch bark, papyrus, leather or wood, and dresses or adoration pieces of same of the same material. The inorganic parts may be stone implements, pottery, metalwares, jewellery of gold and silver, carnelian or other semi-precious lapidary, sculptures in stone, stucco, terracotta, metallic coins, clay tablets with records of the king's horses or lunar phases.

As a general principle, the deeper we go in our dig of the cultural strata, the lesser is the number of surviving objects of organic substances. Their number seems to decrease in inverse proportions to increasing age, and at very deep levels, say of Mohenjodaro Age, we may at best find the organic objects in carbonised state. But the rate of decay of organic objects has a number of other variables, like acidity, alkalinity, and moisture contents of the surrounding matrix, which may hasten or retard the process. In some of the cave dwellings of the Neanderthal Man in the semi-arid parts of Asia and North Africa, there have been

found many relics of organic substances which have suffered extreme desiccation, but have survived well preserved otherwise.

The burial of cultural material either in accumulation of the solid debris or under the sea does not pose so much a great peril for its existence and survival for a long time as does its retrieval by the archaeologists to the open air. The long period of its burial strikes up a state of chemical and physical equilibrium, which is a stabilizing factor checking its further deterioration as long as the object remains buried in its original matrix.

The problems of preservation start as soon as the object is exposed to sub-aerial conditions. The amount of salt absorbed by an object soon starts flowing outwards through the medium of capillary moisture. When this process is rapid, the object tends to split into large pieces, which later on atomise more slowly, leaving only the dust of the vanished relic.

Some preliminary curative treatments given to archaeological material in the field during excavations, and later in the laboratory do help in arresting a rapid deterioration. But even a negligible amount of the chemical or mechanical imbalance left in the texture of the object before relegating it to the care of a museum, becomes a source of constant worry to the keeper of the museum. Inorganic substances like terracotta and stone objects of high porosity, metals, etc., are noted to suffer from a sudden change of their enveloping medium, especially if their patination is unscrupulously cleaned after excavations. Stone and terracotta objects commonly suffer from efflorescence which is a symptom of the permeated salts flowing out, or from exfoliation, which is indicative of their sensitiveness to the diurnal changes of temperature in the exposed situation. Metals usually lose their tensile strength after a long period of burial, become brittle, and develop cracks at which they tend to fall apart at the slightest change in their internal state of stress or strain. Ancient glasses after a long period of burial lose their transparency and become opaque or translucent by the process of crystallisation. The microscopic crystals have their myriads of cleavage planes, making the glass porous, causing it to absorb salts from the surrounding earth. On exposure, the glass objects suffers the loss of equilibrium as other substances, unless proper care is taken to extract the permeated salts and to impregnate it with suitable resins.

The cause of deterioration inherited by archaeological material is a vast study, each substance having its own individual case of the deleterious chemical components and the nature of the burying matrix. It is good for a museum keeper to have an insight into these factors and to know the circumstances of discovery of each important item which he wants to put on display or in the reserve collection. Such information is usually not difficult to find if the archaeological material has reached him from the field or the laboratory with carefully filled in tags and labels indicating layers, depths, particulars of the burying matrix, date of discovery, the chemical treatment given, and the chemist's recommendations for its preservation. In short, museum keeping is not a bed of roses, but a thorny responsibility requiring insight, foresight, vigilance, and capacity for taking pains.

Besides the material which we have briefly dealt with, we have also to consider the type of museum where we are putting the archaeological collection on display or in reserve storage. If it is a large museum of a National or even of a Provincial importance, it is quite likely that archaeology may not be the dominant theme, unmixed with certain amount of material of the historical or personal mementoes, of more recent political events or cultural developments, of Natural History, and of Technological Progress. We may have at best a gallery or two only for display of archaeological material and proportionately, a limited space for storage of such collection.

A purely archaeological museum can be conceived only at archaeological sites, as we have a majority of them in Pakistan at places like Mohenjodaro, Harappa, Taxila, Banbhore, Saidu Sharif, Chakdara, etc. Even at some of these museums at archaeological sites, the recent tendency has been to mix purely archaeological assortments with contemporary ethnological collections of the areas for the good reason of showing a relationship between the past and the present as a function of the cultural diffusion or historical continuity in space and time.

As modern archaeology tends to depict a total sphere of human activities in the past, broadly encompassed by *Palaeo-ecology*, a modern archaeological museum has, of necessity, to accommodate some amount of the elements of the Natural, Biological, and Botanical world to drive home the *gestalt* integration of the interplay of relationship between Man and Nature.

The evidence gathering at Mehrgarh at the foot of the Bolan Pass in Baluchistan of the earliest domestication of water-buffalo around 6th. millennium B.C., or of domestication of sheep in the Neolithic phase, or of cultivation of wheat, barley and sorghum from the Kot Dijian levels at Sarai Khola, tends to revolutionise the archaeological knowledge of ancient Pakistan, and is of no less significance to our understanding of the endeavours of the human race in relation to the rest of the ancient world—and therefore, our depiction of the archaeological history of these regions through museums shall remain deplorably incomplete if we do not provide some space for biological display of the strains of sheep and of buffaloes, and some space for botanical exposition of the cultivated wheat, barley, and sorghum seeds discovered by specialists from cultural strata at these sites.

The old concept of the preceding generation of archaeologists that pottery remains the only proper stuff for extracting archaeological knowledge needs a thorough revision, not only for the good of the subject, but also for enlisting interest and sympathy of other scientific professionals and for a wider fascination for the subject to the museum visitors in general.

Problems of Display

Like exhibits of any other kind, the archaeological material for display poses two-fold problems – those of *preservation* and *presentation*. Some of these problems are inherent in the nature of the material which we have to display, while others

arise out of the location, size and nature of the place where we have to display it.

A piece of archaeological exhibit has a greater chance for safe existence in a museum or gallery which is air-conditioned with a proper range of temperature and Relative Humidity maintained, the excessive amount of dust and other atmospheric pollutants reduced, and the injurious amount of Ultra-Violet rays from daylight replaced by artificial lighting, than in a museum which is improvised in an ill-fitting town-hall with high arched openings on all sides, subjecting the galleries to a sun-bath from large windows from different angles during the hours of the day, and to rapid changes in the temperature and Relative Humidity with every draught of breeze blowing in from outside with all the dust and other elements of atmospheric pollution. The organic class of archaeological exhibits are particularly susceptible to these factors, and must not be put on permanent display unless proper safeguards have been provided against agents of their deterioration.

In a developing country like Pakistan, fully air-conditioned museums are still a remote dream, though some museums are planning airconditioning in limited spaces for preservation of delicate material like paintings and manuscripts. With financial obstacles standing in the way of full air-conditioning of museums, we are left with the next best option of making essential alterations in our existing museums to minimise the effects of excessive heat and Relative Humidity in summer months, direct flux of daylight over exhibit cases, excessive dryness in winter months, filtration of smothering dust from the passing traffic, and last but not the least, security of valuable antiquities against burglary and vandalism.

It may be appreciated that many of these problems, even in the absence of fully airconditioning system, may be avoided at the time of architectural planning of a new museum building. The layout of the building, orientation of the galleries and inner partitions, size of fenestrations, plinth height, ceilings of the mezzanine and the main floors, placement of the water closets and sections of ancillary services, provision of an 'enveloping' verandah around the ground floor, and such other architectural details, if given proper thought and imagination, may go a long way in permanently solving all or part of the major problems encountered in arranging the internal exhibits. Where use of day light is unavoidable for reasons of economy or aesthetic appearance of the building, we may have a museum building glazed with tinted or polarised glass rather than with the common transparent sheet glass. All great architects of good museum buildings agree in that the architectural nature of the building should flow from the needs visualised for contents of the museum, and in this respect a museum keeper is expected to do lot of hard and abstract thinking to guide the architect in his task.

So far a proper check on deterioration of archaeological exhibits is concerned and their urgent treatment is needed, there is every justification for having a small

archaeological laboratory and services of competent archaeological chemists available in every institution. Till we can afford to have all our museums as self-contained units, it would perhaps be possible at least to establish one fully equipped and properly staffed archaeological laboratory in the principle museum of every Province, which may cater for needs of the various smaller district museums in their respective regions.

Coming to the plan of presentation, much would depend upon the space available and the scope of the archaeological collection available to a museum keeper. In a small district museum, a few exhibits cases displaying local archaeological relics may suffice to supplement the exposition of the regional history, unless the district happens to possess some exceptionally renowned archaeological sites, properly excavated and published in authentic reports. In the latter event, the district museum has every claim to all important original finds given to it for display, if possible with financial and technical assistance for their up-keep from the Provincial or Federal authorities.

The scheme of display is conventionally divided into two classes, viz., *Primary* and *Secondary*. A primary display aims at the general perspective, being didactive, eye-catching and introductory of the significance of a particular type of objects in the cultural evolution. It is meant for the general visitors and the laymen. A secondary display is more detailed, arranging objects in their typological series, which is useful for students and research scholars in spotting hither to unknown specimens of a particular type of objects. To illustrate the difference between the two schemes of display by a specific instance let us select the 'knobbed ware' as known from Mohenjodaro excavations. A primary display would place only one or two specimens of the knobbed ware in a range of many varieties of hand-made or wheel-turned pottery to illustrate the evolution of ceramic art from Early Harappan to Mature and Late Harappan sequence. A secondary display, on the other hand would present a multitude of specimens of the knobbed ware as known from Mohenjodaro and from later discoveries at sites in Baluchistan, Bahawalpur, etc., in Pakistan, as well as, from Shah Tepe, Sialk, Tell Asmar, and Khafajah in neighbouring Iran.

An ideal way of presentation would be to arrange both the primary and secondary displays in alternating or parallel series of the exhibition galleries. The primary display, being more general, requires a lot of supplementary aids to explain the cultural significance of an object, such as mural paintings, dioramas, enlarged transparencies illuminated and affixed to walls, working models, etc. As a consequence it usually takes more space than the secondary display.

The secondary display, being addressed to the students and the specialists, does not need the window dressing treatment of a primary display, but certainly it needs good lighting arrangement for close inspection, and supplementary information in the shape of statistical charts, graphs, albums of photographs and drawings, and maps of geographical distribution.

A perfect wedding of the primary and secondary schemes of display, as I remember having seen it in the Field Museum, Chicago, in 1973, had been achieved in their geological and geodynamical department. The primary display occupied the long run of the wide perambulatory on the first floor, while secondary display of the types of rocks, ores, minerals, fossils, models of various kinds of tectonic features, etc. had been arranged in the adjacent bays opening onto the perambulatory.

So far the quantity of material to be put on display in a gallery is concerned, the commonly approved practice is that of thinning out rather than over-crowding of items to allow unobstructed view of each individual piece, and breathing respite for appreciation and mental assimilation of its features. This is especially required in the primary display area. It is good practice to fill vacant spaces between exhibit cases with other features of visual communication like diorama, enlarged transparencies, photographs, mural paintings in the background of the wall show-cases, etc. all concentrating on the diverse features of the cultural and archaeological traits of the region or the site from where the exhibits come. A succinct projection of theme in archaeological display is more satisfying than the 'smorgasbord' approach practiced and recommended by Dr. Bradford Washburn, Director of the Boston Museum of Science. Even here, care must be taken not to induce boredom, attrition of nerves, or tired knees, specially of the lady visitors and the senior citizens. I see no harm in providing some settees in some inobtrusive place in the display areas.

Overcrowding in the secondary scheme of display is not a disadvantage, provided the items have been put in typological, chronological and region-wise order, with proper labelling, supplemented by well-indexed catalogues or cards kept in shelves or drawers close at hand. The wall space in the secondary display area may be used for the statistical charts, graphs, maps or other media of supplementary information.

I have not touched upon the point of security of the displayed exhibits. But a word may be added about the choice of exhibit cases for different kinds of archaeological material. Old Victorian brand of ornate and heavy showcases of teakwood are getting out of fashion for the good reason that they attract more attention and admiration of the general public than the exhibits enclosed in them. Moreover those show cases were more a problem in cleaning and shifting at times of temporary exhibitions. Modern tendency has veered towards light and diaphanous show cases with slimmest of stainless steel or anodised aluminium frames, with as little of solid bases as possible, often supported by a pair of steel pipes jacked between the floor and the false-ceiling. Use of glass and metals in exhibition galleries is on the increase, and so is use of transparent plastic sheets and perspex, especially for devising protective coverings on items of special values and interest. Archaeological material makes no obstruction in the trend of sophistication of show case designing and material, provided its demand of safety and share of public attention is adequately met.

The basic utility of show-cases is to divide the objects into related sets, to protect them from pilferage, dust, rapid variations in room temperature and Relative Humidity, and to some extent, from injurious effects of ultra-sonic vibrations. Small items of archaeological collection and those of organic substances certainly require glazed and dust proof show-cases-the size and nature of the cases depending upon the space available and the place of the exhibits in the theme envisaged for the gallery as a whole. Small items in island show-cases look better, as their insignificance of size is compensated by the prominence of location in the gallery, while larger items sit snugly in wall show-cases.

Heavy pieces of stone sculptures, columns and capitals of temples do not require protection of show-cases, and can be arranged along walls, in the corners, or in the middle of the gallery given, of course, a suitable and secure support of a prop or a pedestal is provided. A notable feature in the case of Gandhara sculptures, depicting various episodes of Buddha's life in the National Museum of Pakistan at Karachi, is construction of wooden panels imitating architectural features of the Buddhist monasteries in Gandhara art, which brings the whole scene of display in sympathy with the sculptures, creating a pleasing blend of careful planning and naturalness of the setting.

For economy of space in galleries or in properly covered verandahs some museums display the large and heavy pieces of sculptures in the open or exposed areas. Aesthetically, there is nothing wrong about it, specially if the display has been blended with features of a pleasing garden and spouting fountains. But exposure of stone sculptures of archaeological importance to vagaries of weather changes is certainly not a very kind treatment, as sooner or later, such statues are bound to suffer the symptoms of exfoliation as happens in the case of natural boulders. Marble is specially susceptible to physical and chemical disintegration in the dust laden atmosphere which carries also injurious quantity of sulphur dioxide. Sulphur gases in humid atmosphere and high temperature are harmful not only to marble, but also to metallic objects, causing rapid corrosion and decomposition.

In the problem of display, an often very vexing question arises about labelling. For archaeological exhibits in the Primary scheme, labels for individual items are sometimes not very necessary, but for a group, a general descriptive label is unavoidable. The labels have to be written with precision of language, calling a spade a spade. But here again risk should not be taken to offend the visitors' intellect, such as in indicating an obviously visible spoon as 'A SPOON'. On labels of individual items, however, there is need for a uniform system of codification of the accession number, year of acquisition, provenance, approximate or exact date to show its age. These particulars may be made as inconspicuous as possible, as they are meant only for use of the museum personnels or research scholars who would like to give a reference in their research works. Details about individual items and their history may be reserved for the catalogue entries, which are exactly not the same as represented with brevity on the exhibit labels. The

catalogue of exhibited items may be published separately or as a part of the guide-book of the museum.

In a multi-lingual country like Pakistan where the level of literacy is low, the task of producing bilingual or tri-lingual labels becomes extra botheration to the museum keepers, as this increases the size of the labels to clumsy proportions. It would be good policy to adopt the convention of using only one language in the written labels, either official or national, and to supplement the written text of the labels with translations in the second language and vernaculars in recorded voices in hidden tape cassettes with ear plugs, working with some kind of selective push-buttons.

Problems of Storage

Storage in museums cannot be taken as synonymous with relagating the material in the junk boxes in the attic of our old country houses. Here again the basic problems are two-fold—those of *preservation* and *accessibility*. Preservation, of course, includes protection against theft, physical and chemical disintegration, fading of colours, weakening of tissues by Ultra-Violet light, against termites, moths, pests, and vermins. Accessibility entails proper recording of the objects in a catalogue, supplemented by accession registers, movement registers, files of index cards, labellings or identification codes on the shelves, cupboards, boxes, batches, or bundles.

The need for storage of archaeological material may arise out of a multitude of circumstances, some of which are enumerated as follows :

- (a) The material comes freshly from archaeological excavations, the final reports of which remain in the process of compilation for publication.
- (b) The archaeological material has already been published, but awaits future requirements of display after completion of a programme of building expansion.
- (c) The material has been sorted out for repairs or chemical treatment to check decay or for disinfection.
- (d) The material simply consists of multiple specimens already represented on display shelves, and cannot be adjusted either in the primary or the secondary scheme of display.
- (e) The material has been borrowed from a sister institution, awaiting special exhibition—the preparations for which are afoot.
- (f) The material has been selected for giving on temporary or permanent loan to some other institution, and awaits the procedure of listing, packing, insurance, and dispatching.
- (g) The material has been received back from another institution after expiry of its temporary exhibition, and awaits physical checking, verification of record entries, and distribution for re-display in various galleries of the parent museum.

- (h) The material has been handed over to the museum by Customs or Police authorities who confiscated it from burglars or smugglers, and has to await finalisation of the court proceedings.
- (i) The material has been bestowed by a private collector, and awaits setting up of a proper gallery for its separate display in the name of the benefactor.
- (j) The material has been received back from the laboratory of the archaeological chemist after repairs, treatment, and fumigation, and awaits procedure for its redisplay.
- (k) The material has been assorted for photography and drawings, and will be redisplayed in the galleries.
- (l) The material is being collected for another museum which is still on the planning board, as such it is a constantly growing collection.
- (m) For lack of display space in the museum, the material simply forms the stuff of secondary display and, therefore, is part of the permanent study collection.

Upon an analysis of all the above named possibilities, it emerges that the collection to be relegated to storage needs either a long term stay (from a year to an indefinite period), or a short term stay (from a week to one year). A prior estimate of the duration of stay of the material in the storage rooms helps the keeper in preparing its proper records. Material for only a very short term stay does not need preparation of special registers or index cards except, of course, for noting the fact in the movement register against each item, and for preparing a number of copies of the working list, to deal with the procedures of packing, unpacking, dispatch or disposal.

Material meant for a long term stay in storage or forming part of its permanent study collection, needs every care in documentation and detailed inventory and cataloguing. If possible, the museum should make arrangements to get the main catalogue published. Further addition in the collection made from time to time may be published as supplementary catalogues. As long as the catalogue does not appear in published form, it would be safer to have several copies of the main accession register or inventory deposited with the district or provincial authorities concerned with administration of the museum, in the main library or archive of the district or the province or some such responsible body within easy reach.

A lot of debate has been done by museum organizers on the question of relative proportions between storage and display spaces, location of the storage area in the museum building, its separation or accessibility from the public area in the museum building, and so forth. In the case of museums still in the planning stage, much benefit can be derived from the different professional recommendations. But in museums already built or improvised in vacant accommodations, the keeper will have to do with what he has - introducing only limited changes here

and there to make it best suit all the requirements. In a general way, it would be good to devote twice as much space to storage as to display galleries as in a growing museum the storage space always tends to shrink under pressure of demand, while display areas keep expanding by further additions of the built-up portions.

It is definitely advantageous in most cases to have the storage area on the ground floor, rather than on the upper floors or the basement. Basement space is better suited for storage of crates, cartons, and the packing material, along with accommodation for garage, museum smithy, carpentary shop, etc. If the museum has an archaeological laboratory, the storage of archaeological material meant for treatment or fumigation may be arranged next to it for clear advantages.

Coming to the question of actual stacking or placing of objects in cupboards racks or shelves, no hard and fast rules need be framed in an abstract way, leaving the various aspects of the problem to the genius and resourcefulness of the keeper and his assistants to solve spontaneously in a given situation. Only a few tips of common nature may be added here, such as, it is good to place the larger or heavier objects on the lower shelves of the racks rather than on the upper ones, and smaller objects should not be placed behind larger ones to avoid much of the clumsy moves which cause some of the most horrifying damages to the museum pieces exceeding those done by natural forces. In placing objects like pottery jars on the shelves, it would be good to keep them inwards a good deal more than the distances between their centres of gravity and the bases, to preclude their toppling down in the event of unpredictable seismic tremors. Shelves and racks in the storage rooms must certainly have a firm stance, and nothing should be left to chance against short-circuiting, especially after close of the working hours.

In a storage room it is always good to have the racks, cupboards, and steel cabinets of various specifications, or with provisions for adjustability to accommodate objects of different dimensions. The storage furniture should be placed along the walls, rather than formed into clusters, bays, or enclosures. The idea is to have the central space of the room as much open as possible for movement of material during packing and unpacking. A large working table placed suitably away from the shelves is of definite advantage. Other essential fixtures in the storage room are the liberal steps for easy access to the top shelves, a four wheeled trolley with adjustable trays, a record-keeping desk, a vacuum cleaner, a sewing machine, and such other equipment of utility.

Some of the worst wears and tears of archaeological objects occur not as a result of natural forces, but by careless handling by the helper staff. Even robust objects like stone celts suffer scratches or chipping away of their edges by careless handling. A possible solution to such problems is to keep them wrapped in cotton wool or tissue pads. But wrapping of every archaeological material is sometimes not possible and often a positive disadvantage in ready identification and retrieval.

This is especially serious for material meant for study collection. A better solution would be to devise desk or table show-cases with internal partitions to the measure of individual items, to pad the sides and bottoms of the partitions with velvet, and to cover the whole show-case with a clear glass sheet. Something similar can be devised for coin and seal collections for study in storage rooms. The study collection in storage areas must not be left unattended while students and other visitors are engaged in research studies.

In conclusion, it may be said that the essence of a good museum keeping in display galleries or storage rooms for archaeological material, as much as for any other kind of material, is to have an efficient system of documentation, an acquaintance with the principles of preservation and conservation of the moveable cultural property, an open eye on the internal and external changes of the surrounding, and an open mind for accepting new ideas and putting them to experiment.

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ATIQUE ZAFAR SHEIKH

Archives

Storage, Care and Preparation of Finding Aids

It is not possible and advisable to go into technical details of the subject but I will deal with it by answering four basic questions about archives. These questions are :—

What is archives ?

How do we store and care for them ?

Where do we find them ?

How do we use them ?

The archives is the office or repository where are stored documents of all types and the documents so preserved. A document is something written to provide evidence or information upon any subject under the Sun. Using the word liberally coins, gravestones, films, paintings, manuscripts, maps, correspondence etc. are documents. But all documents are not archives because a document becomes archive only when it is drawn up or used in the course of a public or private transaction and is preserved in the custody of the people responsible for the transaction and their legitimate successors. Thus archives are not drawn up in the interest or for the information of posterity. An archival document is frequently no longer in current use but set aside for permanent preservation. Thus a letter from Mr. Jinnah to Gandhi concerning political and state affairs and preserved in repository since say 1940 form part of the archive or family papers of Mr. Jinnah, but a single love letter from A to B or the haphazard purchases of an antiquarian cannot be an archive. The widely accepted distinction between documents and archives is records for current use and record for research use : 'records' becoming 'archives' only when they are handed over to the custodian of research material i.e. archivists, curators and librarians. There are four essential qualities of archives :—

- (a) **Impartiality** : Since archives are an actual part of the Administration which produced them, provided that the student understands their administrative significance they cannot tell him anything but the truth.
- (b) **Authenticity** : Archives are characterized by unbroken custody, a reasonable presumption of which is the difference between a document that is and one that is an archive.
- (c) **Naturalness** : Archives are not documents collected artificially like the objects in a museum but accumulating naturally in offices for the practical purposes of administration.

- (d) **Interrelationship** : Any archive is potentially related closely to others both inside and outside the group in which it is preserved and its significance depends on these relations.

Perhaps the most important of these four qualities of archives, and one which distinguishes them from other kinds of manuscripts, is their Impartiality. Because archives and literary manuscripts enjoy a common characteristic of uniqueness they have frequently been confused particularly by librarians. Yet the essential difference is clear : archives are records which not merely represent achievements but also the processes by which they were accomplished, they are the product of activity and so they are impersonal, unself conscious. Literary manuscripts, on the other hand, represent conscious strivings towards literary excellence, they are the product of individual imagination, the whole of thing aimed at, and so they are personal subjective.

These peculiar qualities of archives have practical implications which are important for custodians and students alike. Firstly because archives or unself conscious by-products of human activity, they have the objective formlessness of raw material, compared with the subjective roundness of literary artefacts like books, whether printed or manuscripts. Secondly the significance of archives lies not only in the matter of each document, but also in the interrelationship of documents within a group : the student needs to appreciate this in his researches, but even more important, the custodian must understand and carefully preserve the original interdependence of documents if their evidence is not to be confused or falsified. Lastly, in order to safeguard this objectivity and this original order in his documents, the custodian must protect them against unauthorized access : he must protect them 'morally' as well as physically.

This brings us to the storage and care of archival material. The main purpose of the storage of archival materials is that they should be available to research scholars for research as quickly as possible. This implies that the records have to be stored in a systematic manner. Thus we have to have a proper classification and retrieval systems. The classification system used in the archives is different from the classification schemes used in the libraries. The basic principle for the classification of material in archives is known as the principle of 'provenance' which means that the records are to be classified according to their origin. They are divided into groups and sub-groups i. e. for the records of the Ministry of Culture the main group will be Culture and the sub-group may be Archaeology and Museums, Archives, Cultural Pacts etc. So when the records are placed on the shelves in boxes they are properly classified and the classification appears on the boxes. This helps in the retrieval of the files in proper order. Some lists are also prepared to help in the retrieval of the files. But this I will discuss when I take up the subject of the preparation of Finding Aids. There are certain other precautions which have to be taken while storing the archival material i. e. maintenance of temperature and humidity control. Periodical cleaning, fumigation of the volumes and boxes is also necessary to avoid attack by insects, such as bookworm

silverfish, woodworm which are considered to be the enemies of archives. The most common chemicals used against these insects are thymol and paradichlorobenzene. The relative humidity should ideally be controlled at between 50% and 60% at a temperature of 60-70°F. It is useful working rule that for relative humidity in the region of 6% at 1°F rise in temperature corresponds to a 2 % decrease in relative humidity. So closely related to the storage is the physical care of the documents.

The documents or archival material can straight away be divided into two groups. In the first group will come that archival material which is in good condition and only needs proper storage such as periodical cleaning, temperature and humidity control.

The second category will include those documents which have been damaged and require proper treatment. Such documents need repair and usually these documents are sent to the archival laboratory for treatment. The treatment and repair of documents depend on the condition of each paper. Depending on the condition the documents can be laminated, repaired by patchwork etc. The documents are also de-acidified if the PH value of a paper is found to be below the critical value of 5 to safeguard the life of the paper. It is only recently that the danger from acidity has been fully appreciated. The source of acidity in paper can be either intrinsic or extrinsic. Intrinsic acid is introduced during manufacture, for instance in the form of alum added during sizing, or bleaching agents left in because of inadequate washing : thus deterioration is particularly marked in paper made after the discovery of chlorine in 1744. Archivists today, however, are more disturbed by extrinsic sources of acidity, the commonest of which is sulphur Dioxide in the atmosphere. Sulphur dioxide is not in itself harmful to paper, but it readily combines with metallic impurities in paper to form sulphuric acid, which is highly destructive. These metallic impurities are found in nearly all modern papers and in many papers made after the mid-eighteen century (Annex. A).

Besides the physical storage, repair, chemical treatment, and cleaning, there are other hazards from which archival material has to be saved and these hazards are usually termed as dramatic enemies of archives. These are bombing, rain and flooding, theft, fire etc. In order to secure the archival material from such hazards the technique of microfilming the archival material is widely used in archives.

Microfilm is a compact form of information storage, adoptable, transportable and readily copiable into which new information can be easily incorporated. Appropriately used it can be most useful tool ; inappropriately used it can be a hazard as dangerous as excessively acid paper. In some ways it presents a challenge to the theory that the archivist should not seek to influence the form in which material for permanent preservation is compiled ; in others it offers a solution sometimes quite longtime, to problems of conservation and storage of space.

Microfilming for preservation has continued since the war. However, the bulk of microfilming has probably been in response to research workers' demand,

clearly for a student working on a lengthy run of documents away from repository, microfilm has great advantage of convenience, compactness, speed of copying etc.

However, in modern times the uses of microfilming technique in the field of records management has increased considerably. The main reason for this is the bulk production of records. The enormous increase in the production of records by Government Departments presents obvious problems of their storage and management. The reason for the production of records in such a quantity are inherent in the character of modern Government. They are produced mainly as a byproduct in the performance of work, and the rate of their production is usually increased by expansion of activity. The application of modern technological methods have also contributed their share. The problem is not only of bulk of records produced but also of new materials and new forms of records.

It is not feasible for Government Departments to store such large quantity of records when they have ceased to be current for administrative purposes. Similarly it is beyond the capacity of archival repositories to retain permanently more than a small fraction of the records which are being produced. Here the microfilming techniques could be usefully employed for the management of records of Government Departments.

Obviously, the question of evaluating the feasibility of microfilming programme from security point of view does not arise. The motive behind microfilming in such cases is strong enough to justify the cost. However, while evaluating the feasibility of microfilm programme from the stand points of costs and system efficiency, the following criteria should be kept in mind. There are some general and some specific criteria :

General Criteria

- (a) Can considerable space be saved by microfilming ?
- (b) Can paper work system be rendered more efficient by microfilming map, drawings etc ?
- (c) Will microfilming properly protect and preserve the records from theft, fire etc ?
- (d) Can a large quantity of records be stored for a long period ?
- (e) Can the cost of microfilming operation be justified ?

Specific Criteria

- (a) Are microfilming records acceptable as evidence in the Court of Law ?
- (b) Is the specific cost involved low enough to permit microfilming ?
- (c) Are security and protection of the records adequate in microfilming ?
- (d) Will the characteristics of the documents to be microfilmed permit it to be photographed successfully as different colours and documents can not appear in microfilming ?

- (e) Will the microfilming record contribute to the convenience and efficiency of the office paper work system and is microfilming records acceptable for use.

A microfilm is a miniature transparency, usually 35 mm wide and 1/12 to 1/24 of the side of the original documents. A 100 feet film roll should produce something over 700 frames. On half frame it could cover about 1400-1500 pages. The role of microfilm itself needs careful documentation. The role should start with a title page giving a brief description of the series and the main reference letters and numbers. At the end of the roll the title page should appear again and 'End' or if there is more than one reel 'To be continued,' with 'continued from' on the title page of the next reel. The importance of a clear ordering and numbering of the documents before microfilming is evident when it comes to checking.

An advancement of the microfilm roll is called Micro-fiche (Fiche pronounced as 'Feesh' is a French word meaning cord). These Micro Fiche represent, a sheet of film the size of a standard card on which micro images are arranged in an orderly manner. Such microfiche usually produced in one of the popular standard card size 5 × 3, 6 × 4 and 8 × 5 with either positive or negative images. The negative image serves as a master for photographing the images on the plates for off set printing where large quantities of hard copies (prints) are desired. A microfiche sheet, therefore, represents a set of micro images of related documents. The images are easy to find, easy to read or reproduce in Reader-Printers and can be used economically. This form of microfilming is easily adoptable to coding signals.

If a lengthy run of documents (files, registers etc). is to be microfilmed care should be taken with the preparation of the series before it is handed over to the photographer, he has enough to worry about in setting the right exposure in setting each document on the camera platform. One of the virtue of the microfilm is the speed at which it can be done. It is not impeded, an operator can easily made thousand more frames a day. This means he must not be involved in, or held up by the preparation of the material; the documents must be arranged before hand in straight forward bundles with clips removed, pages unfolded, each item clearly numbered and in order. The photographer must be given precise instructions about what is and what is not to be microfilmed.

This is very important as the efficiency of the microfilm programme depends on how a retrieval system is developed. All that is required is clearly labeling and indexing.

Use of Microfilms

Internal :

- (i) To fill in gaps in series of records.
- (ii) To secure the records from fire, theft etc.
- (iii) It provides access to damaged documents.
- (iv) Production of copies possible for exhibition and educational purposes.

External

- (i) Copies can be supplied to fulfill legal requirements.
- (ii) Access possible to researchers working from away, say other countries.

The next question which arises is where to find the archives. Obviously, archives could be found in the National Archives, the Provincial Records Offices, the District Record Offices, and Commissioner's Record Offices. These are the places where one can find mainly the public archives i.e., the records produced by the Government machinery. However, if we use the word archives to include all types we can find archives in private libraries and in museums as well. A library may receive a donation from a scholar, political leader etc., of his private papers. Similar is the case with museums. Archives can be found in even private houses. A person may be keeping his collection in his house and utilizing it for research on his family, on his town and so on.

The ultimate purpose of storing the archival material, as I stated earlier, is their use by research scholars but it is not possible for the research scholars to consult the records, documents and private papers if records are not accessible. All research oriented institutions produce their catalogues and lists so that their collection is accessible to a scholar or a person desirous of obtaining certain information for himself. The museums produce catalogues of coins or guides to their collections, the libraries produce accession lists of the new accession of books or catalogue cards for their collection of books. Similarly in archives we produce 'Finding Aids' which may be in the form of Accessions List and Inventories, Descriptive lists, Descriptive catalogues of correspondence, Calendars etc. It is through these Finding Aids that the archival materials are made accessible to research scholars.

However, the basic document in Archives or a Record Office is the 'Accessions Registers'. All collections received are arranged, classified and accessioned. The Accession Register in Archives has usually the following entries :

Acc.	Date of Accession	source	Terms	Description	Qty.	File	Location or Classification
128	16-6-71	Atlas Engineering Co. Ltd.	Deposit	Accounts, correspondence, minutes drawing 1868-1950	5 boxes and 3 rolls	III Atlas	Storing Room C

After arrangement, proper classification and Accession, the first operation is the compilation of an *Inventory*. The inventory is an initial provisional Finding

Aid, primarily for internal use. The entries in the Inventory should be logically arranged, and should consist of :

- (i) a title, giving the record type (e.g., correspondence), its inclusive dates, and its quantity ;
- (ii) a descriptive paragraph, specifying significant items, Provenance, content (e.g., main subjects dealt with) and composition (e.g., files, bundles, volumes).

However, an archivist dealing with a very small quantity of documents might find it possible to proceed at once to detailed Listing e.g., Descriptive Lists. The feature which distinguishes a descriptive list from an Inventory is that the unit of description is not the series (or class) but an item *i.e.*, a single document, bundle file or volume.

Another type of Finding Aid is *Guide* to archives which is an assembly of inventories, and so to prepare one the archivist must condense his descriptive lists into inventories if he has not prepared an Inventory first.

A *calendar* is a precise of document which in many cases make the consultation of the original document unnecessary. This method, however, can hardly be applied to many types of records in repositories where economies of time and labour are of vital significance. Nevertheless Calendars have a peculiar appeal to historians and research scholars as they provide information about documents in chronological sequence in which historians must read them to understand how things actually happened.

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Annex. A

Methods of De-Acidification of Documents.**Calcium Hydroxide**

In this method two solutions are used. The first solution can be prepared by placing twenty five grammes of calcium Oxide in an enamel container with 3½ litres of distilled water. Calcium Oxide combines with water to become Calcium Hydroxide. In this process considerable heat is generated. This solution should be left for twenty four hours. When the undissolved particles have settled to the bottom of the container, syphon off the clear liquid which is known as lime water. Add 50% cold distilled water to this solution and use for deacidification. The document should be dipped in it or with the first solution, the document should be treated with the second solution.

Magnesium Acetate

Magnesium Acetate has been found to de-acidify paper and improve the permanence of paper. Magnesium Acetate is soluble in methyl alcohol and ethyl alcohol and a 2 percent solution in methylated spirit has shown satisfactory deacidification. Documents can be soaked in this solution. The solution could also be used as a spray for bound volumes.

Barium Hydroxide

Baynes-Cope of the British Museum Laboratory have developed the use of Barium Hydroxide in Methyl Alcohol for de-acidification of documents written in water soluble inks or which have become fragile and cannot stand aqueous treatment. A 1 percent solution of Barium Hydroxide is formed by dissolving 1.86 grammes of Barium Hydroxide Octahydrate in 100 milli litres of Methyl Alcohol. Now this solution can be used to de-acidify the document with soluble inks. The solution could also be sprayed.

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**CONSERVATION
OF
MUSEUM OBJECTS**

DR. GRACE MORLEY
Museum Conservation

It is recognized that the fundamental duty of the museum is preservation of the material in its charge. It is sometimes assumed that as soon as an object is acquired by the museum its preservation has been ensured. But, alas, this is by no means true. Can one at least feel confident that when an object enters the museum's collection it may from that time forth count on its condition being watched, on any deterioration being detected promptly, on the requisite correction or repair being applied, and above all, on care of handling, both for exhibition and storage? This is surely the ideal to which all museums aspire. In practice, it is not always realized, not because of deliberate action or of omission, but because of ignorance.

Lack of care in handling museum objects failure to provide good conditions for their storage, even employing damaging procedures for putting objects on exhibition, represent some principal cause of damage and of deterioration suffered by objects once they have been acquired by the museum. These failures in preservation of museum material can be prevented, and one of the purposes of training in museology is to help staff members to understand and eliminate them.

All workers in a museum should be aware of the necessity for protecting collections from physical damage, and be alert in avoiding it, but those who have direct responsibility for care of museum objects, the curatorial staff, must be well informed, so that they may make every effort to understand the nature of the material in their charge, the conditions and action which cause deterioration and damage and, with full knowledge, strive to ensure that they are held to the minimum.

It is, of course, true that deterioration is inevitable, its rate depending on the kind of material and on the conditions in which it is kept. The museum's task is to slow down the process to the greatest possible extent and to devise ways of preventing damage of every kind.

In recent years, conservation laboratories staffed by trained and experienced conservation scientists and the required technical personnel to assist them, have been established in most large museums. Their purpose is to meet the needs for treatment of museum material and to provide guidance to museum directors and curators in preservation of their collections in satisfactory condition. The scientific conservator heading a laboratory is usually a chemist, but he must have, in addition, special training and experience in the conservation of museum objects, whatever their kind. A very large conservation laboratory may have a number of scientific conservation experts, possibly sharing work according to individual specialization. Technical personnel of specific training and experience usually assist them.

The conservation laboratories in very large museums may have a great amount of sophisticated scientific equipment, and it is natural for all museum conservation laboratories to endeavour to emulate the largest and best of their type. However, it is wise to recognize that the high costs of such equipment represent a barrier for most museums and that only a few, carrying out research in regard to conservation, in addition to treatment of museum objects, are likely to be justified in acquiring highly specialized equipment. Much more important is the reasonably equipped laboratory, having a well trained and experienced staff, quite competent to deal with normal conservation requirements of the museum.

Frequently objects, when acquired by the museum, are already in poor condition. The conservation laboratory may be called on to give advice in regard to them, when they are being considered for acquisition, and it may have to provide treatment as soon as they enter the museum. Conservation, that is arresting deterioration and repairing damage, does not usually today include 'restoration', which implies making an item appear as neatly as possible as it was when new. 'Restoration' was a frequent practice earlier, especially in regard to old Masters' oil paintings in the West, but it is generally avoided today.

For some museum material, organic material such as textiles, sometimes manuscripts and books, and ethnographic and natural history specimens, fumigation is recommended as a routine precaution before items, newly acquired, are incorporated in the collections, whether for exhibition or storage.

Preservation, that is care in keeping the objects in satisfactory condition follows, once they are passed on to the curatorial staff.

The conservation laboratory makes a careful record, supplemented by photographs, of all treatment and repairs which it carries out. A copy of this report is retained in its own files, but also should be supplied to the museum director and should be filed for reference by the curatorial department concerned. This is to ensure that precise information is kept in regard to treatment, to be available if inspection of condition should occur, or further treatment be required in the future.

Space to accommodate a conservation laboratory will naturally depend on what a museum can provide in relation to the other requirements within its own building or in an adjacent building. Work tables and work benches of various kinds require space. Good natural as well as artificial light, running water, large sinks for photography development and other uses of washing and soaking material, provision for gas and electrical connections, good ventilation, safe storage space, a dark room, possibly a photographic studio, provision for a small departmental reference library and reading room, a separate space, well ventilated, for the fumigation chamber, are some obvious requirements. If the advice of an experienced scientific conservator can be secured when planning a conservation laboratory it would be helpful.

Care and Repair of Archival Material

What are Archives

Archive is the place where Government record is kept. The word 'Archives' has been derived from the Greek word 'Archeion' which means Government House and was first applied to the Record and Papers of a Government Agency.

Man's earliest attempts to record human activities were made on stone. A little later bark leave and ivory was also used. Other early writing materials were dried calf and goat skin parchment.

Paper was invented by Chinese in about 105 AC.

Paper

The principal source for manufacturing paper is cellulose derived from wood. However, cotton linen, rags and cotton waste are also used by the paper manufacturing factories. Paper can be made by hand as well as on machines. In older days paper was always made by hand. Now-a-days machines made paper is universally used and hand made paper is used only for specific purpose. An invariable characteristic of machine made paper is its directional, feature, which is introduced into the material by the design of paper making machinery. This paper tears in straight line along the grains but not across it. As regards hand made paper no two sheets are of the same thickness.

Following raw material is used in paper making :

Hemps : Many types of hemps, like waste rope and cordage, some from crops grown.

Esparto or Alpha Grass : This grass grows in North Africa and Southren Spain. Its fibers are very fine and it is best for making printing paper.

Straw : Straw fiber is somewhat similar to but rather shorter than Esparto.

Wood: Wood fiber is also used for making paper. For preparing wood pulp, logs of timber are simply ground to the powder. The wood fiber is short and brittle and is only used for cheapest quality paper.

In raw state all materials except cotton, are in impure form of cellulose. Usually ligno cellulose need some form of chemical treatment to bring the fiber in the form most suitable for making good quality paper.

Causes of Deterioration of Paper

There are many causes of deterioration of paper and paper products. Man himself is the greatest source of deterioration. Since man began to use organic substances for his writing material, they have been subjected to attack by forms of life for which they supply nutrient namely fungi and insect. Besides, humidity, temperature and air are three main agents of deterioration of paper. A proper counter of these agents is absolutely necessary for paper preservation.

A library or a repository of paper documents and books inside must have good climatic conditions. This means that there should be ways and means to check and control humidity, temperature and air to their useful levels.

Humidity

Control of relative humidity is very essential for paper. As paper is hygroscopic material and it absorbs moisture from the atmosphere, excessive moisture tends to weaken the tissues of paper under attack. The possibility and extent of damage to paper by moisture can be judged from the fact that one thousand ton of books are calculated to absorb at least 20 thousand lbs. of water, when the relative humidity of the atmosphere increases from 57% to 63% at 60°F (16°C).

Time and Temperature

Time itself is the greatest enemy of paper preservation. Even under best favourable conditions paper deteriorates automatically. The time period involved for a poor paper is from 25 to 50 years.

However, chemical reaction is generally accelerated by raising the temperature inside the repositories. A number of investigators have determined that 72 hours of exposure at 100° to 105°C ages a new paper approximately 25 years. The humidity in this case is not specified.

Air

Air should be free of dust and atmospheric gasses. Atmospheric gasses contain Sulphur Dioxide (SO_2) which changes to Sulphurous Acid (H_2SO_3) and then Sulphuric Acid (H_2SO_4). When this Sulphuric Acid comes in contact with the paper, the later develops acidity in it and the paper becomes brittle. The rate of brittleness depends upon the quantity of acidity in a paper.

Cellulose

A cellulose molecule is built up of very simple units 300-1000 in the form of long thin structure like Chain. In fact it is often referred to by chemists as a Chain Molecule.

A picture of the kind of substance cellulose can be obtained by imagining the glucose molecule as being like Chain link but not close, and cellulose molecule



as a chain of links closed except for the end link. Wilson considers that dry aging causes cross linking between cellulose molecule. As is well known from Polymer Chemistry, cross linking can cause brittleness.

Acidity in Paper

Acidity is one of the principal causes of deterioration of paper. This is due to poor manufacturing methods and indiscriminate use of Chlorine, sizing of paper with alum, poor storage conditions, environmental factors, high temperature and high humidity. All these factors tend to aggravate this condition and accelerate deterioration.

Catalysts present in paper accelerate the conversion of sulphur dioxide to sulphuric acid. It is possible that the minute particles of iron are a decisive factor in the brown spotting of paper known as 'foxing'.

Other forms of mould stains such as the red, pink and black spots often encountered in paper may be due to secretions by micro-organism during the course of their metabolic process.

In the early 19th century there were many complaints of the brittleness of paper, which was caused due to excessive use of chlorine and hypochlorites. This chlorine residue breaks down slowly to hydro-chloric acid (HCl) and due to this development of acid, paper becomes brittle.

It is very difficult to protect the paper from attack of acids because the paper-making fibres themselves are weak acid. Normally the pH noted is '5'.

Moist or high humidity ages an acid fibre conversely. It causes hydrolytic degradation of the cellulose molecule and an ultimate loss of fibre tensile strength.

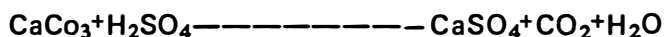
Measurement of pH

By using a pH Meter, one can obtain an exact figure which indicates acid/alkaline condition of a paper. The intermediate figure 7 on the pH scale is used to describe neutrality. If the pH figure is low i.e. 6, 5, 4 etc. the paper is progressively more acidic, whereas if pH figure is high i.e. 8, 9 etc. it is progressively more alkaline. The number 1 and 14 on the scale are limits of acidity and alkalinity respectively. However, these limits cannot be attained by paper for it would disintegrate long before it attains either of these limits. pH paper are also available in market for determining the pH of documents.

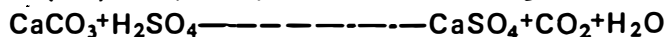
The pH of paper is determined by applying a spot of liquid indicator to the margin of document and observing any colour change. It can also be determined by using international indicator papers that are supplied by their own colour charts. By this method the paper is moistened with clear neutral distilled water and contact made between test paper and document for a short time necessary to determine colour change. When the required figure of pH can be obtained by comparing the colour with standard supplied, having established the relative acidity of the paper, it will be clear that this should give an indication of its physical condition. Paper of PH '4' being at the extreme of frailty and brittleness and requiring urgent need of deacidification and strengthening if they are to be preserved at all. Papers of pH '5' also qualify for early treatment whereas when the pH amounts to '6' the paper may be dealt with in accordance with planned operation to be conducted. When the equipment is not available for more urgent work only paper that have a pH of '6.5' or above is considered to be in satisfactory condition.

Deacidification of Paper

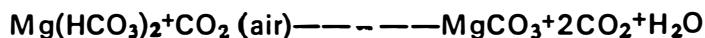
Some old books and papers have retained their original strength better than other stored under the same condition. This is because of accidental deacidification, (or more properly buffering) during manufacture. This could have happened because the pulp was prepared with hard water containing calcium or magnesium bicarbonate.



W. O. Barrow from U. S. A. developed a technique of deacidification of paper. In this process acid contaminated book-leaves etc. are immersed first in solution of calcium hydroxide to neutralize the acid and then in calcium bicarbonate to convert the excess hydroxide into neutral salt which will provide the desired buffering :

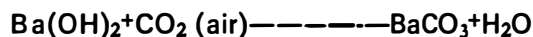


To simplify the process, Mr. Barrow later on devised a single solution process for deacidifying less heavily contaminated documents in solutions of magnesium bicarbonate prepared by bubbling carbon dioxide gas through water suspensions by insoluble magnesium carbonate :



The disadvantage of Barrow Processes is that they, being wet processes, eliminate themselves from the use of documents written with water soluble ink.

For non-aqueous deacidifier barium hydroxide is used with methyl alcohol. The British Museum Research Laboratory favours it for deacidification¹. Reaction is as follows :



In this single solution the barium hydroxide neutralizes the acid : the excess hydroxide is converted to barium carbonate on exposure to air in drying, and this barium carbonate remains in the paper to act as a buffer against future acid contamination.

Insects

More than seventy varieties of insects have been identified as enemies of library materials. The most common of these are : Bookworms silverfish, cockroaches, termites, book lice, mud wasps, fire brats etc.

Now-a-days modern chemicals are being used to kill these insects. Even in Buddhist countries, where it is sinful to slay a ravaging bookworm out right, pentachlorophenol, methyl bromide and dieldrin are being used to destroy them.

Termites

Termite or white ants, have been on the earth for two hundred million years, as compared with man's one million years life. They exist in all warm countries. The food of termites are grass, dried plants, timber, wood-work of buildings, other termites, library books, files, photographs, valuable pictures etc.

Cockroaches

All libraries and housewives in warm countries must be familiar with cockroaches. These are suspected of spreading leprosy, cholera, typhoid fever and dysentery. So, quite apart from any question of book preservation, they are very undesirable in libraries. Their favourite food (or drink) is said to be beer. In repositories they are in contact with books. They are attracted by adhesives used to paste cloth or buckram to the binding board and by the starch stiffening added to some binding cloth by other paste of glue applied to bindings.

Silverfish

This small silvery grey creature not more than 1/2 an inch in body length, with its two antennae spike like tail and curved terminal filament does considerable damage in libraries. It feeds on starch, glue and paste. They set at their work of destruction at night and during the day in dark places, such as drawers of desks etc.

Bookworms

Bookworms have been notorious ever since the making of books began. Danger to books through climatic conditions, wind, weather, fire etc. is far less than this creature called bookworm.

1. See also p. 106 above.

Mud Wasps

The mosquito wire-mesh that has to be provided over windows, vents and grills in order to exclude insects from tropical libraries seems to provide what is called the Mud Wasp. If allowed access to libraries, the mud wasp will cement its nest to the edges of pages of books as they stand on the shelves, to the corner of book cases, to maps and manuscripts. Although it does not attack library stuff and books yet it is not tolerated as its mud has adhesive quality.

Control of Insects and Pests

Librarians and book lovers must remain vigilant and take adequate precautions to protect books from insects.

Anti Termite Measures

Solution containing tri-chloro benzene, penta chlorophenol, sodium arsenite and other toxic substances have proved effective. Building sides should be treated with Dieldrin diluted emulsion consisting of 1 gallon of 20% emulsion concentrate to 80-100 gallons of water which should be applied to the foundations at the rate of 1 gallon to every 2 feet of open trench or sprayed 1 gallon to 5 square feet of surface area.

Some repositories cannot afford this expensive method of protection. They should use sodium arsenite (1 part sodium arsenite to 9 parts benzol) into any rack of library. Flurochrome dinitrophenol mixture is water soluble preservative and is more suitable for use in libraries. In U. S. A. dry wood termite already in a building have been destroyed by fumigation with hydrogen cyanic gas. Methyl bromide can be used as an alternative of HCN.

Fumigation

All insects cause damage to paper by boring holes through it not because they require the paper for food but to reach something, such as paste, which they can eat. If the paste contains anti-septic, such as phenol, para-dichloro benzene, thymol, it might be rather less attractive to certain insects but it certainly will not make the paper immune to attack by all insects under all conditions. Similarly the incorporation of effective stomach poisons, unless they are also insect repellents, will not necessarily prevent insect from causing damage since they will have to attack the paper before they are killed by the poison.

Attack can therefore only be prevented by an effective repellent. A repellent substance must be relatively in order to deter the insect before it attacks paper but being even slightly volatile, it will not remain in paper for a long period. Consequently even with an effective repellent, treatment will have to be repeated at intervals.

Insect troubles must therefore be dealt with before insect can reach the records and, in bad or difficult cases, it may be necessary to resort to methods of fumigation.

The common fumigants e. g. hydro cyanic acid, ethylene oxide, carbon dioxide, ethylene chloride, carbon tetrachloride, carbon disulphide methyl, formate, carbon dioxide, thymol paradichloro benzene have all been shown not to be detrimental to the permanence of archival material. As they are either toxic to human beings or anaesthetic or inflammable all of these present some element, of danger and as such they must always be applied by specialists in this field. When correctly applied there is no doubt about their effectiveness.

In Pakistan most of the archives and museums are using thymol paradichloro benzene as fumigant. A suitable chamber for this purpose must be air tight and it should be large enough to accommodate in a horizontal position any thing upto an imperial sheet (30" x 22"). A 40 watt electric lamp is fixed near the bottom of the cupboard and this emits enough heat to melt the thymol and paradichloro benzene crystals, which are placed some 5 cms, below it. About 50 gms. of thymol is required for sterilizing the contents of cupboard of 1 cubic meter capacity. Thymol is used with paradichloro benzene.

In stacking the cupboard it is important to arrange for free access of the vapours of thymol and paradichloro benzene around the infected material. Vacuum should be created in the chamber during the fumigation process.

Effects of Ultra-violet Light

Ultra-violet light is the universal destroyer of organic matter and paper is no exception. Fortunately, it is unlikely to cause the archivist much trouble chiefly because it has such poor powers of penetration. For example most of the ultra-violet, in quite strong daylight, is filtered out by glass windows.

Accidents, however, may happen. As such important documents could be quite adequately protected from the injurious effect of ultra-violet light by storing in a card board container, which serves as an effective barrier. If the container can become brittle due to long exposure, it could quite cheaply be replaced. Important documents should be stored either in diffused or behind the screen of amber glass.

Reading of faded Writing

Since ultra-violet lamps are used for reading faded documents, it would be a wise precaution to make a transcript of the documents the first time it is exposed to the lamp in order to avoid too frequent exposure.

A source of ultra-violet illumination is used for reading a writing that is illegible. If that writing is still not readable infra-red light is used for this purpose. When an inscription is partially legible under ultra-violet light, the chances are that a photograph taken using this source will be even more rewarding.

Chemical methods of intensifying writing should not be used until the possibilities of obtaining information by modern photographic process have been exhausted.

Repair and Restoration

Successful repair of papers depends upon an understanding of conservation techniques, training and special skills, availability of special equipment and experience. Librarians should establish a working relationship with a reputable conservator, who will agree to examine books and documents collections and suggest what can be done safely on the premises and what should be done elsewhere with special equipment.

Examination

Prior to any work on documents or books, they must be examined carefully to determine and record as much as possible :

- (a) the history of the document,
- (b) how it was stored over the years ?
- (c) character of the original binding,
- (d) evidence of rebinding or previous repair(s) and
- (e) the physical condition of various materials.

Analysis

Prior to any repair or restoration, it is important to know whether a deteriorated paper was made entirely, or in part, from ground wood. This is determined by placing a drop of phloroglucinol solution on the paper. This will turn red if any lignin is present, indicating that untreated ground wood was used in the paper pulp.

It is equally important to know if paper has been hardened with alum/Rosin (a source of acid) or gelatin. A drop of aluminion solution (also in the Barrow Test Kit) on paper will turn a deep pink if aluminium is present and remains faint pink or colourless if not. This is a sensitive comparison. It must be done after the spot has dried. Aluminion indicates the presence of aluminium which in turn indicates the presence of aluminum sulphate and resin size.

Chemists determine the pulp content of paper by identifying the fibre under the microscope with the aid of various stains. A crude but sometimes useful identification of pulp content can be made by applying a drop of Hezberg's stain to a piece of paper-cotton or linen rag content will turn the spot red, chemical wood pulp and mechanical wood (ground wood) pulp yellow.

Other useful regents for spot testing for fibre identification are iodine and zinc-chlor-iodine. Iodine will colour cotton or linen fibres light to dark brown, on straw esparto and chemical wood it will be almost colourless to light brown, and on mechanical wood, yellow to brown, zinc chlor-iodine will turn cotton and linen strong wine red and straw, esparto and chemical wood fiber blue and mechanical wood fibre yellow.

Cleaning Surface Dirt

The first operation in any treatment of paper is the removal of as much surface dirt as possible, using a broad selection of erasers.

Washing

Soaking in hot water will often clean a stained and dirty paper, the hot liquid may dissolve gelatine size, but that can be replaced.

Removal of mud from paper is extremely difficult because of the tendency of the soil to penetrate deeply into fibre. A laboratory can get quite good result by bathing mud stained paper in 1% acetic acid, followed by a bath of sequestric acid and then immersion in a solution of ultravon AN (Non Ionic), 3% sodium and tripolyphosphate, and 5% carboxymethyl cellulose, followed by water rinse and drying. Before paper is immersed in water all ink and colours should be tested for solubility. Carbon and iron gall ink stand up well in water. Modern liquid ink, ball point ink do not.

Stains

The selection of a solvent for paper stains depends upon the nature of the foreign matter. Water is a useful solvent and the safest, being neither flammable nor poisonous. The following solvents have all been reported to have been successful in removing the stains :

<i>Stain</i>	<i>Solvent</i>
Adhesive Tape	Benzene, toluene
Pressure Sensitive Tape	Hexane and toluene mixed
Duco Cement	Acetone
Glue	Warm water
Paste	Water
Lacquer	Acetone
Tar	White gasoline, benzene, carbon tetra chloride pyridine.
Ball Point ink	Dimeteyl Formamide.
Paint	Turpentine, pyridine, alcohol & benzene mixed.
Rubber Cement	Carbon disulphide, benzene & toluene mixed.
Wax	Hexane, toluene, chloroform, carbon disulphide, white gasoline.
Shellac	Ethyl or methyl alcohol.
Tea & Coffee	Potassium per-borate.
Rust	3% Oxalic acid.
Lipstick	3% Tartaric acid followed by water.

Bleaching

Some chemicals with bleaching properties are potassium permagnate, acetic acid, oxalic acid, sodium meta-bisulphate, sodium sulphate, ammonia, hydrogen per oxide and chlorine in several forms. Bleaching is not simple unless done by a well trained person. If applied by an untrained person it can damage the paper far worse than disfiguring by stains.

The simplest and safest but not the most effective chlorine bleach is chloramine-T. This mild reagent powder solution be made just before use as it is unstable.

The chemical is generally prepared 2% solution, but 10-15% concentration are more effective.

Repair

There are several techniques for paper repair. All of these have their own merits. However, here we will discuss mainly two methods.

1. Hand Repair
2. Lamination

1. Hand Repair

Personal Set of Tools for Each Worker

Scalpel

Spatule

Tweezers

Scissors

Soft brushes, 6-8 cms. wide

A smoothing blade for smoothing the condenser paper. The tool can be made of wood, bone or plastic material.

Dimension 4.8 cms. and 0.5 cms. thick. Glue bowl (100 ml.)

Water bowl (200 ml.)

Thick needles

Vessels for preparing Glue and Sizing Mixture

A 750 ml. porcelain bowl or a deep plate for mixing the flour. Enameled pot 3 litres capacity. Enameled wide bottomed pot 2 litres capacity for cooking the glue. Graduated cylinders or graduated vessels for measuring water, glycerin and p-naphthol : 25-ml., 100 ml. & 225 ml. A porcelain spoon for stirring the glue.

The restoration workshop should be provided with the following Material :

- Hand made paper of various grade for patching.
- Glazed paper to insert between sheets during pressing.
- Wheat flour, 30 per cent. glue making Glycerin.
- P-Naphthol for incorporation into the Glue.

Procedure of Repair

- (i) Select a mending paper to match damaged sheet in weight, tone and texture.
- (ii) Lay damaged paper on repairing paper, matching chain and wire-marks and outline the missing area with a bone folder.
- (iii) Tear out the repairing piece 1/16th inch outside the folder mark.
- (iv) Turn the repairing piece over and pair the edge with scalpel.
- (v) Apply paste to both paired edges, then place them together, rub with bone folder and let it dry.

2. The secret of expert silking and tissing is to relax the paper by working on wet surface. One of the many alternatives are as follows :

- (i) Wet the working surface with water.
- (ii) Lay the damaged sheet on wet surface and paste it with very thin wet paste.
- (iii) Lay on tissue (or silk) and brush it down with the thinned paste.
- (iv) Turn the damaged piece over and paste the reverse side.
- (v) Lay on tissue (or silk) and brush it down.
- (vi) Lift the reinforced document from the wet surface and place on chip board to dry.

Mending Holes and Corners

- (i) Select the mending paper to match the document.
- (ii) Apply paste generously to the edge of the hole or missing corner.
- (iii) Place the mending paper over the hole or missing corner so as to match the chain and wire marks.
- (iv) With a razor blade or scalpel scrap the surplus paper away from the mended area leaving a 1/16th inch over-lap.
- (v) With a camel hair brush lightly paste the joined edges and burnish with a bone folder when dry.

Lamination

Hand repair or chiffring is not an ideal method of preservation. The paper may be damaged by handling and, later on, it can cause more destruction due to insects, because paste is good food for insect and fungi.

After long investigations, the process of lamination was first adopted in U.S.A. Technique of this work can briefly be described as follows : a sheet of Cellulose acetate is placed on a polished steel plate. The document to be restored is then placed on the smoothed film. Section which have fallen out, if any, are fitted back into the document and fastened to the film with acetone. The document is then covered with another sheet of film and with second metal plate. The film should extend over the edges of the document. The system thus prepared is placed into a flat bed hydraulic press which can accommodate up to 20 such layered cakes. Duration of pressing is 3.5 to 30 minutes, the pressure is 22-45 kg/cm², and the temperature to 150-175°C.

The main draw-back of this press is that it is bulky and complicating in servicing. This machine is working in the National Archives, Washington, U.S.A. Another drawback of this lamination is that cellulose acetate film are not resistant to tear, they tear easily and require careful handling.

Japanese tissue paper has been applied in the lamination of all documents at the National Archives, U.S.A. The Laboratory for the Conservation and Restoration of Books at USSR Academy of Science has experimented with polyethylene as a plastic laminant for paper and recommends it as particularly suitable for paper with a high ground-wood pulp content.

In the case of polyethylene lamination, required document is sandwiched between the two layers of polyethylene and placed in two layers of release paper. A temperature of 120°C is given for 30-60 seconds.

As this is irreversible process, it is not much recommended to use polyethylene for lamination.

In recent years, some interest has been shown in the evaluation of low cost, and simple to operate laminating device, employing the dry mounting principle used for mounting photographs, prints etc. Ademco manufactured this type of machine, which is cheap and easy to operate.

Instead of polyethylene, a film of cellulose di-acetate which has a semi mat finish and is acceptable for archival material, is applied to paper by applying slight pressure and heat of about 70-80°C.

Because this process is reversible it is preferred over polyethylene.

Solvent Techniques

The solvent laminating techniques were originated in the National Archives of India. This is done by softening cellulose acetate by rubbing with a swab of cotton wool on the tissue paper lying above the cellulose acetate which in turn over-lies the document. Smoothing out thereafter with a roller, the laminated document is then turned over and dealt with similarly on the back.

With practice, excellent results are obtained. There is a danger of toxic fumes, fire and explosion unless carried out in well ventilated room in absence of naked lights.

First Aid Action for Flood-damaged Books

The treatment of a sodden book is dependant upon the type of paper and the materials and methods of binding. In general, books on 'Art Paper' i.e., the glossy paper often used for profusely illustrated books, are ruined by immersion in water and it may well be wise to give priority to books on ordinary paper.

Following general rules apply for books of all classes.

1. Keep the book closed until all external mud is removed.
2. Dry the book gently with a good circulation of air.
3. Never open the book at any one place by more than a finger's breadth. Opening it wide at an early stage may break its back.
4. Be patient and don't try to hurry things.

General Action

First clean the closed wet book with a damp cotton cloth to remove wet dirt, mud etc. It will always be easier to remove mud when wet rather than when dry.

Drying

To dry the books, they should be hung upon a set of three lines of thin white string so that the spine of the book is supported at three places.

Other Precautions

Book Shelves : Bookshelves also suffer as well as the books. The shelves should be cleaned thoroughly, care being taken to remove the dust from racks. They must be thoroughly dried before the books go back into them, and wooden shelves, are best dried slowly. Metal shelves must be cleaned and be free from rust spots.

Fungicidal Tissues: Make a solution of sodium orthophenyl phenate (Trade name is Topane). containing 2 oz. of the solid in one pint of water. Dip sheets of thin strong tissue in the solution and allow it to dry. It is best kept in a closed box or bag. The solution is about as alkaline as fairly strong washing soda, and it is well to wear rubber gloves when handling it, or use a good barrier cream on the hands.

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WASEEM AHMAD

Care and Repair of Museum Objects

'An ounce of Preservation is worth a pound of Cure' is more than an old saying in the mind of Conservators. It is indeed a guiding principle. An enormous amount of damage to museum objects can be avoided simply if proper steps are taken at right time.

Conservation is not all glamour and sophistication; it is hard physical labour requiring a great deal of time and patience.

The future of conservation in this country, and therefore the future of our heritage, lies in two principal areas : the education of both lay-men and museum workers in the fundamentals of conservation, and the development of broad-based corps of professionals trained in the special fields of conservation.

There are minor operations of cleaning and repair that the curator can himself undertake only if he is aware of the dangers involved and takes precautions against them. The curator should also be able to recognize deterioration when he sees it in any form. Above all he should be able to realize when he must call on an expert to give help. No one harms his collections wilfully ; it is only ignorance of the basic principles of methods of preservation which is responsible for much damage. A curator, therefore, must know what are the various agencies of deterioration, how they act upon objects and what methods can be adopted to control them.

Factors of Deterioration

A number of agencies have destructive effects upon matter. Here we will consider only those which are commonly found in museums, libraries and archives.

Some of the causes of decay are natural whereas others are, what might be described as, man-created. The natural causes are :

- (i) Climatic conditions and environment,
- (ii) Light,
- (iii) Insects,
- (iv) Micro-organisms like fungi,
- (v) Pollution.

(i) **Climate** is a very important factor for the preservation of cultural heritage. Organic material such as wood, ivory, paper, textile and

adhesives are hygroscopic. They will undergo changes in dimensions as they either absorb or lose water vapours.

- (j) If relative humidity (R.H.) is low (excessive dryness) shrinkage with warping and cracking of wood and ivory ; embrittlement of paper and adhesives and weakening of textile occur.
- (ii) If R.H. is high (excessive wetness) swelling of wood and ivory, softening of adhesives, slackening of textiles (e.g. Canvas paintings) also danger of growth of mold and fungus, risk of actual condensation of moisture on cold surfaces take place.

Constant changes in R.H. must be avoided because as a result of this, painted wooden objects will surface by flaking off paint, books will suffer from strain imposed by dimensional changes and salt absorbed in porous material will crystalize.

Relative humidity (R.H.) is recommended between 55-60%. Beside water vapours dust is also very harmful for museum objects. Museum objects should always be protected from dust. Vacuum cleaner should be used in removing the dust. The first operation in any treatment of museum objects is the removal of as much surface dirt as possible.

Control of Relative Humidity

The ideal method for the control of R.H. is complete air conditioning i.e. the installation of central unit which regulates both relative humidity and temperature and distributes controlled air in the museum. This is expensive both to install and to maintain. A simpler and more economical procedure is to use special unit to control the R.H. in particular areas of the museum. These are :

- (i) **Humidifier** i.e. units which introduce moisture if R.H. is too low.
- (ii) **Dehumidifier** i.e. units which remove moisture if R.H. is too high.

Light : For museum objects light means damage. As such its use should also be judicious and reduced to minimum. The subject of light in relation to museum objects has been fully dealt with at pages 131-139 below. Here, only a few salient points have been discussed.

All museum objects must be exposed to certain amount of light, natural or artificial in order to render them visible to the spectators. But this exposure of museum objects to light has its bad effects as well. U.V. rays infra-red and radiation of light discolour, disintegrate and damage the objects exposed to light.

Kinds of Light

1. Sunlight or Natural Light

Sunlight or natural light is the least expensive source of lighting

museum exhibits. However, it is not without its short comings. This source is undependable. It can be utilized only at day times, and even then only in clear wheather. Sunlight and day light, (even North Light), like the flourescent tube light, has a high percentage of U.V. rays and are;thus injurious to museum exhibits. Due to these facts it is not much recommended in museums.

2. Artificial light

Artificial lights are of the following types :

- (a) Flourescent light
- (b) Incandescent or Tungeston light
- (c) Mercury light.

- (a) **Flourescent light** : Flourescent lights emitted from the flourescent tubes cause fading of museum objects and archival material besides discolouration of dyes. Harmful rays in some cases cause deterioration of fibres in certain materials.
- (b) **Incandescent light** : This light is the least harmful among all artificial lights and hence is recommended for museum use.
- (c) **Mercury light** : A Mercury Vapour Lamp generates the maximum amount of ultraviolet radiations. Due to this fact, this light cannot be recommended for museum lights.

.How to measure U. V. Rays

U.V. radiation is measured with the U.V. Monitor,-an instrument for detecting and measuring U.V. radiation.

To protect the museum objects from U.V. rays, U.V. Thon sheets or U.V. Thon jackets are recommended which absorb 97/98% of Ultra Violet rays.

These U.V. Thon jackets are clear transparent plastic covers made in a spring role and slip easily over tubes. These are supplied 47"/48" in length and 1½" in diameter and can be cut as required to cater for any length.

Insects

There are many kinds of insects known to attack archives and books as well as museum objects of wood, textile and leather. They can cause irreparable and extensive damage and it is essential that necessary action should be taken to control insects infection in its early stages. This can be achieved by the practice of constant inspection of objects on exhibition and in storage. For the types of insects, their food and consequential effects on museum objects and ways and means to check their attack and treatment of affected objects, see above PP. 115—117 of my article 'Care and Repair of Archivel Material'.

Metals

Metals are also very durable like stone, but are not totally immune from deterioration. The main metals in use from ancient periods are gold, silver, copper, iron, lead and their alloys. Bronze (an alloy of copper and tin) and brass (an alloy of copper and zinc) were very popular in ancient times.

Special Methods used in treating Metal Objects

Silver and its Alloys

Silver Dip : as Godderd salt immersion in or application of 5% thiourea solution in distilled water containing 1% of non ionic detergent (e.g Lissapol). Silver dip is recommended for removal of tarnish, light patinas.

Formic Acid : Immersion in 30% hot formic acid made by diluting the commercial acid with 2 volume of distilled. H_2O Vapours evolved are irritating. This treatment is recommended for base silver objects (e.g. coins) encrusted with corrosive product of copper.

Ammonium thio-sulphate 15% in distilled water containing 1% lissapol. This solution has slightly more vigorous action than silver dip.

Copper and Its Alloy

Citric Acid Solution : Immersion in a hot 2—5% solution of citric acid in distilled water.

Temperature 50—80°C.

Recommended for separating copper alloy objects joined by corrosion products. A coating of copper powder is usually found over the object. After treatment it is removed by brushing. Citric acid is apt to strip off all the patina.

Sodium Hexametaphosphate

Soaking in a 5—15% solution of sodium hexametaphosphate.

Silver Oxide : Dry treatment of local out-bursts of bronze disease (Corrosion by cuprous chloride) with silver oxide (Ag_2O) powder.

Stages in Process are as follows :

1. Excavation of the spots of disease.
2. Local application of dry salt-free silver oxide powder with a pointed match stick using alcohol as a medium required.

Please never use Sulphuric Acid in any case for cleaning the metals or coins.

Iron

The fact that caustic soda (NaOH) is a rust inhibitor gives it an advantage over acid electrolytes in removal of rust. Treatment must be followed by intensive washing to eliminate chloride.

Or

Oxalic Acid 9% solution in distilled water can be used as a rust remover.

Textile

Cleaning

Water dissolves a greater number of substances than any other liquid and is the best solvent of ordinary dirt. For textiles that can be made wet without harm, washing is the simplest and most efficient method of cleaning. The water should be soft for this is better for textiles fibers as well as more effective in removing soiling matter, than water containing dissolved minerals and gases. The difference between washing with soap in soft water gives lather freely.

Soaps and Detergents

The function of soap and synthetic detergents, technically described as wetting or surface acting agents is to reduce surface tension of water, causing it to spread.

Deacidification of Paper

The presence of acid impurities in paper causes it to become brittle due to degradation of the cellulose.

A simple practical method for the deacidification of brittle paper was devised by Barrow. The document is first immersed in a saturated solution of calcium hydroxide (lime water) which neutralizes the acid. Any excess of calcium hydroxide is removed by subsequent immersion of the document in a dilute (about 0.15%) solution of calcium carbonate in water.

This method cannot be used for water sensitive ink. In such cases a non-aqueous methods of deacidification must be used. For this purpose prepare a

dilute solution of barium hydroxide in a methyl alcohol by dissolving 18.6 g. crystalline barium hydroxide in one litre of methyl alcohol. The document to be deacidified is then immersed in this solution which neutralizes the acid impurities.

For more details on care, repair and preservation of paper documents see above pp. 111—124.

Lamination

This process for conferring strength to documents which are brittle due to degradation consists of sandwiching the document between two sheets of suitable transparent supporting material. The classical method of lamination is that of silking, a process in which both sides of documents are covered with fine silk chiffon having an open weave that is attached, by adhesive such as starch paste or dextrine. For a more exhaustive treatment of this subject see supra pp. 122—123

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WASEEM AHMAD

Effects of Light on Museum Objects

All museum objects must be exposed to certain amount of light, natural or artificial, in order to render them visible to the spectators under favourable conditions. But, this exposure of museum objects to light has its bad effects as well. The U. V. rays and the Infra Red radiation of light discolours, disintegrates and damages the objects exposed to light. This deteriorating effect is large or small depending upon how we use light in a museum, and what precautionary measures we take in this matter. In order to understand the effects of light on museum exhibits, it is at first necessary that we should know what 'light' really is.

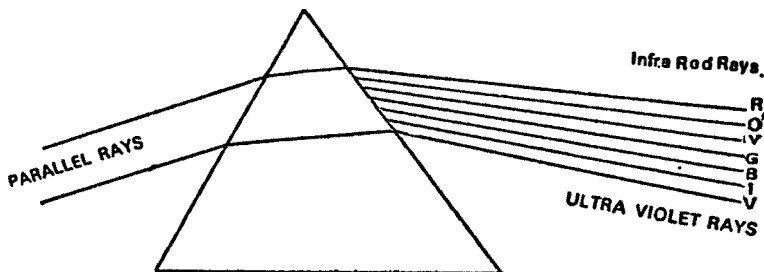
What is light

Light is a form of energy which stimulates the organs of vision producing sight. According to Newton's Corpuscular Theory, light consists of infinitely small particles passing through space at a high rate of speed. Hygen a (Danish physicist) described light as 'waves of energy projected through the luminiferous æther'. Another theory, known as Electro Magnetic Theory, is advanced to explain the nature of light as a specific range of wave length and considers it as a form of radiant energy.

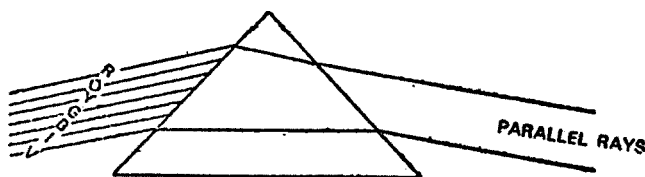
White light, such as sunlight and the light from an ordinary electric lamp, is composed of seven wave lengths each of different colour. These seven colours are jointly known as VIBGYOR (a combination of initials of Violet, Indigo, Blue, Green, Yellow, Orange and Red). These are also known as seven colours of rainbow. When such a light passes through a glass prism, the emergent beam is not only deviated from its path due to refraction through glass but also spreads out into a broad band of seven colours. This band is called Spectrum and this phenomenon of spreading away of components of light is called Dispersion. But even beyond the limits of the wave lengths of two outer-most light rays i.e. Violet and Red, there exist some light rays which are invisible to the human eyes. Those beyond the violet end of the light band are called Ultra-violet or U. V. Rays and those beyond the red end of the spectrum are called Infra Red Rays. This means that the light band can be divided into three parts :

1. Invisible Ultra-violet Rays, having wave length 3000-4000 Å° (Å° stands for Angstrom Unit for measuring wave length).
2. Visible Light band, having wave length 4000-7600 Å°.
3. Invisible Infra Red Rays with wave length 7600 Å°.

This can be demonstrated with the help of following diagrams :—



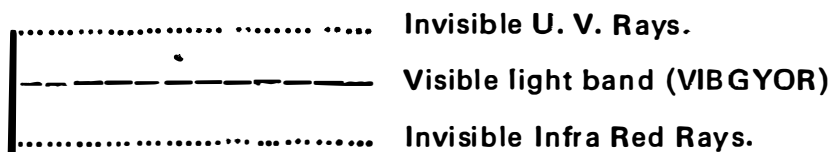
- (a) Place a prism in a very dark place. Pass a beam of light through it. It is observed that after refraction we see seven colours of the rainbow on the screen instead of one ray.



- (b) Reverse the process.

Place another prism in place of screen. It is noticed that once again a single ray is obtained instead of seven rays.

- (c) Following diagram can explain the actual position of light on the screen :



Whereas only the visible part of light band helps us in seeing museum objects more favourably, all parts of light do damage the museum exhibits to one extent or another. On the one hand ultra-violet rays and the visible light bring out photolytic decay and on the other, the Infra Red radiation due to excessive lighting causes the temperature of an object to rise above that of its surroundings, thereby accelerating process of deterioration. Particularly, bright sunshine is very detrimental to paper and textile causing its colour to fade away and making it very brittle. Any document exposed to intense light, natural or artificial, will have an increasing acidity and so lose its physical strength. The colour of the ink and paintings are also greatly affected by intense light.

Kinds of Light

The light is of two kinds :—

1. Sunlight or Natural Light, and
2. Artificial Light.

1. Sunlight

Sunlight or natural light is the least expensive source of lighting museum exhibits. However, it is not without its short comings. First of all the source is undependable. It can be utilized only at day times. Even at day times it can be utilized only in clear weathers and only in those parts of building where sunlight can reach. Sun-light can be used for lighting a room or illuminating an area, but it is not convenient for illuminating all types of objects. Particularly it is not suitable for lighting statues and other objects causing strong shadows. There are some grave technical problems as well. It is difficult, if not impossible, to control the intensity of sun-light. Direct sun-light hitting a museum exhibit damages it too quickly: it raises the temprature of the object and bleaches its colours or make the object brittle. The tropical sun-light is much more harmful than the light in other regions. Similarly, summer light is stronger than the winter light. Thus, if even ever it is necessary to use sun-light, it should be used with utmost care. It should be used indirectly and its intensity must be brought down to the minimum desired level in such case. Its intensity varies from time to time, from place to place, and from season to season. In the museums at Mohenjodaro, Harappa and Banbhore, show cases are lit by sun-light through back windows placed high up in each showcase. But in general, use of natural light is diminishing in all countries of the world including Pakistan.

Moreover, the sunlight is rich in ultraviolet radiations. Since the intensity of these radiations varies with place, season and time, they are not very useful for a quantative study of photo-chemical reaction.

2. Artificial Light

In this modern age man cannot rely on natural sunlight. As sunlight is for specific period, it cannot be utilized after day time. Even during day time it is avoided due to its heating and bleaching effects.

In order to overcome the problems of use of natural light for illuminating museum exhibits, artificial lights of different kinds are now being used for the same purpose. Artificial lights are of the following types :—

- (a) Flourescent Light.
- (b) Incadescent or Tungston Light.
- (c) Mercury Light.

(a) Flourescent Light

Flourescent lights emitted from the flourescent tubes causes fading of museum objects and archival material. Besides, discolouration of dyes due to harmful rays in some cases causes deterioration of fibres in certain materials.

(b) Incandescent Light

This light is the least harmful among all artificial lights & hence recommended for museum use. However, the tungston-halogen lamps have

quartz envelope in place of glass. These light sources may emit appreciable quantities of damaging U. V. radiations at a wave length shorter than the range to which monitor is sensitive. Light source with quartz envelopes must be fitted with a filter of ordinary glass for museum use and if necessary, a U. V. absorbing filter also be used. However, despite its being least harmful among all the artificial lights, museum all over the world tend to minimise its use due to yellow colour of its light.

(c) Mercury Light

The fact that a brilliant light is emitted when mercury is vapourised in an electric arc, has led to the construction of Mercury Vapour Lamps. A mercury vapour lamp generates the maximum amount of ultraviolet radiation. Due to this fact, this light cannot be recommended for museum lighting.

Thus it becomes clear that all direct lights—natural or artificial, are harmful for museum exhibits and the best way to avoid this harmfulness is to lit the halls/rooms and not the objects. But this is not possible in majority of cases. The objects have to be illuminated and as such the harm cannot be eliminated. It can, however, be minimised by judicious use of lighting. In other words, lighting must be controlled in relation to nature of objects, temperature and humidity.

Effects of Light on Museum Exhibits

For museum objects, light means damage. Light effects on the museum objects is different in different environments. The light in presence of dust particles in the atmosphere or on the museum objects in presence of oxygen and water vapours form a substance which accelerates the aging of objects. The oxygen and water vapours in presence of light bring about an oxidative decay of the polymer material. At the same time this active oxygen, together with water vapours, forms hydrogen peroxide (H_2O_2) which decays the objects and bleaches them.

The surface of many museum objects are damaged due to exposure to light. However, following objects are more sensitive to light than others :—

- (i) Textiles (costumes, tapestries and rugs),
- (ii) Paper & Paper-machie objects.
- (iii) Leather.
- (iv) Paintings & Painted objects.

Besides, the light does affect objects of other materials such as wood, metals and even stones. But the damaging effect is relatively much less on these materials than on the materials mentioned above.

Effects on Textiles

Due to excessive light, fibres of textile degrade and result into cleavage in chain. Tensile strength of fibres decreases with decreasing average length of cellulose molecule.

In the case of dyed textile exposed to lights, it is well known that certain dye-stuffs have a protective action in slowing down tendering while other actually accelerate this washing of the tissue. When exposed to light fading occurs.

Dust particles present in textile specimens break the cellulose fibre in presence of light. All wave lengths of light shorter than 4860 Å can break C-C bond (or carbon-carbon bond) and consequently can be detrimental to many organic materials. This sort of decay in which light alone is the disintegrating material is called photolysis.

Effects on Paper & Paper-machie Objects

Paper is a substance composed of fibres interlaced into a compact web, made (usually in the form of a thin flexible sheet, most commonly white) from various fibre-material as linen and cotton rags, straw, wood, certain grasses etc. which are converted into pulp and from pulp paper is made.

The effect of light on some papers, like rag paper and superior type of radio-bond paper made of cotton or cotton objects. The cellulose chain of this type of paper undergoes disintegration with effect of U.V. rays. The effect of light on this type of paper is similar as that on textile, rather this paper is more affected by light as compared to textiles, due to its less resistance to wear and tear. Bright light i. e. sunlight or artificial light is very detrimental to paper. Ultraviolet rays make the colour of the paper fade. Infra red rays make the paper brittle. Due to heating effect, paper becomes dry and its strength decreases. Many documents exposed to intense light will have an increasing acidity and so lose their physical strength.

The colour of the ink is also affected by intense light.

Effect of Light on Leather Objects

Leather is the finished product of hide or skin. The colour and shades of the finished leather are produced by the combination of dyeing and finishing operation. Most of the dye stuff used at present are now synthetic coaltar derivative.

The finishing series of operation in production of leather includes mechanical treatment and application of finishing material to leather.

The following classes represent the more common material used in leather finishing :

1. Cellulose Ether,
2. Waxes,
3. Resin,
4. Dyes,
5. Pigment,
6. Lacquer material,

Almost all the above mentioned materials are affected by light.

As light falls on leather objects the ultraviolet rays discolour leather objects and their shades given by the dyes and diminish their pigment. As a result of it the originality of the leather is destroyed.

Infra red rays are equally harmful to the leather objects. The heat melts the waxes and split it haphazardly on leather objects. Thus the finishing of leather is destroyed. At the temperature of 62-64°C it shrinks approximately to one-third of its original length.

Effect on Painting

All kinds of paintings are sensitive to light. Ultraviolet rays fade the colours. If illumination value is high i.e., more than fifty lux¹, it bleaches the colour and dislocates it due to heating effect. Due to heat radiating from light, a paper itself and the colours on the painting expand. When light is off, both the colour and the canvas or paper contract. This repeated expansion and contraction of matter makes the object fragile. Most of the colours and surfaces which are affected by light are susceptible to both U.V. and visible light. Therefore, illumination level as well as U.V. radiation both affect the paintings.

Effective Check-up of Use of Light

To check that the lighting is controlled correctly, it is necessary to measure illumination value with a Light Meter and proportion of U.V. rays with U.V. Meter. Fortunately, equipment for all these purposes are available.

Pocket Light Meters are not accurate instruments and their reading is affected by the kind of light source used. Therefore, whenever used, they should be calibrated against one of the large light meters. The Light Meter is placed in the position of the exhibited objects. For a plane surface such as a picture the Meter should be parallel to the plane of the surface and facing the observer.

Then read the scale, taking care that the reader himself is not obstructing the fall of light on the Meter. The U.V. Monitor is pointed directly at the light source and gives the proportion of U.V. rays emitted by that source. Its reading is independent of distance between light source and instrument, though it is advisable not to bring into too close a contact with the light source.

How we measure the Ultraviolet Rays

U.V. Monitor :—U.V. radiation is measured with the U.V. Monitor. A U.V. Monitor, being an instrument of detecting and measuring U.V. radiations, has two main purposes in the museum :

- (i) To check that the U.V. illumination procedure is working correctly. This use alone makes it important for the Chemist.
- (ii) To investigate the presence of U.V. radiation in real and experimental situation with a view to improve protection.

1. Lux is an international unit for measuring luminous energy and is given lumens/sq. meter.

In most countries, many museums have no record about the lighting conditions in the museum halls, still less within showcases. According to a Canadian Survey, 105 museum galleries were requested to submit samples of ultraviolet filters in use. Sixty institutions supplied the questionnaire and 26 sent filter samples, which were tested as to their efficiency in removing ultraviolet radiation. It was found that only 25% of the institutions knew their lighting level, and that only 12% of them keep their lighting at acceptable level. An increasing number of institutions apparently use ultraviolet filters on fluorescent tubes, although no responding institutions reported the use of filters for day light. A number of ultraviolet filters currently manufactured appear to be excellent, and testing of such filters indicates that these can be used for at least 10 years.

No museum in Pakistan (except the Lahore Museum), uses these filters and has the knowledge of their lighting level. Excess of light is also harmful for the museum exhibits. Even when precautions are taken to protect museum objects from atmospheric pollution, adverse climatic condition and biological attacks, there still remains the very real danger that may arise from excessive exposure to light.

Recommendations for U.V. Control

The general recommendation to be found in works dealing with the conservation of antiquities is that the U.V. rays should be removed from all such light sources which emit a higher proportion of U.V. rays, than a tungston incandescent lamp does. This means that as measured on the U.V. Monitor, the U.V. rays should be removed from all light sources emitting more than about 80 micro watts U.V. per lumen.¹ It is important to remember, however, that removal of all U.V. energy from the illuminations does not make illumination harmless to museum exhibits. Most of the colours and surfaces which are affected by light are susceptible to both U.V. and visible light. Therefore illumination level as well as U.V. radiation must be controlled.

To protect the museum objects from these lights, U.V. Thon sheets are recommended. These sheets, or tube jackets, absorb 97/98% of ultraviolet rays. These jackets are clear transparent plastic covers made in a spring role form to slip easily onto the tube. These are supplied 47/48 "in length and 1½" in diameter, and can be cut as required to cater for any length.

May & Baker have two varieties of U.V. Thon sheets i.e. U.V. Thon-C and U.V. Thon-Y. Samples of both types are available in the Lahore Museum Laboratory.

U. V. Thon-C :—This is colourless transparent film which absorbs invisible ultraviolet light and this helps to protect against fading. U.V. Thon-C should be used only where limited protection is necessary and where the colour of U.V. Thon-Y is unacceptable.

1. 1 Lumen/sq ft = 10.8 Lux.

U.V. Thon-Y :—This coloured transparent film excludes ultraviolet light and also most of the visible short wave light rays here which the most active cause of fading. U.V. Thon-Y is the material to use where maximum protection is required.

How to get full benefit from U.V. Thon Sheets

- (i) Keep them lowered during day light.
- (ii) Sponge occasionally with a little detergent dissolved in lukewarm water.

In museums, general standard of light is 150 lux. More than that is harmful for museum objects. But for miniature paintings it should not be more than 50 lux.

Even in the Lahore Museum light level could not be controlled totally. Although protection of miniature painting is made by placing U.V. Thon Sheets and Jackets on fluorescent tubes, yet light level is high. As it is about 200 lux, whereas it should not be more than 50 lux. By using double layers of glass sheet with thick paper sheets in between or painting a glass sheet we have been able to bring down the light level to 50 lux.

The control just described apply equally to textiles as well as to other sensitive museum objects, such as water colour paintings. However, textiles are more sensitive to light than oil-paintings. The show cases in Islamic Gallery and Swat Gallery of the Lahore Museum, containing textile material have the intensity of light about 200 lux. This should not be more than 50 lux. The amount of fading is depending on the total time of exposure received. So that one year under light at a certain illumination value is equivalent in destructive power to two years under light of half this illumination.

The incharges of various galleries are requested to take the following precautionary steps :—

1. The National Gallery of Canada has a special form to be signed by the person responsible for the photography, giving precautionary measures for the operation of temporary lighting equipment used for still photography, motion pictures and television. The forms state that it is the responsibility of the Camera Operator to ensure that the lamps does not increase the surface temperature of the painting and textiles more than 5C° and that the maximum interval for illumination is no more than 15 minutes. This we can also apply in our museums.
2. The use of infra red filters is one of the simplest and most direct steps that can be recommended to reduce the heating effect of lamp.
3. No museum object should be allowed to be placed under sun for any purpose,

4. Lighting level within the showcases may also be reduced to 50 lux.

The human eye has very little ability to measure illumination value, but readily detects difference in brightness. A room may be very adequately lit and yet look gloomy if there is brighter room beside it. It is therefore suggested that galleries containing paintings, textiles and other fragile objects be the first where the lighting and temperature should be strictly controlled according to international standard *i.e.*, not more than 50 lux.

5. Light level in other galleries displaying stone objects, metallic antiquities, wooden objects, etc. may be increased gradually upto 150 lux.
6. When museum prepares to exhibit objects on television, the Chemist should be consulted regarding the general safety of objects like Miniature Paintings, textiles, etc.
7. In a newly designed museum an exhibition room should be designed to exclude day light. In existing museums, it is usually possible to block out day light from the exhibition room but in some cases, where the museum itself is architectural exhibit, there has to be a compromise. Showcases should be arranged within the room in such a manner that no day light falls on them or if this is impossible windows can be curtained and treated with U.V. absorbant varnishes.
8. The time of exposure can be lessened most easily by limiting the actual hours of viewing. But, this solution is not in accordance with the present museum policies. It must be limited, therefore, by ensuring that exhibits are illuminated only when there are eyes viewing them. Attendants must be trained to switch off lighting whenever a room is empty and switch it on again when needed.
9. Wherever textiles are displayed the flourescent tubes be covered with U.V. Thon jackets or sheet.

Appendix

THE LIGHT IN LUX FOR DIFFERENT OBJECTS

<i>Nature of Works</i>	<i>Approximate value</i>
1. Casual observation, corridors, stairways and Clock Room	10 LM/FT ² , 100 Lux
2. Rough Work Stock Rooms Large Assembly, Canteen	5 LM/FT ² , 200 Lux
3. Medium size detail, General Offices, Class Rooms, sewing light material	30 LM/FT ² , 300 Lux
4. Drawing Boards, Business Machines, Printing Works	45 LM/FT ² , 450 Lux
5. Fine details on dark material Small Assembly	70 LM/FT ² , 700 Lux
6. Minute details engraving Instruments Assembly.	150-250 LM/FT ² , 1500-2500 Lux

MUSEUM EXHIBITIONS

DR. GRACE MORLEY

Museum Exhibitions

The museum communicates most broadly with the public by its exhibitions. They are there to be seen and enjoyed, their message visually conveyed for those who care to look and to learn.

Permanent and Temporary Exhibitions.

Usually the majority of the exhibition halls or galleries in a museum are devoted to permanent exhibitions, that is, exhibitions from the museum's own collections, which remain unchanged for a considerable period. However, even permanent exhibitions usually are now changed at intervals, perhaps only to accommodate an additional item, or to substitute a new one for one earlier exhibition, or to alter the design of the exhibition as a refreshment for an arrangement too long familiar. But in the case of some material sensitive to deterioration, especially by exposure to light, even that most carefully filtered, such as miniatures and textiles and other organic materials, substitution at frequent intervals, say every six weeks, is imperative for preservation.

By contrast, the temporary exhibiton, whether drawn from the museum's own collections, or from loans from another or several other sources, is kept on exhibition for a short period. It may be a travelling exhibition organized by one museum and then lent successively to others for short periods of only a few weeks each. Naturally the same precautions against exposure of sensitive material to light should be applied. Also special care is required in order to ensure that repeated handling, and the installation and dismantling of the exhibition at different places, does not lead to damages or deterioration of the objects included.

Theme

The theme of an exhibition determines what type of museum objects should be selected to illustrate it and how they must be exhibited. They may be entirely of one kind, say miniatures, or of some three dimensional objects as well, such as large stone sculptures, small bronzes, terracottas, or objects of decorative arts.

Show-cases

Some items must be exhibited in show-cases. As a general rule show-cases, whether built into a wall or free standing, should be as unobtrusive as possible—safe containers of objects, but themselves as nearly invisible as possible. This means no ornamental features.

The miniatures would be shown in shallow wall cases, or framed on panels against the wall, or in shallow sloping cases. The sculptures, if large, might be

free standing on pedestals, either against the wall or distributed in the gallery, or they might also be in glass cases against the wall. The small terracottas, bronzes and decorative items, would have to be protected by glass cases, probably in deep wall cases, with shelves or with blocks, to support them. Or they might be shown in free standing cases. The problem would be to arrange this material, whether of the same kind or of different kinds, within the gallery space available, to illustrate the theme of the exhibition and in an agreeable way. A possible theme for an exhibition employing objects of different kinds might be 'jewellery', or it might represent a selection of a variety of art objects owned by a museum, a cross-section of a period perhaps, or the production of an artist who worked in many media. The aim of the exhibition is to show all the items safely protected but clearly visible, secure from possible theft and vandalism, or even from visitors' hands, curious to feel what an object is made of. The case with glass is the best protection, though it presents a psychological barrier between the objects exhibited and the viewer. The large sculpture on a pedestal therefore offers a welcome relief. Placing the pedestal on a platform beyond easy reach, or surrounded by a decorative area of sand or gravel, within a curbing, possibly adding potted plants, provides protection.

Probably the one rule which applies to all exhibitions, permanent and temporary is 'Avoid crowding; give ample space to each exhibited object in the gallery as a whole, but also in the separate cases'. With adequate space between objects they have the possibility of securing the viewer's concentrated attention, to make their individual appeals for appreciation and understanding.

Background

The question of background for cases and wall panels should be considered carefully. Lively and striking colours may make the general impression of an exhibition gallery attractive. But do they compete with the objects for the visitors' attention? A general recommendation for case and panel background is the use of neutral background, that is grey or beige. These unobtrusive tones work well for larger items, like sculptures or framed paintings. Cases in which small objects of delicate colour are installed require backgrounds of pale colours, perhaps contrasting in hue in order to give the exhibited objects all possible prominence. Pale, and cool colours, that is 'receding' colours in the blue and green range, tend to give objects prominence, if their colour value is not of the same tonality as the object, but presents a contrast.

Textiles for cases and panels are attractive ; they provide a pleasant textured but unobtrusive background. They tend to fade, however, and if objects are changed, faded areas may present a problem for the succeeding installation. For this reason, but also for economy, some museums use painted backgrounds, which can be renewed easily and cheaply, as required. Matt surface-effects are needed.

Lighting

Lighting for cases makes the objects exhibited in them prominent, so that

in a gallery of positive colour the cases stand out as bright areas. Concern for the adverse effects of light on organic materials—miniatures, manuscripts, textiles, for example must be kept in mind. Filters to prevent the destructive effect of ultra-violet rays from fluorescent tubes, and adequate distance from the source of light and sufficient ventilation against the heat of tungsten lamps and spot lights must be provided. Even with all precautions, a low level of illumination and limitation of exposure time to the extent possible, against any type of lighting are recommended. Like wise light reflected from a surface painted with zinc oxide is less destructive.

Installing the lighting arrangements outside the case or in an upper compartment of the case, has the advantage of making replacement of globes or tubes possible without opening the case of exhibits, but, likewise of eliminating the source of heat.

Humidity Control

Cases which are sealed and dust-proof are an advantage. Also they offer the possibility of introducing humidity control. For example, by means of silica gel in a compartment communicating with the exhibition area an object needing protection against humidity may be kept in a dry atmosphere, provided the chemical when saturated is replaced by a new lot. In some countries, where it is impossible or impractical to air condition an entire gallery, experiments are being carried out with large air tight cases, in which a small air conditioning unit is installed out of sight of the visitor. This may represent a satisfactory solution to the problem of protecting sensitive materials in difficult climates, or to protect them against air pollution. Technical advice on the dangers from light and from climate should be sought in the various publications on conservation available. It suffices to call attention to the subject here.

Display

Ways of installing material in cases need to be given careful attention by museum curators. It is tempting to devise an attractive installation, but if it represents any strain on delicate material, on textiles and costumes, for example, it should under no circumstances be used, however handsome it would look. The museum's first duty is to preserve safely the material in its charge. Only after that is ensured, it is permissible to consider how to interest, attract and instruct the visitor. Placing delicate textiles flat or on gently sloping shelves or case-bottoms, rather than hanging them in any fashion is recommended. Weak textiles may tear by their own weight. If they are sturdier or have a strong backing to reinforce the delicate fabric, hanging over a rounded rod of three or four inches diameter may be safe. Each textile piece should be considered carefully, with sensitivity to its weakness, when planning an exhibition, one may recall that the average visitor spends only a few seconds looking at any one object in a museum exhibition; it is not worthwhile to risk deterioration of a fine object for so cursory a viewing. Better to keep the

delicate rare piece in as good condition as possible for the reference use of the serious scholar.

Garments are always something of a problem. Should one use realistic or abstract manikins? Or should one use only forms, roughly of the required shape, padded and carefully planned in size to obviate any stretching or strain? If the garment is fragile, and full length, it may be wise to put the upper part on a well padded form and spread the lower part on an inclined shelf. The exhibitor must decide, after attentive consideration of each individual piece, what method to use in exhibiting it without damage. Under no circumstances should any metal fastener be used. This applies to all museum material, but is especially necessary to remember in regard to textiles. Pins, staples, nails, are alike destructive, injuring the threads, but, still more dangerous, sure to stain as the metal rusts, as it surely will.

Dioramas

Museums of archaeology, arts and history depend on the object itself to give its message. Rarely does a museum of this category think of creating an 'environment' for the items which it exhibits. An exception is a 'Period Room' often found in museums in the West, in which an authentic interior—an 18th century French or English wood panelled room, for example—furnished with furniture of the period, possibly even the furniture belonging to the room originally, provides a setting for a painting of the same period, again possibly originally hung there. Rarely do museums of archaeology and arts in Asia have a similar exhibition of a recreated setting from a given period and place.

On the other hand, the natural scale habitat diorama for ethnography has been created in more or less complete form in a number of museums, at the National Museum in Karachi, for example, for part of the ethnographic hall. In some museums in Asia, having natural history sections, the natural scale habitat diorama for animal groups has been well developed.

The reduced or miniature scale diorama has been used effectively in relation to prehistory in a few instances, as in the Indus Valley exhibition at the National Museum, Karachi.

This type of exhibition, in contrast to the archaeology, art type, must draw on the skill of craftsmen, modellers, carpenters and others, such as taxidermists for a natural history diorama, as well as the knowledge of the curator, to fabricate the accessories for the diorama. The miniature scale diorama must rely even more strongly on the artisan's skills.

Labelling

The individual label for every kind of exhibition presents no problem. It is based on the information recorded in the Accession Register, giving the title or name, artist or maker if known, material of medium, date of fabrication if known,

or period, school or find spot. For the convenience of precise and rapid reference, the addition of the accession number is useful.

For a case with a number of items on exhibition it is sometimes advantageous to plan a group label in order to avoid cluttering up the space with a number of individual labels. Each piece can have a number, which is referred to in the label. This is especially practical when all or many of the items are connected with another, when repetition of the general information which all shares can be avoided.

A variant on the use of small numbers near each piece is an outline drawing of the items in the case, with numbers, to which the group label then refers.

If labels must be in two or several languages the problem of avoiding overcrowding of a case with labels becomes more acute, and the device of the group label, possibly not placed in the case itself, but on the wall adjacent, permits a good solution.

To summarize : exact and reasonably complete individual labels are a necessity, but their interference or obstruction of the viewing of the objects is to be avoided. Thus a label should never be propped against any part of an item on exhibition, or overlap it. An exception is a label laid flat on an undecorated part of a textile, but even then it is better to have the labels in an accessible but non-obstructing location, conveniently at hand, but interfering in no way with viewing of the objects.

Generally some sort of introductory label, giving essential information about an exhibition, at the entrance of the gallery in which it is installed, is useful. The written information may be supplemented by a photograph or photographs, showing possibly the place from where the exhibited objects come, an archaeological site, perhaps, an artisan at work making some items, or some other interesting visual illustration. Maps, Charts and graphs may similarly be used as part of this introductory label. Reference to some book for further reading also may be appended.

In writing a general introductory label the aim should be to provide for the ununiformed visitor the information essential for understanding and appreciating the exhibited material, and, if possible, stimulate him to make the effort to learn for himself more about it. The style should therefore be simple and persuasive, and, above all, this label should not be long.

In some museums, a leaflet, possibly with an illustration or two, providing the information of the introductory label in more complete form, is provided at the entrance of the gallery for interested visitors to carry away as a reminder of their visit. Sometime they may deposit a small coin in a box with a slot, to pay for the leaflet. But free or paid for, this contribution to instruction of even the casual visitor may be considered a gesture of museum education.

Preparing an Exhibition

An exhibition requires thoughtful preparation. The subject or theme it is to illustrate, the items to be used for it, the space to be occupied by it, and the sub-divisions of that space, should be considered in some detail beforehand. Many museum experts make an exact model to scale of the exhibition gallery to be used, and with exhibition items, also fashioned to scale, study their arrangement, consider the circulation for visitors, test the colour scheme, and decide on all details of cases, pedestals, placement of labels, location of rest areas if any, decoration of the gallery with plants and any other matters pertinent to the specific project.

Meanwhile, selection of the items to be exhibited from the museum's own collections can be made. Or if the exhibition is to be the result of securing loans, arranging shipment, placing insurance and providing receipts can be carried on.

Catalogue

If a catalogue is to be issued for the exhibition, its particular form, content and design and its preparation for the press and its printing must be arranged in good time so that it will be ready for the opening of the exhibition.

Publicity

The public relations and publicity aspects of the exhibition likewise need attention. Usually a press preview precedes the formal opening, first to the select group of persons invited then to the general public. Press releases, giving the essential information about the exhibition in order to provide for the journalists material for their review articles, must be prepared for the press preview. Perhaps radio and television features of one kind or another may be arranged.

Invitations for the inaugural function must be printed and mailed in good time. If some event or series of events is to accompany the exhibition—a lecture by an eminent authority or a seminar of scholars, perhaps, all arrangements for that must be made. The education programme for the schools must likewise be planned.

Setting up Temporary Exhibitions

Among multifarious activities of a modern Curator, the one most important from public point of view is of communication with his visitors who throng his galleries. The degree of success of this communication depends largely upon the successful display of his exhibits. The Curator must, perforce, be an exhibitor. With this end in view the participants of the Museology Course were provided ample opportunities to conceive, plan, and organise a number of exhibitions during their training period. This opportunity also provided them facility of handling a variety of objects and tackling numerous problems which came in their way. One large size Exhibition on Calligraphic Paintings by Sadequain was installed by the staff of the Lahore Museum before the Course actually started, and then, while the Course was in progress, three other exhibitions of varied sizes namely :

- (a) Miniature Paintings on Ragas and Raganis,
- (b) Palaeolithic Stone Artifacts, and
- (c) Punch-marked Coins.

were organised one each by a competent officer of the Museum with active assistance of other colleagues and participants. These officers tell us the story as to how these exhibitions were planned and installed in an atmosphere of mutual cooperation and assistance with a view to providing practical training to the participants.

[Editor]

NUSRAT ALI

Exhibition of Miniature Paintings depicting Ragas and Raginis

While attending the Course of Museology I was given a short notice to arrange an Exhibition of Miniature Paintings on Ragas & Raginis. Being Display Officer, I am always prepared for such an emergency. But this time things were quite different. The idea was not merely to exhibit miniature paintings depicting specific theme but also to educate the participants and to make them aware of the problem of arranging such an exhibition. A team of about a dozen devoted participants was attached with me. This was, no doubt, a team work. But handling priceless paintings by amateurs was not without risk. Thus right in the beginning it was decided that no one except the Officer Incharge will be allowed to handle the original paintings. In order to provide the participants proper training, all the selected paintings were photographed and print prepared according to the original size of each painting. These dummies were given to the participants for doing all exercises, particularly the mounting, labelling and exhibiting. The mounting, pasting, etc. of original paintings was done by me in the presence of all the participants.

The first point to be considered was the selection of a proper and suitable place for the exhibits keeping in view the following :—

- (I) The location should be very conspicuous so as to attract the attention of every individual entering the Museum.
- (II) Exhibits should be placed in proper and balanced surrounding i. e. placing of exhibits should blend with their surrounding and yet be dominant.
- (III) With miniature paintings it is essential that they should be kept in proper show case under lock and key and they should be displayed at proper eye level.
- (IV) Approach to electricity should be at hand so that exhibits are illuminated properly.

Next came the problem of handling the Miniature Paintings. Original paintings being fragile, brittle and every valuable, under normal conditions, are not taken out of their storage space unless it is inevitable. Participants were, therefore, explained that when handling becomes inevitable, following precautions must be taken :—

- (a) Before touching an original painting, hands are to be thoroughly washed to avoid any grease or sweat for being smeared on the paint-

ings. If possible, gloves should cover the hand. In summer a neat towel should always be kept at hand.

- (b) One painting should be handled at one time. The remaining should remain in the storage space till they are needed.
- (c) The paintings should be handled from corners and lifted or turned over with utmost care to avoid tearing of brittle paper.
- (d) While a painting is being studied no liquid, water, tea, ink, etc. be placed on the table to avoid spilling over.

After selection, all the selected paintings were photographed. Participants were required to prepare Index Cards of the paintings giving all possible information about each painting. On the back of each card was fixed a large size photograph of the painting. This was absolutely necessary. No paintings was allowed to be mounted and exhibited unless its Index Card was ready.

After indexing came the job of mounting. In mounting a miniature painting the most important thing to note is the quality of the mount paper. It has to be acid-free. Unfortunately, in Pakistan, such paper is not available in the open market conveniently. However, we were grateful to Messers. Packages Ltd. for cooperation and assistance in providing us acid-free paper from their stock. The colour of the mounting paper is also significant. These miniatures are old, rare and quite a few torn out and faded, we used mount paper of grey colour. This dull colour has the quality to make the objects prominent.

Paintings were mounted on double leaf mount to keep them safe from both sides. In this regard two, instead of one, mounting papers of the size of the window of show-case were taken. An opening was made in the upper leaf in size equal to the portion of the miniature paintings to be displayed. As a normal practice, the lower border of the mount of the opening was left wider than the remaining three sides. The broader side was meant to exhibit the label. In order to maintain a balance and harmony among the exhibits, the beautiful border of majority of the paintings was kept hidden behind the mount.

After the preparation of mount, came the process of pasting miniatures in the mount. No ordinary gum-tap or adhesive paste was allowed to be used for this purpose. These are decidedly harmful for paintings and other paper documents. Besides, ordinary pastes leave stains after a short period. Therefore, instead of ordinary commercial paste, ordinary flour-gum mixed with insecticide was used. Flour-gum without insecticides is a good food for insects. For actual pasting, 1" wide strips of acid-free paper were cut and pasted with flour-gum length-wise at one edge of the reverse side of the painting leaving half an inch width of the strip free to be pasted on the lower leaf of the mount. The upper leaf was then placed over the painting allowing its best part viewed through the window.

As a rule, every painting must have its own label giving title, name of the artist, particular school and date followed by a brief description of the theme of the painting. The lower most line must contain, in smaller lettering, reference to Accession Number. The labels for this exhibition were prepared on the same lines. These were pasted on the lower border of the mount but always on the same place on all the paintings. This was done for the sake of balance and symmetry. Besides these individual labels, a main label for the Exhibition giving details about the theme of the Exhibition and other technicalities was also prepared for the help of the participants.

In all, 25 miniature paintings on the subject of Ragas and Raginis were selected out of the reserve collection of the Lahore Museum. 15 of them came from the Ragamala set pertaining to Jaipur School of 19th Century. Rest were from the collection of Mughal paintings of the Museum.

Last but not the least was the problem of illuminating these exhibits. Light, artificial or natural, is the deadliest enemy of miniature paintings. The paintings fade away quickly and become brittle if exposed to a strong light for a long period. Therefore, in case of miniature paintings, the use of light for illuminating exhibits should be most judicious and be limited to the barest minimum. If controlled natural day light is available nothing like that. Otherwise, light should be arranged in such a manner that it should illuminate the objects alone and does not strike the eyes of the viewer. The intensity of light should not be more than 50-55 lux since higher intensity would fade the colour and make the paintings brittle in a short period. Since in the Miniature Paintings Gallery of the Lahore Museum, where this Exhibition was arranged, there was no provision for natural light, we had to resort to artificial light. To control the intensity of light, ground glass sheet were placed below the fluorescent tube rods. The results were still not favourable. We then placed thick sheets of paper in between glass sheets and tube rods. The tube rods were provided with U. V. Thon Jackets or U. V. Thon Sheets to minimise the adverse effect of U. V. rays. The controlling of light in the above mentioned manner was done under the direct supervision of our Chemist.

Since the subject of this Exhibition was Ragas and Raginis in Miniature Paintings, miniature models of various musical instruments were procured and exhibited in one separate show-case. This made the Exhibition more interesting and charming.

SHAHBAZ KHAN

Exhibition of Palaeolithic Artifacts

Main objective of this exhibition was to acquaint the participants with practical difficulties of meaningfully displaying dead and shapeless objects like stone tools of remote antiquity.

The all-time purposes of such an exhibition are easy to comprehend, namely :—

- (i) To introduce our general public to the remotest history of 'man' in Pakistan which is represented through the shapeless stone tools alone.
- (ii) To display these dull, flat and unimpressive stone artifacts in such a way as to make them intelligible for a common man of today.

With these ends in view, we started planning this exhibition. Miss Humera Alam, Research Officer was my co-pilot, whereas a team of half a dozen persons from among the participants assisted us in more than one way. Stone implements from Soan area in Potwar Region of Rawalpindi district were our main tools.

Before starting actual work of display all the participants were given a brief introduction about the historic background, technique of manufacture and use of these stone tools. The participants were first explained and trained as how to distinguish a worked out artifact from an unworked one. It was demonstrated that if we drop a number of pebbles of the some size from a given height upon an equally hard surface with akin force the fracture of no two pebbles will be similar because according to a law of physics, nature likes disorder. Hence a uniform technique with controlled force must be applied to get the desired uniform results. This had been the practice in our remote past when our palaeolithic man was making his stone artifacts.

After this basic initiation to the subject, the participants were divided into three groups each group was made responsible for :—

1. Selection and cataloguing of stone tools to be displayed.
2. General layout of the exhibition space
3. Aesthetic display of the exhibits including preparation of diagrams, charts, photographs, maps etc.

The whole lot of palaeolithic artifacts in the reserve collection of the Lahore Museum was made available to the participants. They made a judicious selection

keeping in view the historic background, the typology of tools and aesthetic aspect of the exhibits. The selected tools were arranged on a large table and participants were asked to prepare index cards, one for each object giving their full description including a rough sketch of the objects. In all 40 tools, consisting of choppers, chopping tools, hand axes, cleavers, scrapers and flake blades were selected for display. Out of these 40, only 4 belonged to Pre-Soan, 21 to Early Soan, 9 to Middle Soan and 6 to Final Soan period. All these stone tools were displayed in chronological order.

The participants in the second group were given a free hand to select a suitable space for the exhibition anywhere in the museum premises. A few spots were pointed out, discussed and debated. Finally the newly built show-cases in the Indus Gallery with a single glass opening of 6' x 4' size and diffused light from the top through 1" square mesh of deodar grill painted white were selected for the purpose.

In front of these show-cases an area measuring 22' x 22' was enclosed with the help of free standing chipboard pannels (each 8' x 4'), erected on iron poles. These pannels provided a considerable wall space for the display of charts, maps, diagrams and a large oil painting (5' x 4') specially prepared for this occasion.

In order to make this exhibition more illustrative, understandable and attractive full advantage was made of charts and diagrams depicting the techniques of these tools. Coloured photographs of the findspots of these stone tools gave added colour to the exhibition. A diorama depicting a "Stone Age Man" working with his tools and a large size painting "Cave Men at work" were also displayed. Besides various maps showing the distribution of pre-historic sites in Pakistan and charts showing different terraces of river Soan with associated human finds were also displayed.

Coloured rice-paper in attractive shades and corrugated straw board was freely used to add colour to otherwise drab and monotonous exhibits.

Both descriptive and individual labels were used to explain the major tool types and the associated industries.

There was sufficient lighting inside the show-cases. One inch square wooden grill was used to diffuse and control the intensity of light. Bracket lights with adjustable angles and lengths were also used to illuminate charts and diagrams exhibited on chipboard pannels.

A brief note of introductory nature on different periods of Soan culture, the techniques of manufacture of Soan tools and its use was distributed among the participants.

Exhibition of Punch-Marked Coins

Coins have always been a great problem as far as their display is concerned. Their small size and relatively high value render them all the more difficult to display from visual point of view and more vulnerable from security point of view. For us the problem was even more complex. A few hundred punch-marked coins were mixed up in a huge collection of more than 30,000 coins and then our galleries were too big to display these tiny objects.

To begin with, the entire collection of punch-marked coins were sorted out from various safes. Afterwards a judicious selection of 360 good coins was made. Selected coins were arranged in different trays according to the metals *i.e.* gold, silver and copper and shapes *i.e.* bar, round, square, rectangular triangular and bowl-shape etc.

All coins were numbered and sent to our Conservation Laboratory for treatment and cleaning. The selected coins included one gold, seven copper and 352 silver.

Our next step was the preparation of index cards, charts etc. Index cards for all the 360 coins were prepared, giving full description of each coin namely type, metal, shape, symbols on obverse and reverse.

Charts of all the symbols on the obverse and reverse of each coin were prepared. The symbols on the obverse were divided according to groups *i.e.* Sun, Six-armed symbol, hills, animals, birds, water-animals crescents, dots, taurine etc. (with all their variations).

In the same way reverse symbols were divided according to their groups *i.e.* there were 53 forms of the crescent, 6 forms of the Sun and stars, 5 forms of hills and so on and so forth. The final charts for display purpose were prepared by Modeller of the Museum.

Since coins are not always easy to see and appreciate, large size photographs of best coins were prepared and used as background of the exhibits.

Then arrived the last difficult problem *i.e.* Selection of the spot for the display of these coins. All the galleries were too big to exhibit these coins conveniently. Matter was discussed rationally and a small portion in one of the corners of the General Gallery was selected for this purpose. Selected area was cordoned off with the help of chipboards. Panels fixed on vertical poles. For better viewing pedestalled showcases of appropriate height were procured and provided with locks from security point of view. Inside of these showcases was

lined with navy blue velvet. Coins were aesthetically displayed on circular and square wooden panels covered with golden and navy blue velvet pieces. The solitary gold piece was withheld from display due to its scarcity. However an enlarged photograph of this coin was displayed.

Descriptive and individual labels in English and Urdu were prepared by our Label Writer.

Last but not the least was the problem of light. Charts and Photographs, which were exhibited on the chipboard panels, were illuminated with the help of spot lights. However, coins in showcases were illuminated with subdued but sufficient fluorescent light.

Show-cases used for this purpose were slightly below the eye-level. This created difficulties for the viewers. This problem was conveniently solved by providing powerful magnifying glasses tied with chains of convenient lengths. Anybody desirous of seeing the coins from close was able to use the magnifying glasses and thus could have full satisfaction and enjoyment. The trick worked well. The chains helped magnifying glasses from not being lost.

MUSEUM EDUCATION

DR. GRACE MORLEY

Museum Education Programme

The school visit is the most elementary form of museum education and it is carried on almost everywhere, and usually with identical failures and deficiencies. Potentially a benefit for both pupils and teachers, it fails to fulfill its promise usually because there has been no preparation for it in the classroom before the visit, and often the museum is not notified of the visit in advance and so is un-prepared for it, not even having available a guide lecturer to help in leading the children through the galleries. But most frustrating of all, the visiting groups are too large and the children simply file through the museum halls with no time to stop and examine any exhibit or exhibition. Then there is no follow-up for the pupils after the visit, not even a report or letter to be written about it to fix some aspect of it in the memory of the young visitors.

What might be done instead is clear : teachers should be encouraged to come to the museum in order to discover what, among its varied offerings, provide some illustrations relevant to the syllabus which they are following. There should be a short introduction in the classroom to what is to be seen in the museum and what its relations to the lessons are, either by the teacher or by the the museum's lecturer, invited to give a brief talk. The visiting group should be kept small, if a large group of a hundred or so is inevitable, then the museum, if prepared for the visit, can have staff at hand to receive the young people and divide them into a manageable groups of 25 to 30, to be led to a few key exhibits of interest for their current lessons, which can be explained and discussed.

How to achieve this better prepared visit ? Here probably the most promising way to do so is to try to secure the cooperation of the school system and persuade it to organize short courses for teachers in which museum staff can demonstrate use of the museum for improvement of their teaching. This has proved very successful in a great many countries, including some in Asia. Both teachers and pupils benefit. In connexion with a museum which has a variety of collections, some of which provide illustrations of outstanding periods of the country's achievements in the past ; some insight into the variety of ethnic groups found in it today, with their skills in arts and crafts ; examples of the traditional arts of calligraphy and of decorative embellishment of varied materials, like metals and pottery ; and some sampling of the arts and items of luxury from foreign lands ; an alert teacher can draw much material to stimulate young people's curiosity and to enrich the knowledge to be found in their text books.

But museum education should not be limited to the school visit and even to fruitful broadening of teachers vision. There are the secondry school students

who can be encouraged to enjoy the museum, to have there leisure time recreational activity, led by museum educational staff. Hobby clubs for interest in coins and stamps collecting, for example, or 'history walks' through an old city, rich still in monuments of the past, recalling history, or sketch clubs, are all relatively easy activities for young people, which can be based on museum collections and need only some imaginative leadership to start off modestly.

For adults, regular lectures and classes on various aspects of art, illustrated by museum collections, are a possibility to be offered by the museum's own staff. Visiting lecturers can be featured, but also guest speakers from the community itself, offering a few pertinent lectures in series of three or four at intervals, might well stimulate the habit of repeated visits to the museum which it is so desirable to instil in the local public. Temporary exhibitions on suitable themes, drawn from the museum's own collections, or borrowed from other institutions for a special exhibition on some pertinent subject, preferably related in some way to the museum's collections, or a travelling exhibition from some source, possibly from another country through an Embassy or Consulate, are also a means to encourage the beneficial repeat visits. Sometimes a special seminar or lecture in connection with such an exhibition broadens the impact on the community and attracts an interested local group.

Screening of motion picture films on subjects related to the museum's collections is useful for the school audience, but also attracts the general public. A considerable number of films suitable for showing in museums of different types now exist. Those from foreign countries may usually be borrowed through Embassies and Consulates.

Meanwhile regular guidance at announced hours, though particularly helpful to visitors from other parts of the country and foreign tourists, provides a useful all purpose type of educational service.

Cultural Programmes

ICOM's International Committee on Museum Education includes 'cultural action' in its programme. Many museums, which have the good fortune to have auditoriums, or even a large gallery which may be adapted to give space to seats and to a programme of music or dance or a demonstration of some activity, include such events in their programmes, either on a regular basis, or from time to time, as a special feature. In some climates, such programmes may be presented outdoors, in the garden, perhaps under the shelter of a shamiana. This again is a device to encourage the beneficial 'repeat visits' so desirable for ensuring the full benefits of the museum to its public.

SHAHBAZ KHAN

Education Through Museum In Pakistan

The need for educating the masses through some visual aids has revolutionized both scope and function of a museum. The function of a museum, today, has been changed from mere collection, preservation and presentation to identification, publication and education. Till very recently the museums were regarded as repositories of antiquities where the visitors could discover and appreciate for themselves the importance of the exhibits. No attention was given to the function of a museum as a source of education.

To determine the role of museums in the field of 'Education', UNESCO organized three International Seminars, first in 1932 at Brooklyn, another in 1954 at Athens and the third one in 1956 at New Delhi. The 'MUSEUM', a quarterly review published by UNESCO, also devoted two of its issues on Education through Museums. It is the result of this that today Education Department is usually the most active functionary of a well organized museum in the West. This aspect is still generally neglected in majority of museums in Asian countries.

In Pakistani museums, the 'Educational Programmes' have no official recognition. However, majority of our museums are rendering educational service in more than one way but without asking for any credit. This is because we have extremely limited view of education in a museum. Education in a museum does not simply mean arranging and conducting visits of school children to a particular museum; this is actually children's museum programme or museum's school programme. Museum educational programme is much more than this. School programme is only a small part of it. Arranging and conducting visit of primary school and even college and university students in a museum, teaching school children about the collection of a museum, going to school and teaching there about museum collection, conducting ordinary visits at announced hours, arranging temporary and travelling exhibitions, organising symposiums, seminars, showing of movie films and slides, arranging regular, periodical or casual lectures by museum staff as well as by outsiders and allowing other cultural and academic agencies to arrange their cultural shows, exhibitions and other functions in a museum auditorium or museum premises and many more similar functions come under the title of 'Museum Education Programme'. Many of our museums are performing some or several of these functions in one way or the other.

Almost every big or small museum in the country receives school and college students in groups which are being conducted through the museum. Museum staff is always available to arrange conducted tours, if asked for before hand. Regular guided tours at announced hours are available atleast in the Lahore

Museum. This museum is also renowned for arranging temporary exhibitions of varied nature. It encourages other cultural bodies and educational institutions to arrange their exhibitions, lectures, seminars, symposiums, get-togethers, mushairas and even dramas and other musical performances within the museum premises. Its auditorium hall, along with many facilities and necessary equipment, is always available for the purpose. Besides, the Lahore Museum also arranges its own periodical lectures by eminent scholars of the country and foreigners, and paper reading sessions by its curatorial staff. Periodical films and slide shows have also been arranged in the past.

After the Lahore Museum, the most active, in education programme, is the National Museum of Pakistan in Karachi. Their educational activities include guided tours, quiz competitions, film shows, brief but delightful talks on creative art works, freedom to go around and enjoy etc. But this programme is orientated to satisfy school and college students alone. However, the museo-van service which takes up the responsibility of transporting school children from and to their educational institutions, has great advantage. The National Museum also arranges temporary exhibitions on some special occasions of national or international significance and, they also though very casually, arrange public lectures.

All other museums of the country contend themselves with 'ask and be guided' principle. School groups and other interested parties, when ask for facility, are always guided free of any obligation by competent personnel.

But the museum educational programme is usually more than what we have been doing in this country. A museum, in its real sense, is not a building but an idea, or a complex of ideas. The exhibits and even the building itself are part of the process of materialization of these ideas. The educational role of a museum can more easily be understood by museums of science and technology where most difficult theories and problems are explained in a simple illustrative and understandable way.

Today the efficiency of a museum is determined in inverse ratio of degree of care with which curiosity, pleasure and hunger for the knowledge is stimulated in the visiting public. Guided tours, illustrative materials, instructive labels, film shows, slide projections and supplementary labels, etc. are simply aid to these stimulations.

While talking about the museum education it should not be forgotten that visitors of various age groups, different mental levels and opposite interests come to the museum. Majority of visitors to our museums have no special trait. They are usually casual in their visits and most of them don't know why they are there. A fair number of them really come to accompany their friends or guests only. This is why they don't feel keenly the significance of an artifact and are not conscious of the total potential of the material displayed in a museum or a gallery of it. Our museums, therefore, have to play a double role : firstly to invite the

people or provide them an opportunity to come to have a look at the museum collections and secondly to arrest their attention for developing in them a taste to look at things with an inquisitive and educative eye for acquiring fresh knowledge. They should be allowed to become interested in new subjects, re-shape their values and change their order of priorities—all things which education is supposed to do. This is possible if the objects are selected and arranged in a way that every one who sees them should respond in a prescribed and guaranteed manner. The collection of a museum should always be used effectively towards the good and well being of the future and not as an embellishment to the traditional system.

It is usually said that the major difficulty in beginning the educational programme in our museums is the absence of a basic frame work for our museums and the educational institutions to work inter-dependently, and some sort of a basic prescribed course to be followed. But this is not the fact. As a matter of fact there could be no prescribed course and also no hard and fast rule for carrying out such activities. Essentially the educational role of a museum is to provide objective lessons and first hand experience which cannot be found in the books. The students can, therefore, have their courses individually tailored within the parameters of the museum's scope and other possible facilities, with the help of their teachers and the museum staff. The lack of proper educational programme in our museum is due less to lack of programming but more to shortage of staff in a museum. Majority of our museums have just one or two staff members on the curatorial list. This staff has much to do besides their normal curatorial duties—they explore, excavate and conserve monuments, do protocol and most of other jobs on their list. The museum educational service should, therefore, in our country, be designed to work without the visible presence of the museum staff. For this purpose, teachers from local schools and colleges can be trained to carry out this programme with their students independently. The museum staff will, however, provide all the possible facilities to make it a success. Lahore Museum once trained about hundreds of school teachers, as how to conduct students in the museum. The purpose was to educate them and to encourage them to come back every now and then with new badges of their students. But non of them ever turned up.

An education programme of a museum should not be on 'take it' or 'leave it' basis. The visitors should be asked to see slowly, observe closely and concentrate attentively. They should avoid to see too much at one time. The teacher should continually explore the ways appealing to the interest of the students. In the guided tours arranged for the purpose, the students should be made active participants by means of questions and discussions. The conducted tours, if followed by slides and film shows, quiz programmes, discussion sessions etc. will facilitate the process of learning for the students. The provision of class rooms, demonstration in laboratories and workshop facilities where the students can be allowed to learn by 'touch and feel' method can also bring good results. The

children who have a very sharp memory, as compared to that of adults and do not forget what they see, can more easily be benefited.

Now it is high time that museums should properly be used as an effective media for education and instructions towards the promotion of learnings in almost every field of life. The time has passed when museums were meant just to house antiquities and other remains from the past. Today the scope of a museum has been changed altogether. Now we have, besides the museums of archaeology, general history and folk heritage, well established Natural History, Geology, Science and Technology, Industrial and Commercial, Army and Air Force Museums in the Country. All of them are playing an important role in the 'Country's Education'. They can play still a more significant role. Their efficiency and real output towards Country's Education can more easily be increased if they are provided with a few basic facilities—the facility to transport students to and from their schools, facility for students to sit together in a classroom or lecture hall and the facilities of a workshop. It is not possible for the museums alone, which are already short of funds, to provide all these facilities. Only Government can help in this matter. The Government should not only provide these facilities but also encourage both schools and colleges to take their students to local and far off museums on one hand and on the other hand to compel museum curators to chalk out interesting educational programmes for the students. It is the responsibility of the museum staff to attract more and more people and to make it a place of interaction by arranging various cultural programmes and allowing other cultural bodies to organize various cultural functions within the museum premises. The museum thus will automatically become a focus of public attention. This will ensure 'Repeat Visits' by every body—teachers and students, parents and children, artists and viewers, etc. etc. Frequent visits to a museum will definitely educate people and teach them how to view museum objects and what lesson to get out of them. This will also develop a habit of observing the things critically. This is Museum Education.

**MUSEUM RESEARCH
AND
PUBLICATIONS**

DR. GRACE MORLEY

Museum Publication and Research Work

The collections of a museum of whatever kind provide the basis for study and research. For its own staff the process of registration requires securing and recording as complete information as possible on every item of the collections, gathered at the time of accession and registration, but also including as well data on the piece previous to its acquisition, as described briefly in the foregoing section on museum documentation. When objects are exhibited the Accession Registers may be expected to supply the indispensable information for individual labels, but introductory labels or explanatory labels on an exhibition commonly require study and research in pertinent literature in order to provide the reference framework of some breadth needed by the visitor.

More demanding is the research required for preparation of an article or a book based on the museum's collections. Even a simple descriptive report for publication of an item in the museum's collections, calling it to public attention as previously unknown, for example, would normally require research to discover pertinent references to similar or related material published earlier, while an article or book of broad scope might require months or years of painstaking research.

In the archaeology/art/history field, as in that of the natural sciences, specialized periodicals are outlets for such writing in the form of articles, while publishers usually are to be found for books of value. Usually the museum's curatorial staff and members of its educational department and its public relations officer may be expected to be the authors of such material. It may be the result of advanced post-graduate study or a by-product of their daily duties, but spontaneous and carried out as a personal contribution and not an assigned museum task. Such efforts are to be appreciated and encouraged obviously, for they represent often a very considerable sacrifice of effort and time. Valuable publications by its staff members, even when not directly connected with their duties in the museum, contribute to its prestige. The museum's library usually plays an important role in making such work possible.

However, a museum with collections of importance may expect also to have scholars and scientists using them as a basis for research and eventual publication. Normally museums welcome such use of their collections and encourage scholars and scientists to carry on research, provide often special facilities for them, photograph material for them or make prints for them, if negatives already exist, as a courtesy without cost, or at reasonable rates. The museums are glad to have this type of collaboration in assembling information on their collections and

in making them more widely known. However, the museum expects to have the source of illustrations acknowledged and usually requests one or more copies of the article or book for its library as a small return for its courtesies.

More intimately connected with the museum's own programme are the publications which it brings out on its collections and activities. They are often included in the work programme of its officers, especially curators in charge of collections, but frequently also, for some categories of publications, staff members carrying on educational work and public relations responsibilities.

Catalogues of collections are a particularly important publication of a museum. With accurate listings of the items in a given collection and a sufficient number of good illustrations they provide an invaluable record and reference tool. But they may, in their introductory text, make a contribution to scholarship or science, based on the listing, but of broader significance. On the purely practical level they serve as documentation of ownership, which, for the art field, where theft are so frequent at present, they prove useful. On a similar level are monographs on an object or group of objects.

Some museums publish quarterly or annual bulletins or journals in which illustrated articles about items in their collections and accounts of related material appear. Usually depending on contributions from the staff publications may sometimes include articles invited from experts outside the museum, either on some object or objects in the collections, or on some other subject of interest.

Guide books for museums may take many forms, from very detailed and complete descriptions of the institution, gallery by gallery, with at least every item of importance mentioned, with some data about it, and abundant illustrations, to attractive leaflets, giving the plan of the museum, the location of the various collections, and some significant illustrations. Each type has its value.

Small brochures or booklets, well printed, well illustrated, containing essay on specific items or collections, for sale at a moderate price, have proved very popular in some museums.

Catalogues for special exhibitions are a useful type of museum publication. They may range from a major work, with an important essay on the subject of the exhibition, lavishly illustrated, with the detailed listing of the items included appended to the leaflet, providing a general introduction to the exhibition.

For all the varied publications mentioned here, as for the preparation of an introductory or general label, the value of good library is obvious. It must be planned to complete, supplement and complement the museum's own collections and, if possible, have even a broader scope in related fields. It should include pertinent periodicals as well as books, and if a trained and zealous librarian can

be in charge of it, its usefulness is enhanced. Staff including junior and subordinate staff, should be encouraged to make use of it, and gain the habit of following as closely as possible the literature related to their own fields of specialization.

Not directly dependent on research, yet undoubtedly stimulated by the climate of alert concern to which preoccupation with research and the desire to make more widely known what one personally enjoys, is the large category of popular publications and publicity. Notices of lectures and other events in the museum, mailed to a selected group, are examples. Picture post-cards and colour prints and posters, likewise, belong in this group of publications.

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MUHAMMAD ASGHAR

Role of Museum Library in National Development¹

Libraries do take part in development of a nation. National development is the sum of all progresses and promotions which take place in constituencies of framework of a nation. It is not limited to only one aspect of the whole. For example, if economically we are stable but our social and cultural values are condemned, then we shall not be termed fully developed nation. We shall be socially handicapped.

It is the type or kind of materials, a library maintains, which effects the human mind. Scientific literature will lead to scientific inventions and that of humanities otherwise.

A leading scholar of our country Mr. M.M. Sharif ('National Integration and other Essays') once pointed out that successful response to challenge, creativeness, knowledge, moral character, and planning are the five basic conditions for national growth or development.

Here we see that creativeness, knowledge and moral character are directly related to libraries or more specifically to research libraries. Study and educational level play a basic role in the formation of character of a man. Planning, to some extent, is also indirectly dependent on these as characteristics of political, economic, social and cultural systems of a nation influence the national planning. Healthy, sound and perfect education prepares healthy sound and perfect mind, which characterizes and originates sound and perfect systems. Hence our national planning enjoys developmental principles.

As is pointed out, creativeness, or in other words research is a basic factor for advancement. Knight says: "It is studious investigation directed towards the extension of knowledge". Creativeness is conducted on the basis of what is already known to us and in which hidden corners are enlightened. Only experimenting in a laboratory and to make world know the facts related to these investigations is not the only research. It may require expeditions to unexplored regions and study of collections in galleries and museums.

Narrative of various expeditions and travels, explanations of art objects and antiquities, their critical study and acceptable generalizations etc. emerge as written records and are assets of libraries. For further investigation and advances in knowledge these, the written records, are helpful. This way these

1. Quite many museum in the Country have libraries attached with them. The Library of the Lahore Museum is the largest and best among them. It possesses about 25,000 volumes on its list. The libraries of Peshawar Museum and Taxila Museum are equally impressive as far as their collections of rare books are concerned. There are smaller libraries attached one each with Swat Museum, Mohanj daro Museum, Bahawalpur Museum etc. National Museum of Pakistan, Karachi has, unfortunately, not yet developed a library worthy its name, (Editor)

research libraries are a means for creation of a new civilization. Materials in these affect the health of scholarship and hence of society as a whole. Libraries with poor literature may not revolutionize a nation. Only those with extensive materials may do so.

Another factor of national growth is successful response to challenge. It is accepted that books of great merit and excellence can give a nation intellectual and moral equipment which can create the type of manhood and social order that can accept the challenge of this age. Challenge is the element which motivated and compelled the human beings to do something and to think for some thing. In primitive ages when the challenge of cold was faced, caves were discovered and dress of leaves and bark of trees was invented. Hunger forced the creatures to hunt. Among these the man, because of his thinking power, developed different arms to make the hunting convenient. Modern scientific developments took place due to the same factor. In this way the knowledge grew and in order to preserve the knowledge libraries came in to existence.

It is a historical fact that there was a time when caves were dwellings, stones were arms, leaves and bark of tree were clothing and wild plants and raw meat of animals were food stuff of our ancestors. Now quite many of us live in centrally air conditioned houses. Most dangerous weapons have been invented. Most sophisticated clothes are in our hands and dishes of so many varieties are on our dinning table. This, man's journey from cave to the outer space, is a journey of knowledge. Hence role played by libraries which are the repositories of our knowledge that could be confined to record.

Whenever there is a mention of National Development, the scientific and technological advancements of a nation at once strike to our minds. It is thought, that National Development means advances on this side. As it is the era of science we cannot and should not deny the scientific and technological developments, but these are also dependent on some other factors, such as the historical, cultural and social values as well as economic conditions of a nation. Historic factor plays basic role in the development of any nation. Here the value of museums and their libraries cannot be ignored. Historic material is an integrated part of museums and their libraries. Antiquities of Lahore Museum range from prehistoric times to modern period. Lahore Museum Library maintains historic documents of national character i.e. Shahi orders of Muslim India and those of Sikh period, letters of our heroes. etc. All these help us to study our past and know the realities.

Paul Sears has defined culture "as the way in which the people in any group do things, make and use tools, get along with one another and with other groups, the words they use and the way they use them to express thoughts, and thoughts they think." This definition helps us to understand that growth in our cultural and social values is equally important, as technological and scientific developments are for development of our Nation.

If basic functions of libraries are well understood, i.e. (1) The preservation of materials, (2) Research, (3) Information and (4) Education, then we shall face no difficulty in determining what role libraries play in National Development. The libraries are service oriented institutions. These have a duty to preserve knowledge so that none is lost, organise knowledge so that none is wasted, and make knowledge available so that no one need be deprived. A nation invests on libraries, not for wasting its finances, but to have satisfactory service from them, so that the nation may advance.

People pay taxes to the Government, so that, among others, libraries can run along-with other Government financed bodies. These provide educational services in return, so that the minds to run the Government institutions are developed. This way these discharge their responsibility.

Libraries are given the name of yard stick for measuring the development of a country or nation. These may give us a view of advancements of a nation. Libraries, poorly equipped and with limited materials, will be the sign of a non-developed country. So developed nations will have fully developed libraries with latest techniques of dissemination of information and non developed will have otherwise. Hence by witnessing libraries of a nation, its growth is well imagined. From this it is evident that development of a nation is directly proportionate to its libraries or in other words libraries are the soul of National Development.

The major part of a library is comprised of book form materials. The value of a book is ever-lasting. Their importance is recognised with the words : "great thoughts, noble ideas brave all barriers of time and space through books". (Man vs Books by M. I. Ghazi) Books are real and greatest treasures of man's creativeness. This way knowledge becomes immortal. The books or written records are authentic sources of the transmission of knowledge. This way the investigator goes beyond what already he finds in such records. He has not to be bothered about previous experiences recorded in these sources.

Without national integration, the national development will have to face many difficulties. National intergration is the end result of the social processes which tend to harmonise and unify, diverse and conflicting units of national life. Museums are important means of national integration. These help us to co-relate various aspects of our national life and the library maintains written records of these all co-relations. Displayed objects are only viewed in the museum, their full explanation at that occassion is not easy, but a book containing information about these may be enjoyed anywhere.

If we are able to create a spirit of using libraries up to entire satisfaction, then it may be thought that we have changed the fate of our nation, because the right use of libraries is one of the most potent factors for shaping the life of a civilized community. It is the library, again that keeps engaged the civilization of the past and present for the knowledge of posterity.

Museums are of so many kinds, i.e. archaeological, cultural, arts and craft, biological, geological, science etc. But here I am talking with special reference to archaeological and cultural museums and more specifically Lahore Museum. Museums of this type are repositories of our cultural heritage. These are also imparting education to the masses. These are not static, but are growing day by day and are exploring new ways and means to be effective. Research is meant a normal part of the duties of museum curatorial staff. It is conducted for :

1. Authenticity of specimens and to be confident of data on labels in the museum.
2. To answer queries.
3. To solve the perplexing problems in history of art and/or science.

Research related to museum is not limited to museum staff, but other specialists are also involved. Museums provide facilities to them for this purpose. The Research, a basic and important activity, is also being performed in our country. New aspects are explored to enlighten the outside world. It needs no argument that research is impossible without libraries. So majority of museums in our country are maintaining their own libraries in accordance to their resources. It is justified to say that a library is indispensable for study and determination of objects in a museum.

Museum library supplements and explains critically, the objects housed in a museum. In a museum library subject fields are prescribed by the speciality of museum, his clientele is made up of experts. In modern sense, museum libraries are with special collection of books and other materials which are maintained by museums for research and educational purposes and which stand in a direct supporting relationship to the collecting scope and purpose of the museum.

Museum library is one of the types of special libraries. As a special library of a particular administration, it serves the officers of that administration, the staff of the museum, not only by providing a reference collection just also by responding actively to their specialized information needs. The maintenance and servicing of photographic archives, slide collections, picture collections, and pamphlet files are only a few of the documentation activities that go on in the museum library. The museum might gather information from the publications that come into the library daily, and on the basis of reader profiles disseminate it selectively to staff members with an established need to know every thing about a particular subject. This involves some abstracting and indexing of periodical articles, a Current 'contents' information service, data files, and other typical aggressive services of the kind that distinguish the special from the general library.

Lahore Museum Library is maintaining collection on the following subjects with special emphasis on the sub-Continent :

1. Museology.
2. Archaeology.
3. History.
4. Arts and Crafts.
5. Culture and Civilization.
6. Ethnography.
7. Anthropology.
8. Architecture and
9. Design.

For understanding library techniques, works on librarianship are also going to be acquired. It is also worth to mention that some learned personalities of Lahore i.e. Maulana Ghulam Rasul Mehr, Lt. Col. (Retd.) Khawaja Abdur Rashid, Dr. Abdul Salam Khurshid, Dr. Muhammad Baqir and Begum Hijab Imtiaz Ali Taj have donated their valuable collections to the Museum Library. Now these collections are open to research scholars. These comprise a major part of the collection of the Museum Library. Due to the basic research function of the library it is necessarily contributing to advancement of knowledge and hence in advancement of our people in the city and education.

A few years ago it was pointed out by Mr. Mahmud Hussain, "Of Libraries and Librarians" to realize the urgency of collecting the materials pertaining to our art, literature and history. About almost all collection of Lahore Museum Library, it is consisted of these subjects. The requirement of various types of material, such as manuscripts, early printed books old and rare journals, newspapers and other documents, was emphasised. Lahore Museum Library is trying for the same. The results are positive. There are about seven hundred manuscripts, also many rare, documents, books, journals and newspapers like daily Zamindar, daily Inqalab etc. are available in the library. Materials like these are a part of our cultural heritage and apart from helping the cause of research they play a distinct role in creating and strengthening national consciousness.

Lahore Museum Library is a non-lending library. It is because of two main reasons: (1) Efficient availability of required materials to the scholars when needed in the library and (2) Preservation of material. If a book is lent to a reader he exercises less care in returning the book to the library and then it is lost. They may also be careless about its wear and tear.

The library is opened to all bonafide readers. Only students are asked to produce an introduction letter from their head of the institutions. Donated collections are being processed. For the convenience of users printed lists of collections of Dr. Abdul Salam Khurshid, Imtiaz Ali Taj and hand written list of

Ghulam Rasul Mehr are available in the Library. Lamination, fumigation and other preservation and restoration facilities are provided to the library. Unfortunately, at present we do not have microfilming, micro-fishing and photostating facilities in the library. We hope to get some in near future. The Library has complete author and title catalogues of its own collection. Subject cards are also being prepared. Serials are housed in a separate room adjoining to the main library Reading Room and are arranged alphabetically by their title in open shelves.

Let me conclude with the words of M.M. Sharif : "Every nation takes pride in its national assets, its national monuments, and achievements of its heroes, statesmen, artists inventors, social workers and thinkers". Museum libraries are expected to house all written records about these all and by these all.

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Source Materials and Their Bibliographical Control

In this paper I have tried to give an outline of the categories of source materials and the methods by which their bibliographical control is possible. While discussing the problems of acquisition of research materials and their control I would like to emphasise that future generation will probably blame us or praise us, not for our fine catalogues, classification scheme, circulation systems and reference techniques but for what we manage to save and pass on to them. The source material can be divided into two broad categories :

- (1) Books
- (2) Non-book material.

The acquisition and classification of books is not a difficult task. Information concerning new books is obtained from various sources i.e. publishers, announcements, book reviews in newspapers and periodicals and listings provided by agencies, and they can be classified according to famous classification schemes such as Dewey decimal classification, Universal decimal classification, Library of Congress classification etc. As regards old books which are out of print the librarians and archivists usually seek the help of second hand book dealers in obtaining these. Many dealers provide this service but some specialise in researching these materials.

It is with the second category of material i.e. non-book material where we are faced with problems of their acquisition and control. At the outset let me determine the categories of material which should be collected and controlled for the future research scholars in Pakistan. The categories are :

- (i) **Public records** i.e. files of the Ministries/Divisions/Government Departments/Autonomous bodies which are of permanent nature and have research values.
- (ii) **Government Publications** :—Various types of Government Publications are :
 - (a) Debates and Proceedings.
 - (b) Annual Reports of Departments.
 - (c) Special studies by Commissions, Committees and Reports of Ad-hoc Committees.
 - (d) Publications dealing with rules and regulations of Government and its Departments.

- (iii) Serials—newspapers and periodical.
- (iv) Maps, atlases and gazetteers.
- (v) Reference materials such as directories, almanacks and year books etc.
- (vi) Theses and dissertations.
- (vii) Photographic materials such as microfilms, micro-fische, motion pictures, news reels, film strips, cassettes.
- (viii) Pamphlets.
- (ix) Press Handout and Daily Press (News and Views) issued by Press Information Department, Government of Pakistan.
- (x) Private Papers/collections.

Now I will deal briefly with each category of material indicated above :

(i) Public records

The first category of material i.e. public records are those records which are created by the Government during the course of an administrative or executive transaction. Thus their essential qualities are :

- (a) Impartiality because records are an actual part of the administration which produced them and they cannot tell the research scholar anything but the truth.
- (b) Secondly they are authentic because such records are characterised by unbroken custody.
- (c) The third quality of such records is their naturalness because public records are not documents collected artificially like the objects in a museum. On the other hand they accumulate naturally in offices for the practical purposes of administration.
- (d) Finally the inter-relationship because any archives is potentially related closely to other both inside and outside the group in which it is preserved and its significance depends on this relationship.

Since we did not receive any public records on the creation of Pakistan except for few photo copies of files which were required for disposal of certain cases as such our efforts for collection in this category of material will be limited to the period after 1947. It is encouraging that Ministries/Divisions/Government Departments have started transferring their permanent category records to the Archives and we are working on the draft of access rules to public archives. After the announcement of the Access Rules, it may be possible to open the records of the first years i.e. 1947, 1948 if we adopt 30 years rule as in other countries.

(ii) Government Publications

The next category of material as indicated above is Government Publications. The bibliographical control of this category of material poses

certain problems, because of frequent constitutional and administrative changes in Government machinery and confidential nature of certain publications which are meant for restricted circulation and are produced in limited number. They are not meant for public consumption in the immediate future. Here it can be argued that it is easier to control them because they are distributed by the Central Publication Branch in Pakistan. It may be pointed out that some Government Departments tend to produce their publications without the knowledge of the Central agency. It can further be argued that under the Copy Right Act all publications are to be deposited in the National Library but due to ignorance of this law the deposit is not complete. The only efforts made to produce lists of such publications in Pakistan have been by Mr. A.H. Siddiqi and Moreland. They have published two volumes i.e. *Publications of the Government of Pakistan 1947—1957* and *a Guide to Pakistan Government Publication 1958—1970*. It is therefore, necessary that the deposit of such publications under the Copy Right Act should be ensured by the National Library of Pakistan and that they should issue periodical lists of such publications for circulation to various research institutions in Pakistan and abroad.

(iii) **Serials—Newspapers & Periodicals**

Bibliographical control of Serials involve two distinct problems i.e. (1) the identification and control of particular titles which is achieved by directories, catalogues and union lists and (2) the identification of articles within each title which is achieved by indexes and abstracts. Of all the source material bearing on the life of a community the local newspaper is probably the most comprehensive and easiest to secure. Collected today, tomorrow it is a scarce and later perhaps rare or unique. The scope of information contained in a well run sheet is astounding and even against its own editorial will it reflects the events of its time. Newspapers and periodicals are therefore, one of the most important source material and coordinated efforts can be made in this field. Further separate files of clippings from newspapers and periodicals are useful and are of considerable historical value. Here subject files may be opened on important issues and the clippings may be filed in Manila folders and indexed by subjects. These efforts by us today for collecting and arranging clippings on certain important subjects relating to Pakistan, will be a valuable source material for the future research scholars. It is proposed that the National Institute of Historical and Cultural Research may consider appointing a committee of experts to prepare a list of such subjects relating to the current History of Pakistan. The Committee may meet periodically to update this list of subjects.

(iv) **Maps and Atlases**

No comprehensive guide to Pakistan maps and atlases exists. This

category of material needs to be controlled and a comprehensive guide to Pakistan maps may be issued. District Gazetteers are also important category of source material but the District Gazetteers available are out-dated. It is learnt that the Government of Punjab has taken steps in up-dating their District Gazetteers. The same steps may be recommended to other Provincial Governments.

(v) Reference material such as Directories, Almanacks and Year Books.

The next category of material which may be termed as general reference material is enormously varied category which may contain historical, statistical and geographical information, lists of office holders ; Who's Who, lists of Government departments, institutions, guides to events of previous years. Services which are the equivalent of annual registet or which provide chronological account of events, reprints of selected text from newspapers ; legislation, official speeches, treaties, trade agreements etc. are also important categories of reference material. The National Institute of Historical and Cultural Research can undertake such a project as no efforts has been made so far in this regard.

(vi) Theses and Disertations

There are wide range of Ph D. and post graduate dissertations, both inside and outside the country relating to Pakistan. For recording these theses a National list of these can be useful method of controlling this category of material.

(vii) Archival material on films etc.

Efforts should be made to collect as much as material from within and outside Pakistan on microfilms, microfische etc. relating to Pakistan. The microfilms, microfische may be indexed according to the subjects indicating the source from which obtained. News reels, film strips and recorded interviews of personalitites on cassettes may also be indexed in a suitable way.

(viii) Pamphlets

Most libraries and research institutions collect pamphlets. The purpose of pamphlets collection is to supplement knowledge obtainable elsewhere in bound volumes and to keep readers supplied with up-to-date information about a particular calendar or fiscal year. However systematic weeding is essential here to keep down the bulk of the collection and to discover those items which appear to be of permanent value so that they may be bound or otherwise preserved.

(ix) Handouts and Daily Press (News and Views)

The Government Handouts issued by the Press Information Department

and daily digest of important news and views also issued by the Press Information Department is yet another category of material to be preserved. The National Institute of Historical and Culutural Research may request the Ministry of Information and Broad-casting to keep it on their regular mailing list.

(x) Private Papers

In the end I would also suggest that the National Institute of Historical and Cultural Research may maintain a National Register of private collections and un-published reports on collections of privately owned papers. These reports may be made available for consultation in the search room. The National Institute of Historial and Cultural Research may also undertake the task of advising the individual research workers in finding and using primary historical research materials.

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MUSEUM ARCHITECTURE

DR. GRACE MORLEY

Museum Architecture

The perfect museum building seems impossible to achieve. Invariably defects or omissions are discovered in new buildings specially planned for museums in consultation with the best authorities available while older buildings, possibly historic monuments, adapted for museum uses, not surprisingly present problems.

For museums recently planned and constructed the defects that are discovered are usually to be explained by the fact that museum requirements change and the new uses have not been foreseen. It seems impossible to lay down general principles for the architecture of museum buildings which may be expected to serve indefinitely.

Perhaps the only valid advice to offer in regard to planning a museum building is that the architect selected should be the best possible one to be found, that the requirements of museum operation obvious at the time, and those that can be foreseen for the future, should be clearly defined for his guidance, and that there be sympathetic understanding between the architect and the museum director, and continuous consultation as the plans are developed. The advantages of some flexibility for the various parts of the building and of possibilities for adaptation should be kept in mind.

If space beyond immediate requirements can be provided within the building to allow for growth, that is obviously an advantage. In any case, a site with sufficient space to permit later extension or enlargement of the building, and a building plan permitting that to be done, without destroying whatever visual and other qualities the original building has, should be ensured.

The building's exterior will, of course, reflect the architectural style of its period, but while striving for the best possible aesthetic effect, any interference with the practical usefulness of the space it encloses should be avoided. In the past, a museum building was likely to be considered a kind of monument in its own right, regardless of the collections for exhibitions and of other museum services. Indeed this aspect of an imposing building often merits appreciation for museums of earlier periods. But today architecture tends to seek simpler effects, and though one still hopes for a building of quality, in style worthy of its museum purpose, the utilitarian needs of the interior spaces may be given major emphasis.

In general, the interior space of the museum should be planned with definite requirements in mind, but with the possibility of flexibility and adaptation. The halls for exhibitions are always a major requirement and must correspond to

the size of the museum's collections and its expectation of growth. They must also, of course, be considered in relation to the guarding and other services which will be required. The proportion to be maintained between exhibition areas and those areas for storage, for offices, shops, and other services, and for public use are difficult to express exactly. Perhaps one-third for exhibition and approximately two-thirds for other uses is reasonable.

Exhibition galleries should have agreeable proportions, should have sufficient height to show well the type of material foreseen, and should be free from columns or other obstructions. They should be so arranged that one or more galleries may be shut off for installation or other purpose without obstructing circulation. Corridors should be wide enough for circulation of visitors and for movement of objects.

Lighting for exhibition galleries presents a great range of possibilities. Artificial lighting has been preferred by many museums of the world because its visual effects can be precisely controlled. However, its exclusive use is considered tiring and monotonous by some museum leaders, who prefer having some natural lights. Sky lights are not practical in tropic regions of intense sunlight, with much heat for most of the year. Windows placed high to leave wall space for exhibiting objects or placing cases below them are often practical and, the galleries usually must have supplementary artificial light, especially for cases, they may provide an agreeable general lighting for a gallery. It is necessary to take into account the cost of lighting solely by artificial means, and also attention must be paid to the deteriorating effects of various types of light and the need to exercise great care for some materials, like textiles and miniatures, particularly.

Service areas included workshops of various kinds, the conservation laboratory and the photographic studio, given space according to the size of the museum and the requirements of its programme. Again if space for future growth is provided it is a great advantage.

Offices have to be provided for staff of different categories, possibly in some cases adjacent to storage areas of the various collections, in others, readily accessible to visitors even on days when galleries are closed, depending on the responsibility of the respective officers.

The library is an important part of any museum, with space for staff, readers, and, possibly storage also. It is convenient if it may be made accessible to the public, particularly students, when exhibitions are closed.

Classrooms for educational work should be considered likewise, one or more small meeting or seminar rooms and auditorium, with projection facilities for both slides and motion pictures, are fundamental requirements for a modern museum. As programmes of various kinds are usually included among museum's cultural activities, a stage of adequate size, with at least some provision for special lighting foot and spot lights, for example and for other requirements for performances, as well as for lectures, forums, and similar uses, is desirable. The

auditorium should be so located that it may be used when other parts of the museum are closed. Some space for dressing rooms and equipment storage should be provided.

In connexion with the auditorium as well as for the museum in general, adequate and conveniently accessible public and staff conveniences are needed and should be carefully planned.

A lounge where visitors may rest, possibly in relation to the auditorium, but on a smaller scale, if the museum is large, situated at intervals among the exhibition galleries, is a necessity. A canteen or, at least, a place where some simple refreshments may be secured, also having seats for resting, is desirable. Some large museums have complete restaurants. Including such elaborate facilities in a museum depends on what programme is foreseen for it, its location, the habits of the public which it is expected to serve. Obviously such facilities have value for both the educational and recreational use of the museum, depending on the community which it serves. They can be extremely important in making it a centre of social life. However, the problems which may result must not be forgotten. Security and especially the risk of fire must be recognized, and suitable precautions must be taken. For Security, the number and locations of entrances require careful study.

Two specific problems in relation to the subject of museum architecture may be considered ; the small, one might call it the minimum museum, and the museum in an old building, possibly an historic monument.

In the case of the small museum, the facilities discussed above must obviously be reviewed and those of fundamental importance should be included. One or more exhibition galleries, generous provision for storage, space for offices and a workshop, a darkroom, a meeting room, and, of course, for the public, conveniences may be recommended as minimum necessities. Obviously excellent active small museums have been organized and have carried out programmes of exhibitions and activities valuable to their communities with even more limited facilities. On the basis of success, they have, in some cases at least, been able to grow and acquire the additional facilities recommended.

Organizing and operating a museum in an old building, even when it provides ample space, inevitably present problems. If originally constructed for museum use, the old building rarely included space for the varied services listed above for a modern museum of some size and an active programme. As a result, areas have to be adapted to contemporary museum needs, and the results are rarely satisfactory. However, with ingenuity and planning to provide accommodation for some functions in adjacent buildings, a reasonably efficient rearrangement for the services required can be made. The Lahore Museum is a pertinent illustration in what has been accomplished so far, of the improvement possible, and addition or rebuilding of some service areas will provide still more satisfactory space for modernized operation. Older museum buildings usually have the advantage of

spacious galleries. Often within them, rearrangement or interior alterations succeed in adaptation of the space to contemporary needs.

A Museum to be organized and operated in an historic building is normally a still more difficult problem. Rarely are the interior spaces of a scale suitable for museum functions of exhibition, research, storage and services. Sometimes features of interior decoration must be preserved and limit greatly freedom of use either for exhibitions or for other purposes. Free standing cases and panels for the exhibition functions sometimes are of assistance, but naturally inhibit concentration on the items exhibited. When these exhibits have some definite relation to the building itself, the setting, by contrast, even if it distracts to some degree from objects exhibited, provides for them an additional dimension which more than compensates for any disadvantage. However, the demand on the knowledge and taste of the person organizing the exhibition, and on his sensitivity to both objects and to their setting becomes the greater and the chances are that he will never feel fully satisfied, but be unhappy over the inevitable compromises which he must make. Nonetheless, using an historic building as a museum represents a logical worthy use and may ensure its preservation, with the least amount of loss, for its character and fabric.

Location of the Museum Building and its Environment

Whether a museum should be located in the middle of a city or somewhat distant, in a park or in a garden area, must be considered when a new building is to be constructed. Accessibility and convenience for the public should be carefully weighed in relation to the safety of the collections.

In an urban setting, the threat of air pollution is difficult to counter, unless the building can be air conditioned twenty-four hours a day all year round. This will also provide control of temperature and relative humidity, of course, but also it represents not only the cost of installation of the original machinery required, but also the expense of continuous operation when the costs of energy are increasing. It must never be forgotten that abrupt changes in relative humidity, which would be caused by interruption of air conditioning, is particularly damaging to organic materials in museum collections. In many cases, it seems that unless climate control in the museum can be continuous it is wiser not to attempt it. Much thought has already been given to this procedure and some study has been made of ways in which architecture of the museum building and the planning of its surroundings may contribute towards mitigating adverse effects of climate. It is pertinent to call attention here to this problem, but it requires more study and discussion than is possible here. Especially it is necessary to consider it in relation to each specific case. However, it may be kept in mind that lawns, trees, fountains and ponds in land surrounding a museum building help in controlling dust and contribute somewhat to moderating high temperatures. The manner in which a building is oriented, to avoid exposure of any part to direct sunlight for too long a period, and shading of walls by verandahs and overhanging roofs in hot climates are useful to consider.

DR. AHMAD NABI KHAN

**Museum Architecture
A Museologist's Approach**

Architecture as you know is the art of building. However, it is not as simple as that especially when it relates to monumental buildings of permanent nature, and more specially with the museum buildings where both permanence and elasticity are of our prime concern. But, before we start talking about the principles, the considerations and requirements involved, let us take into account the over all position of museum architecture in our country. Although, let me explain, the museum movement is more or less a century old in Pakistan, planning of museum building is still in offing. A score of museums that we have are housed in, by and large, improvised buildings; even those which were specially designed and constructed for the purpose are just a little better than improvisation. Our story begins with the Lahore Museum, the Central Museum of good old days. It was the creation of a happy coincidence. In 1864, the Government of the Punjab gathered together some specimens of local art and industries of the province and mounted an exhibition in an improvised temporary building, now fondly called 'Tollinton Market'. The experiment was successful and therefore was given a permanent footings. The special exhibition was given the name of the Central Museum¹. Markham and Hargreaves write: "For thirty years the collections, which grew rapidly, were maintained in the temporary building, but in 1894 were removed to the present museum which had been erected (to the designs of Lockwood Kipling) as the result of public subscription to commemorate the Jubilee of Her Majesty Queen Victoria". That the same spirit of public subscriptions helped creation of museums at Karachi and Peshawar is evident from the fact that both the buildings were created as memorial halls, the one at Peshawar in 1907 and in Karachi in 1928. However, the Archaeological Museum at Taxila was completely a Central Government enterprise. To quote the above authorities again: "The Museum.....was built in accordance with the policy of the Government of India to house on excavated sites the antiquities, recovered by the Archaeological Survey of India which cannot be preserved in situ. Its plan is that of a Buddhist monastery, a range of buildings round a rectangular courtyard. Only half of the planned structure has been erected...It is built of the local stone in simple design, is well lit and admirably finished and furnished". The other site museums which the old Archaeological Survey created at the excavated sites of

1. The original name of this institution, as recorded in its foundation stone of 1890, was *Victoria Jubilee Museum and Technical Institute, Lahore*. C.J. Rodgers (1891) records its name as *Government Museum, Lahore*, S.M. Latif (1892) as *Central Museum*, Percy Brown (1908) as *Lahore Museum* & R.B. Whitehead (1914) as *Punjab Museum*. Today it is officially known as *Lahore Museum*. (Editor)

Harappa and Mohenjodaro were nothing better than store houses where the excavated material was arranged.

After the Partition, the activities of building museums became more vigorous. Again the newly created Department of Archaeology took lead. The site museum at Mohenjodaro was first to be taken up. The present building was designed by a foreign architect and was completed in 1959. Site Museums at Umerkot, Banbhore, Harappa, Swat etc. came up within the next decade, while those at Bahawalpur, Dir etc. followed suit. The building of the National Museum at Karachi was completed by 1970. It was the joint enterprise of the Pakistan Public Works Department and the Department of Archaeology. The National Science Museum and the Folk Art Museum are among the latest exercises. A fullfledge improvisation was made at the forts at Hyderabad and Lahore to create exhibition galleries.

An old Persian verse says :

خشت اول چون نهد معمار کج تا ثریا می رود دیوار کج

It means that if a bad mason puts the first brick of the building wrongly, the whole edifice goes wrong even if it is skyhigh. The museum architecture in our country suffers, by and large, from the same drawback.

The above bare minimum outline of the history of museum building in Pakistan would show that accommodation and improvisation has been the hallmark of these enterprises and even those buildings which were specifically designed for the purpose lack basic requirements and amenities of a proper museum. It goes without saying that such an improvisation creates many un-surmountable problems both for the exhibits as well as for those who are made to look after them, and above all to the lay-visitor. The reason for these serious and basic short-coming is not far to be seen. While the older buildings fell short of the basic concept of a modern museum, the comparatively new buildings were ill-conceived and badly designed by amateurs and non-qualified draftsmen. It is more than obvious that such buildings resulted into serious short-comings. What was more pitiable was that on completion of such buildings, it was found out that some of them did not have provision for booking offices, where as a few others did not at all included storage space, visitor's convenience, space for conservation laboratories, library, cafeteria, etc. Beside, many of them suffered from monotony of exhibition galleries, display arrangement, lack of sufficient and proper lighting etc.

Planning a New Museum Building

A few generalities are to be considered at the time of the planning of the new museum building. Naturally, two basic considerations are to be taken into account, namely, the nature and scope of the museum and the resources available. We have a broad or main category of museums which are normally termed as general museums. Such museums deal with all kinds of artifacts which the Man has been

able to manufacture since the day of his existence on this planet. Administratively, these may be national as well as local. Then there are museums which deal with the physical sciences, modern arts, industry, folk arts, ethnography etc., while a distinct category called site museums is concerned with exhibition, preservation and research on the material excavated from archaeological sites. These museums are mainly the concern of the Department of Archaeology. A few others, like the Dir Museum are controlled by the Provincial Government each through a Board.

While planning a museum building, financial resources might be taken as second primary consideration. Naturally, you cannot create a sky-scraper with a few thousand rupees. Similarly, you will have to have financial as well as technical resources for the successful planning and completion of the building project. Immediately thereafter, comes the problem of the location of the museum building. It would be ideal if a joint plan of the museum, library, and allied socio-cultural institutions is proposed while having broad based town planning. Anyway, the museum must be within an easy reach and within convenient distance from almost all part of the city or town.

It would be ideal to locate the museum within a public park which not only present an agreeable and pleasant atmosphere, it will also protect the building and its contents from excessive heat and dust. Similarly, while planning the museum building, we have also to take into consideration, the surroundings of the site, other notable buildings in the vicinity and their architectural features. The museum building should have its individuality for its specific function and it would be worthwhile to consider its assimilation within the environments. The building should express through its exterior facade the characteristics of the contents it has. It may be worthwhile to consider the advisability of giving an oriental or Islamic touch to its exterior specially to those museum buildings which are of national character. I am not suggesting that we should impose upon a modern museum building superficial elements of Muslim architecture like arched openings, minarets, domes, etc, but if a plausible assimilation is achieved with the help of these architectural features, it would be worthwhile. The building should be inviting, interesting and not too much formidable. It should become a place of rendezvous, have public telephones, pleasant seating accommodation, a post office etc. so that even those who are not interested to enter the Museum should at best come to the venue for other purposes.

The external lay out should include courtyards and open areas which may eventually be used to display sculptures and other objects of more permanent nature. It is questionable whether we should have many entrances to the museum building besides the main entrance, for visitors may wish to see one exhibition gallery without traversing other galleries. This question will have to be considered alongwith the security problem of the building. Similarly, it is of primary importance that the approach for goods and vehicles carrying exhibitions should be practical and safe. It should not interfere in any way with public entrance.

Similarly, separate entrance must be provided for goods that cater for the restaurant and other services.

Internal Planning

Now a few considerations about the internal planning. The modern museum building has to cater the requirements of all kinds relating to the exhibition. Generally speaking, the following is the minimum of the basic items which are provided in a modern museum :

- (i) A large and spacious entrance hall, with its appropriate services.
- (ii) The main exhibition galleries, for the general public.
- (iii) Subsidiary, or secondary exhibition galleries, for experts and students.
- (iv) A number of students' rooms.
- (v) Storage space, appropriately fitted out for various parts of the collections.
- (vi) Storage space for timber and other materials and for cases and fittings.
- (vii) Offices and staff rooms, for all grades of staff, with contiguous cloak-rooms.
- (viii) Library, and archive and record rooms.
- (ix) Laboratories and crafts workshops.
- (x) Public restaurants, lounges and cloak-rooms.
- (xi) Lecture, board, and conference rooms.
- (xii) School service wing.
- (xiii) General servicing rooms (heating, air conditioning, and lighting plants, lifts etc.).
- (xiv) Packing and unpacking rooms, loading and unloading bays etc.

The above services are to be arranged in such a way that at least one fifth of the whole area should be reserved for main exhibition galleries and the second fifth for reserve collections. The exhibition galleries should be, as a matter of fact, as open as possible with minimum of structural walls dividing it into rooms so as to leave the Director as free a hand as possible, any necessary divisions being constructed in the form of non-structural walls or screens. Equally, the architectural embellishment and decorations should be as simple as possible so that the objects, which are, after all, the main concern of the museum can be seen to the best effect without any background distractions.

Commisioning of Architect :

In order to achieve satisfactory results, a close liaison and co-operation between the museum Director and the Architect is of utmost importance. It will

be the duty and responsibility of the Director to provide the maximum possible details of the project to the architect for his planning. Generally speaking, for designing a museum building three possibilities could be considered :

- (i) To pick up a specific architect and commission him to do the work.
- (ii) To select a number of architects who would be interested in designing a museum building.
- (iii) To hold a competition which could be either open or restricted. The competition could be national or even international according to the importance and the resources of the museum.

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KAMIL KHAN MUMTAZ

**Museum Architecture
An Architect's Approach**

This is not intended to be a lesson on how to design or construct a museum but rather a guide to the client on how to obtain the best results from the architect.

I intend here to explain the respective roles of the client, the architect and the builder in the inception, design and construction of a museum, or for that matter any building. We have a well known saying: 'neem hakim khatrae jaan', that is, half a doctor is a threat to life. The relationship between the architect and client is after all not different from that between a doctor and his patient. The architect's training, like the doctor's is long and complex. It is obviously not possible, nor indeed necessary to make you museum architect in one evening. However, it would be profitable for you to know what the architect can do for you so that if and when you are entrusted with the responsibility of establishing a museum you will know at what stage and how best to call in the services of an architect.

In any client-architect relationship the client is usually the owner of the prospective building or his representative. I understand that as directors, superintendents etcetra many of you might well find yourselves in the capacity of a client.

The question of the mode of selection of the architect has been touched upon, and architectural competitions as a method of selection of the best designs has also been mentioned. I would therefore like, before proceeding further, to take up this very important aspect.

The simplest and least complicated procedure is to appoint an architect in whose competence and ability you have reason to be confident. This will most probably be based on previous similar work done by the architect, which you have seen. However, for a number of good reasons, and especially for projects of national importance, it may be advisable to be guided by a committee, an impartial committee, rather than by personal preference, and a competition would seem to be more desirable.

There are three types of competitions; a competition of ideas or a competition in stages, in which at the first stage you may call for broad conceptual proposals, and at the next ask for the best proposal or idea to be developed into an architectural scheme. This type of competition is usually more suitable for rather large and complex projects.

A second type of competition is a limited competition, in which a limited number, normally five or six, architects are selected and invited to participate. Each competitor is paid a fee and the architect of the winning design is awarded the project. The third and most usual form of competition. The competition is publicly announced in the press and participation is open to all architects.

In principle, competitions are a good thing and should be encouraged. They provide the younger architects an opportunity to demonstrate their talents, and the client the opportunity to select the best design from the range of entries. It also minimises any suspicion of the client having exercised personal preferences or partiality towards any single architect. However, all this holds true only if the competition is organised and held in accordance with internationally recognised rules and procedure for holding architectural competitions. This can best be ensured by consulting the Institute of Architects, Pakistan. The Institute will provide all necessary advice and guidance and if required will assist in organising the competition. Their one prerequisite will naturally be that their official rules are adopted. For example that the panel of judges have a majority of architects ; that their names and the prizes offered be publicly announced together with the public notice announcing the competition ; and that the winning architect be awarded the project.

The assurance that a competition is being conducted in accordance with the standard rules and regulations of IAP, and the announcement of a respectable prize and a competent jury is your guarantee that the best architects will participate, and that the best design will be selected. But remember that a competition is a fairly expensive affair both for the client and for the participants, and unless you are prepared to offer (and honour) reasonable rewards to the winners and to follow the standard rules or atleast to follow the rules announced, it is better to steer clear of competitions.

Having selected an architect, the client must specify his requirements and indicate the resources with which he intends to meet them. The architect for his part takes the client's instruction, co-ordinates the design team, evolves the design concepts through which he proposes to fulfill the client's needs within the specified resources. Once the design is mutually agreed between the architect and client the architect prepares detailed instructions for the builder and supervises the construction work.

In the case of a museum the client would first have to specify the purpose or purposes of the museum. Is it primarily intended as a repository where certain objects, for example manuscripts, are to be preserved and to be used let us say, by researchers or other specialists ; or is it intended to hold objects on display for the general public ? Is it intended to provide a general exhibition or is it to have a specific educational function ? Secondly, the client would have to specify the site where the museum is to be located and provide related information such as topo-

graphical and other features, Thirdly, the client would specify his functional requirements. For example, what objects and how many are to be displayed indoors, outdoors, or in-situ ? Does the client require workrooms, for example wood, metal or stone workshops, or laboratories ? How many, and for what specific operations ? Similarly the numbers and types of other spaces such as offices, stores, libraries, lecture rooms or auditoriums, and any ancillary spaces such as lavatories, cloak-rooms, control points, car parking, cafeterias, and souvenir shops etc. etc.

Finally, the client must specify clearly his budget and any other cost constraints. For example will all the funds be available in one installment or will the funds be available according to a known schedule ? Correspondingly, will the construction have to be phased in time ? Should the plan allow for future expansion etc. etc.

The architect then specifies how best the available space can be organised to accommodate the requirements of the client in such a manner that each element is in the optimum relationship to others in terms of efficient flow and movement. This organisation of space is applied in the first instance to the site itself. Keeping in view the characteristics of the site, such as its size and shape, access and location of services, topology orientation and other features, the architect will determine where best to locate the structure or structures and how to organise other elements such as roads, footpaths, car parking and landscaping on the site.

Next the architect will consider the organisation of internal spaces : the most appropriate size of each individual space in view of its functional requirements ; and the relationship between spaces. In developing these formal concepts he will also be guided by environmental considerations as well as the structural possibilities and limitations of his forms and the materials and technological means he proposes to employ.

The architect will first present his proposals to the client in the form of a sketch scheme. Once the general concept is agreed with the client, the architect will proceed with the detailed design and constructional details as well as such technical details as mechanical equipment and installations for the creation of the desired micro-climate. These details will include measures to control temperature, light, humidity, ventilation and acoustics. He will also specify the materials to be used in the structural elements and as finishes to various surfaces such as floors, walls roofs and ceilings etc., and provide estimates of costs.

Any complex building such as a museum could involve the skills of a number of specialists, for example structural, electrical and mechanical engineers, and specialists on lighting and illumination, air-conditioning, security system and designers specialising in display.

In such situations it is the architect who must act as the co-ordinator of these various specialists and orchestrate their special skills to serve a single concept.

An important aspect of the architect's services is supervision during construction. This is not always appreciated by many who consider the architect's role to be limited to the preparation of pretty elevations. In fact the architect will prepare, if required, complete tender documents and assist the client in the selection of the contractor. Thereafter he may be asked to provide top supervision to ensure that the contractor is following his design and specifications. The architect will certify the contractors bills for payment from the client only when he is satisfied that the work has been completed to his satisfaction.

It will be noted that I have offered no ready-made solution as to what a museum building should look like, but I have rather attempted to explain how a design will be evolved. The availability of new materials and techniques on the one hand and the specific requirements of the contemporary museum are such that the architect is confronted not only with problems that are unprecedented but with technical means that have no precedent. The design of the contemporary museum cannot be found by fishing out of a bag of patent remedies, but by a creative quest for appropriate forms based on a rational and analytical design methodology.

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**EXPANDING HORIZONS
OF
PAKISTANI MUSEUMS**

Role of Archaeology in the Development of Museums in Pakistan

The genesis of the Museum movement in the sub-Continent is to be traced in the 'Asiatic Society of Bengal' founded by William Jones on 15th January, 1784. By 1796 the Society had to consider seriously the question of suitably housing the many 'curiosities' that had accumulated by donation by the members from time to time. In 1814, at the instance of Nathaniel Wallich, who offered his services as the Honorary Curator, the Society established a museum comprising of two sections, one archaeological and ethnological and the other geological and zoological. This eventually came to be known as the Indian Museum, Calcutta.

The Museum grew rapidly. In 1836, the Society finding itself financially weak, approached the Government for funds and persisted in its demand till, in 1839, the Court of Directors of the East India Company sanctioned an amount for the maintenance of this museum and also authorized the Government to make other grants from time to time for special purposes. The question of housing the collection could not be solved for some time. After protracted negotiations the Government finally agreed to construct a new building for it. Consequently, the building of the Indian Museum was constructed in Calcutta and made ready for occupation in 1875.

Meanwhile another museum had come up at Karachi. There, as early as 1851, the Victoria Museum was established by Sir Bartle Frere. In 1870, it was transferred by the Government of Bombay to the Karachi Municipal Corporation. The latter was responsible for the construction of a new building in 1928 in the Burns Gardens. It was basically an art and archaeological museum. Its exhibits comprised of archaeological artefacts, coins and specimens of embroidery, ivory, pottery, lacquer work, textile etc.

In 1864, a special building (Tollinton Market of today) was erected in Lahore to organise the first Punjab Exhibition of the local arts and industries. On the close of the exhibition a number of specimens of the arts and crafts as well as agricultural and forest products of the Province were made available to remain in the building. These soon assumed sufficient importance to be designated as the Lahore Museum. For thirty years the collections, which grew rapidly, were maintained in this temporary building. In 1894, these collections were removed to the present Museum which had been erected as the result of Public subscriptions to commemorate the Jubilee of Queen Victoria.

Archaeology and Museums

In the earliest stages of the Museum movement the nucleus of the collections had mostly been geological or biological, but with the coming of archaeology to

the field in the northern areas of the sub-Continent by Lord Canning and the appointment of A. Cunningham as the Archaeological Surveyor, the place of archaeology in museums soon came to be felt. Through the indefatigable work of Cunningham, the museums came to possess rich archaeological collections in which they pride today. Long before the archaeological Service was constituted, Cunningham himself had presented, as early as 1835-36, to the Asiatic Society a large collection of Buddhist images of the Gupta period. As the Director General of Archaeology, Cunningham presented to the Indian Museum several Gandhara sculptures.

Cunningham did not stop with the presentation of antiquities but helped even in arranging the material in museums, and his arrangement techniques has essentially continued with necessary modification down to this date. He was also responsible for recovering the ancient remains of Harappa in 1862 and collecting a number of steatite stamp seals engraved with pictographic writing which he saved by their removal to the British Museum.

With the commencement of the present century, which saw the rejuvenation of the archaeological service, the archaeological sections in museums were enriched, and several museums exclusively devoted themselves to archaeology. The personal interest and enthusiasm of Lord Curzon in understanding and preserving the glorious past of the sub-Continent by maintaining monuments and starting museums accounts for several archaeological museums. From 1902 there was a regular sequence of events in the history of the building of museums, as several site museums and local museums were established, some directly by and others through the encouragement of the Department of Archaeology headed by Sir John Marshall.

As stated above, the intimate connection between archaeology and museums had been accentuated from the beginning of the century. The Museum at Peshawar was established in 1907 at the instance of Curzon. Thanks to the efforts of D.B. Spooner, the Peshawar Museum was greatly enriched by the wealth of sculptures he had unearthed at Sahri Bahlol, Takht-i-Bahi, Shahji-ki-Dheri and other sites in Gandhara. One of the most brilliant discoveries in this area, e.g. the relic-casket of Kanishka, forms the most valued treasures of the Peshawar Museum.

If Cunningham's efforts laid the foundation of the Gandhara collections in the Indian Museum, Calcutta and the Museum at Lahore, it was the excavation in the Frontier region at the beginning of the present century that accounts for the enormous growth of similar collections in the Lahore and Peshawar Museums. The last two, beyond doubt, are the richest in Pakistan today.

John Marshall felt that the officers of the Department of Archaeology should work in close co-operation with the various museums in the Province. Under this policy, the Superintendents of different Circles acquired archaeological collections on behalf of the Provincial Museums. The Archaeological Superin-

tendents have also associated themselves with the administration of the archaeological sections in some of the Provincial museums, and that accounts for the prompt acquisition of Treasure Trove finds of sculptures, bronzes and coins. In Peshawar, till a Curator was appointed in the Museum, the Superintendent of the Frontier Circle was the Honorary Officer to help it in archaeological matters. In addition, the Circle Superintendents had been on the Committee of some museums. It was not only by advice and help but sometimes by liberal grants that the Archaeology Department had helped the growth of the museum collections at Lahore and Peshawar and other places in the sub-Continent.

Material from important sites had been freely distributed among the museums by the Archaeology Department. Thus representative objects from Mohenjodaro and Harappa found their way in almost all leading museums in the sub-Continent.

The material excavated at various sites was generally made available to the museums of the region. Thus, the Peshawar Museum was enriched by the finds at different sites in the Frontier Province, and the MacMahon Museum at Quetta from NaI which, however, was transferred to the Indian Museum, Calcutta after the earthquake disaster of 1935.

Not only by direct creation but also by the indirect friendly policy of the Archaeology Department, was the building up of museums pushed ahead. In the arrangement of the material in the museums also the help of the Department was sought and freely extended. In the preparation of catalogues, guide books and other publications the department had equally lent help. It was Cunningham who first prepared a descriptive list of the Buddhist sculptures in the Lahore Museum (*Descriptive List of the Principal Buddhist Sculptures in the Lahore Museum*). A handbook of sculptures of the Peshawar Museum, was first prepared by D.B. Spooner (*Handbook to the Sculptures in the Peshawar Museum, Calcutta 1910*) later revised by H. Hargreaves (*Handbook to the Sculptures in the Peshawar Museum, Calcutta 1930*). The *Buddha Story in Stone* by H. Hargreaves discussed some selected Gandhara sculptures in the Lahore Museum (*The Buddha Story in Stone, Calcutta, 1914*). John Marshall not only did so much by way of excavation and construction of museums at Taxila, Harappa and Mohenjodaro, but also arranged for the writing of excavations and a guide on Taxila monuments and antiquities in the local museum.

The 1938 report by S.M. Markham and H. Hargreaves. (*The Museums of India, London, 1938*), clearly brought out the unsatisfactory picture of the museums and monuments in the sub-Continent, the main reasons being ascribed to mass-illiteracy, inadequate funds and lack of proper awakening on the part of rich and the influential intelligentsia. However, the Report stated that Alexander Cunningham's activities and researches, as a result of the formation in 1862 of the Archaeological Survey, awakened wide spread interest in the field of archaeology. This interest got further impetus when Curzon's Government reorganised the

Archaeological Survey in 1902. The history of the Archaeological Museums from this date onward is largely the record of the labours of John Marshall whom Curzon appointed Director General of the Archaeological Survey. Under his able and spirited guidance, the Archaeological Department made important discoveries thus adding so substantially to the history of the sub-Continent and awakening world-wide interest in its art and antiquities. It also stimulated feelings of nationalism among local people and directed their attention to the need for preserving their archaeological treasures.

This emphasised the intimate connection between archaeology and the museums. The policy of the Department had been to maintain museums in the vicinity of sites subjected to extensive excavations to enable the serious students and visitors alike to study the antiquities in their proper context. In pursuance of this policy site museums were established at Mohenjodaro (1925), Harappa (1926) and Taxila (1928), where systematic excavations continued for several years. It is strange that Leonard Wooley, in his report submitted to the then Indian Government in 1939, recommended the closing down of most of the site museums, but considering the cultured importance of the sites concerned and the possibility of fostering education, the Government decided to retain them.

In the regime of John Marshall, a number of European scholars distinguished themselves in various fields of Archaeology. Their contributions and published works are a substantial help for scholars to study material in different museums. For example, Henry Cousens published a number of important works of which 'THE ANTIQUITIES OF SIND' pertains exclusively to Pakistan and deserves a particular mention. J. Ph. Vogel, the Superintendent of the Northern Circle, was the first archaeologist to recommend to the then Government of India, on the 20th June, 1910, protection of the world famous site of Taxila. His excavations at Charsadda in 1902 and his scholarly work 'TILE MOSAICS OF LAHORE FORT' are substantial contribution to the Archaeology of Pakistan. He served as an Honorary Assistant to the Lahore Museum and arranged its Buddhist Section. H. Hargreaves and D.B. Spooner excavated many sites in the Frontier Province and the material excavated by them found its way to various museums, particularly the Peshawar Museum.

We have particular reason to be grateful to John Marshall for the main archaeological sites and their museums we inherited on Independence, namely, Mohenjodaro, Harappa and Taxila. Of these sites, he conducted the excavations at Taxila and Mohenjodaro himself. His voluminous reports on Mohenjodaro and Taxila are classics of scientific description and analysis. Before his death in 1958, he was able to complete his 'BUDDHIST ART OF GANDHARA' and to revise his Guide to Taxila.

The 14th of August, 1947, saw the emergence of Pakistan as a sovereign independent state. The Government of the new country had to face a number of problems, not the least among which was lack of money. The Department of

Archaeology and Museums which came to be organised in Pakistan, was no more than a skeleton affair, with Muhammad Munir, a well known scholar and epigraphist, as the first Director and only a few officers to help him. He was followed in 1948 by Dr. Muhammad Nazim, who served for a few months and gave place to Shamsuddin Ahmad, the distinguished epigraphist and Scholar. Shamsuddin was Director for five years, but his time, like those of his predecessors, suffered from lack of trained and experienced hands and money.

It was in Shamsuddin's time that Sir Mortimer Wheeler was appointed as a part-time Adviser on Archaeology and served as such for two years. His advice was valuable as was his leadership. He guided the Department's activity within the limited resources as available, and under his direction, a beginning was made with the National Museum in Frere Hall at Karachi.

Shamsuddin was succeeded in 1954 by the French Scholar, Raoul Curiel. He served the Department for four years as Director, and for a short while afterwards, as Archaeological Adviser. In April, 1958, his contract ended. His time was characterised as phenomenal progress on all sides. He organised the Department on a proper basis and gave life to the dead bones of archaeology.

The Museum administration was reorganised and expanded. The National Museum in the careful hands of S. Ashfaq Naqvi, the distinguished museologist, was built up through the efforts of a Committee appointed for the acquisition of antiquities. The Committee operated on a fund set apart for the purposes by the Central Government. Some of the National Museum acquisitions, such as the unique Abdul Malik coin in gold, and the rare and the unique manuscripts of the Zafar Hussan Collection, were the result of Raoul Curiel's personal efforts and directions.

At the same time, important new excavations were undertaken at Mainamati in the then East Pakistan and Kot Diji and Banbhore in West Pakistan. These consequently resulted into the establishment of two new museums, one each at Mainamati and Banbhore.

An outstanding event of the Curiel's time was the exhibition of Islamic Art and Culture which was opened at the Lahore Fort by the President of Pakistan in December, 1957, and was subsequently held in the National Museum, Karachi. To it came exhibits from Iran, Turkey, Indonesia, Great Britain, France, Italy and the United States of America. It was unique occasion and the varieties of the objects displayed and their rare and representative character made the exhibition a memorable success.

Another important measure of Curiel's time was the revival of Marshall's Archaeological Scholars Scheme which has fallen into disuse. According to the scheme, youngmen, fresh from the University, were trained as probationers. They started on the humbler tasks of the Department in field work and Museum service to equip themselves for scientific investigation and discoveries.¹

1. The scheme was once again discontinued in 1962 and never revived again (Editor).

During the next thirteen years between April 1958 and October 1970, the Department had built further on the strong foundations laid by Curiel and made considerable progress in all archaeological discipline.²

An Archaeological Laboratory had been set up at Lahore. This has served to remedy one of the serious deficiencies of the Department on the scientific side. A team of young scholars had been trained abroad in museology, archaeological chemistry and conservation of monuments. A number of exhibitions sent to foreign countries has been a great success in Japan, Germany, Italy, Ceylon and the U.S.A.

The Department took long strides in the development and scientific display of some twelve museums including Swat (1963-69), two remarkable galleries—Mughal and Sikh periods in Jindan's Haveli in the Lahore Fort (1964), Banbhore (1967), Mohenjodaro (1967), Harappa (1967) Umarkot (1968) and the National Museum, Karachi (1970). In East Pakistan, five museums were constructed one each at Dacca, Chittagong, Mainamati, Paharpur and Mahastangarh.

For all these museums, new buildings had been designed and constructed by the Department itself. Rare objects had been acquired for the National and other museums. Museum libraries had been established at Taxila, Swat and Mohenjodaro. Each site museum had a comfortable rest house for the convenience of scholars.

The work of publications, which had been initiated by Raoul Curiel, had been organised and concentrated in a new section of the Department namely, 'Pakistan Archaeology'. The new Journal, started in 1964, gives an account of the Department's work in three main fields, namely exploration and excavation, museology and conservation of sites, monuments and antiquities. The Department published a number of reports, memoirs and guide books to some of the sites and museums.

All these activities continued unabated until 1970 when after the separation of East Pakistan majority of the senior officers migrated to what came to be known as Bangladesh with the result that there was a paucity of mature trained personnel in the Department. Hence the pace of the progress achieved previously could not be sustained.

In the field of exploration, except for exploration in northern Baluchistan, southern Sind and Bahawalpur, no significant discovery was made. In fact the work in this branch has remained stand still.

2. R. Curiel was followed by Dr. F.A. Khan as Director of Archaeology and Museums (1957-70), Dr. Nazimuddin Ahmad (1970-71), S.A.A. Naqvi (1971-73) and Muhammad Ishtiaq Khan (1973 to day). Among them the prolonged period of Directorship of Dr. F.A. Khan has been the most fruitful one and active as regards establishment of museums and museum activities. Almost all old museums were rebuilt, renovated and reorganised whereas many new museums were established in the then West Pakistan and East Pakistan. Most significant period of Mr. S.A.A. Naqvi was the International Symposium on Archaeology at Mohenjodaro which helped focussing the world attention on Mohenjodaro and its remains. (Editor).

In the field of museology no new museum was built. Even the expanded galleries in the Swat Museum, which were completed in 1969, remained lying vacant for ten years although a proper scheme was made available in 1970. The two museums in the Lahore Fort, viz. the Armoury, established in 1928, and the Mughal-Sikh Galleries organised effectively in 1964, were dismantled. While the British and Sikh period weapons of the Armoury Museum, pleasantly displayed in Emperor Jehangir's Sleeping Chambers shifted and displayed effectively in the ground floor of Jindan's Haveli, the Mughal material comprising miniature paintings, oil paintings, manuscripts, coins and a large ivory model of Taj Mahal was dumped in the Armoury Museum building.

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MUHAMMAD AKMAL

Role of Science Museums in Pakistan and National Museums of Science and Technology, Lahore

Science Museum or Science Centre

Present-day Science Museums, more commonly known as Science Centres or the Halls of Science, are educational institutions for the public-at-large. In order to make them effective their presentations must be educational, factual, and participational. They must appeal to the visitor and attract him, and thus bring to him the message of science, of its service to mankind, its past, present, and future.

All such displays are presented in a way that demonstrates the principles and applications of science for everybody to comprehend. Working models combined with sound, light, colour and movement generate interest among the visitors and provide them with the means to understand and be fascinated by the underlying principles.

Science Museum & Developed Countries

Museums of science and technology are powerful media for the propagation of the appreciation of scientific principles and methods. In these museums, the principles of science and their application to man's benefit are dramatically demonstrated in easily understood exhibits which appeal to people of all ages in all walks of life and of all degrees of sophistication. The museums are effective agencies for developing a scientific awareness among common people, and for generating interest in the study of science. Museums of science and technology while spreading knowledge of science and technology also go a long way in making the common man understand and appreciate the method of science, its power and also the achievements of scientists in furthering human comfort and civilization.

In the developed countries museums of science and technology occupy a unique place among educational institutions. Whereas the schools, colleges, universities, vocational and other institutions are confined in their activities to the following of a set curriculum for achieving planned goals of instructions, science museums of modern times supplement the process of mass education through displays where the effective use of sound, light, colour and movement fascinates and attracts the viewers. The active participation of viewers in operation of many of the exhibits helps to reinforce their learning.

First Science Museum in Pakistan

Being aware of the growing role of the science museums as a medium of mass education, the Government of Pakistan, in 1965, authorised the first science museum at a national level at an estimated cost of one and a quarter crore of rupees. The National Science Museum which is being developed in stages, will have, on its completion, three distinct sections namely, physical sciences, biological sciences, and technology. In addition it will have a planetarium and a good reference library.

By the end of 1975, the Museum had succeeded in acquiring 27 complete exhibits on the topics of electricity, engines, fluid mechanics, light, magnetism, mathematics, and mechanics. At present there are 149 exhibits, fully operational and installed in display cases in their assigned locations. A visitor to the museum usually spends about 2½-3 hours to see all these exhibits and is encouraged to operate most of these himself.

In a country like ours where science education is handicapped by inadequate facilities, and higher education is restricted to a few—a science museum which is accessible to the common man, can make a meaningful contribution in prompting mass science education.

The first science museum of Pakistan, approved and sanctioned as a public sector scheme, is being financed by the Government of Pakistan, Ministry of Education. It was due for completion during the plan period 1975-80 at an estimated cost of Rs. 112.6 lacs.

Exhibits

It was formally inaugurated on 7th July, 1976 and its doors were then opened to the public.

The museum had at that time a total of 68 exhibits, and the topics represented were engines, fluid mechanics, light, magnetism, mechanics and static electricity. One of the star exhibits namely the animated life-size figure of human body was ready for display, representing the topic of human anatomy.

The process of the acquisition of exhibits has continued with not only a number of exhibits having been added to each of the topics, but a few more topics having been included. These new topics include behavioural psychology, current electricity, energy, meteorology and sound. In most of the exhibits the visitor is encouraged to operate them himself and in several of the exhibits, the aspect of topics covered had advanced from principles to applications.

The list of exhibits follows :—

(A) Fluid Mechanics

1. Static Pressure

2. Measurement of Pressure

3. Torricell's Theorem	4. Pascal's Principle
5. Archimedes Principle	6. Cartesian Diver
7. The Syphon Principles	8. The Syphon
9. The Solid Syphon	10. Gear Pump
11. Barometer Atmospheric	12. Water at Work—The Hydraulic Press
13. Water at Work—The Reaction Turbine	14. Water at Work—The Venturi Tube
15. Water at Work—The Pelton Wheel	16. Water at Work—Water hitting a Surface
17. Baroscope	18. Boyels Law
19. Fluid Friction	20. Connecting Vessels
21. Vacuum Phenomenon	22. Surface Tension
23. Bernoulli's Theorem	24. Aeroplane Wing Lift
25. Soap Bubles	26. Hydrostatic Balance

(B) Mathematics

1. The Moebius Strip	2. The Pythagorean Theorem (Classic)
3. The Semi-Circle	4. The Hexagon
5. The Number Pi	6. Area of a Triangle
7. The Parabola Hyperbola Model	8. Probability Machine

(C) Mechanics & Energy

1. Rotatable Pendulum	2. Fluid Centrifuge
3. August's Apparatus	4. Watts Governor
5. Flattening of Earth	6. Rotatable Glass Vessel
7. Molecular Gas Separation Analogy	8. Wind Mill
9. Electroplating	10. Photo Voltaic Cells
11. Piezo Electricity	12. Heat Expansion
13. Thermocouple	14. Foucault's Pendulum

(D) Engines

1. Steam Engine	2. 4-Stroke Petrol Engine
3. 4-Stroke Diesel Engine	4. 2-Stroke Petrol Engine
5. The Jet Engine	6. Wankel Engine

7. Ignition	8. Differential
9. Motor Car Chassis	10. Steering
11. Gear Box	12. Glass Motor
13. Disc Brakes	14. Drum Brakes
15. Motor Cycle (Wankel)	16. Wankel Engine Working Model Sectional
17. Engine Generator Static Model	18. Engine Graphic Model (Wankel)
19. Engine Coupled Generator (Wankel)	

(E) Magnetism & Electricity

1. Van de Graff Generator	2. Wimshursts Machine
3. Magnetic Attraction & Repulsion	4. Magnetic Clutch
5. Magnetic Spring	6. Magnetic Field
7. Magnetic Forces in Equilibrium	8. Electrolytic
9. Electro Magnetism (Faraday's Experiment)	10. Oersteds Experiments
11. Jumping Ring	12. Ohm's Law
13. Electrical Resistance	14. Potential Drop
15. Electromagnetic Force Jumping Ring	16. Eddy Current Brake
17. Barlow's Wheel	18. Conductor Balance
19. Conductor Pendulum	20. Motors & Generators
21. Motors & Generator Reversibility	22. Motors & Generators Circuitry
23. Synchronous Motor	24. 3-Phase Motor
25. A. C. & D. C.	26. Jacob's Ladder
27. Induction Coil	28. Tesla Coil
29. A. C. & D. C. Transformer	30. Magnetic Shunt
31. Step-up Transformer	32. Variable Transformer
33. Step-down Transformer	34. Stop Welding
35. Wheatstone Bridge Analogy	36. Outdoor Transformer & Distribution Station

(F) Light & Sound

1. Lenses & Mirrors	2. Optical Illusion
3. Primary Colours of Light	4. Colour Mixing
5. Colour Business Test	6. 3-D Mirrors
7. 3-D Computerized Dot	8. 3-D Stereoscope
9. Stereoscopic Vision	10. Spectrometry

11. Light Polarization	12. Optical Stresses
13. The Human Heart	14. Diagram of a Raw Sugar Factory
15. Persistence of Vision	16. Holography (A)
17. Spatial Relationship	18. Holography (B)
19. Stroboscopic Light Effects	20. The Eye Lense
21. Iris	22. Reflection/Refraction from Water
23. Ames Window	24. Ripple Tank
25. Doppler Effect	26. Standing Wave Stroboscopic
27. Standing Wave String	28. The Human Ear
29. Hearing Test	30. Prismatically Transformed Vision

(G) Behavioural Psychology

1. Depth Perception	2. Driver's Test of Peripheral Vision
3. Shape Orientation	4. Reaction Time
5. Rotating Cylinder	6. Loop along a Wire
7. Inverted Images	8. Milling Machine
9. After Images	

(H) Meteorology, Astronomy and Time

1. Barometer/Barograph	2. Thermometer/Thermohygrograph
3. Wind Speed/Wind Direction	4. Hygrometer
5. Astronomical Clock	6. Time Measurement (Galileo's)

(I) Human Anatomy

1. Plastic Human Figure

Buildings

These exhibits are displayed in the museum's own buildings, the first phase of construction of which was completed in 1973. The total covered area presently available is approximately 23,000 sq ft out of a total of 75,000 sq ft planned for the completed project.

The built-up areas consist of 10,000 sq ft for one exhibit hall (East Gallery), 5,120 sq ft for one basement (the South Basement) for museum's workshops, and 2,304 sq ft for another basement (the North Basement) currently being used to house the animated human figure, Library and Conference Room. The rest of the covered space consists of the passages, foyer, etc. The structure is in reinforced cement concrete,

The construction of an auditorium and a tower for the Foucault's Pendulum is underway at an estimated cost of Rs. 12,75,000. On completion the museum will have 13,000 sq ft of additional covered area.

Workshops

In order to develop the capability of indigenous development and production of exhibits, the museum has acquired equipment for its workshops, mostly through donation by the British Government under Colombo Plan.

The workshop machinery includes metalworking tools, wood/plastic working machinery, and tools and equipment for the electrical/electronics shop.

(2) List of workshop machinery.

A Metal Working.

1. Straight Bed Copying Lathe	2. 8" Shapping Machine
3. Drilling Machine ($\frac{3}{4}$ ")	4. Grinding Machine
5. Universal Milling Machine	6. Tool and Cutter Grinder
7. Model-Makers Lathe	8. Hack-Saw

B. Wood/Plastic Working

9. 10" Tilting Arbor Saw	10. 10" Radial Arm Saw
11. Planing and Thicknessing Machine	12. Band-Saw

C. Electrical/Electronics

13. D.C. Precision Measuring Instruments	14. Bench Power Supplies
15. Spot-Welder	

D. Miscellaneous

D. Pentagraph Engraving Machine	17. Spray Painting Equipment.

The Library and Publications

The museum receives the following periodicals through the courtesy of the British Council :

Museums Journal (Quarterly), Wireless, World and Scale Models (Monthlies) and New Scientist (Weekly).

The monthlies, Popular Mechanics, Radio Electronics and the Scientific American are being obtained from the local market as soon as they become available.

The total number of library books available, now being used for reference work, has reached the 2000 mark.

Laboratory Equipment

The development of a laboratory for experimentation for the development of exhibits, and for the testing and maintenance of installed exhibits has been kept abreast with pace of acquisition of exhibits.

Administration of the Museum

For the purpose of administration of the Museum an autonomous Board of 12 Governors has been constituted with the Secretary, Education Division, Government of Pakistan as its Chairman.

The Board has been empowered to frame general principles and policies for the direction and supervision of the affairs of the Museum, to appoint such committees as necessary, and to frame its own Rules of Business and other rules and regulations as may be necessary for the proper discharge of its functions. Besides the Board, there is a small Executive Committee to run the day-to-day administration of the Museum consisting of the Vice-Chairman of the Board as its Chairman, the Director as its Member-Secretary and two nominees of the Board. The Director is the administrative Head and the Drawing and Disbursing Officer of the Museum. He is responsible for the proper maintenance and smooth functioning of the Museum.

The Board has also authorized the formation of standing committees for advice in the matter of construction of museum buildings, and the acquisition of exhibits for each of its sections namely, Technology, Physical Sciences and Biological Sciences.

The Director of the Museum is the Convenor for all these committees.

The Museum has its own Rules of Business and Employees Service Regulations.

The Funds of the Museum

The funds of the Museum consist of grant-in-aid from the Federal Government and such other incomes as may accrue to it from other sources. The funds are administered according to rules prescribed by the Government from time to time. The accounts of the Museum are subject to audit by the Auditor General of Pakistan.

The total financial input for the development of the Museum from the commencement of the project in 1964-65 to June 30, 1979 is given below :—

Year	Receipts		Expenditure	
	Total	F.E.C.*	Total	F.E.C.*
Total	69,08,900	11,00,000	61,01,838.35	11,00,000

*Foreign Exchange Component.

The actual utilization of Foreign Exchange has been Rs. 40,38,800/-. In addition to Rs. 11,00,000, funds to the tune of Rs. 29,38,800/- in the form of cash licences have been obtained from the Controller of Imports and Exports (C.I.E.) out of the commercial quota.

From the figures of the tables above it may be noticed that the total input (69,08,900) spreading over a period of 14 years has accounted for less than 61.35% of the total of the sanctioned project amount of 112.60 lacs. According to the phased programme of the sanctioned scheme the Museum was to be completed by 1979-80 ; i.e., in about 15 years.

This shortage of funds over the years, combined with world-wide inflationary trends in prices, has adversely affected the progress actually made. Whereas the input of funds spread over 14 years has been to the extent of 61.35% of the total, the physical progress attained is mere 30%. Thus 70% of the project is yet to be completed.

In view of the situation created by the shortage of funds, and bearing in mind that the museum must be firmly established as early as possible, efforts are being made to use the money available in such a way that a maximum number of educational and meaningful exhibits are acquired as soon as possible.

Museum Hours

The museum is open to public on all working days during the working hours, except Thursday, a day exclusively reserved for the weekly maintenance and upkeep of exhibits, buildings and service facilities.

Admission Fee

Entrance fees to the museum are charged as follows : -

(i) Students in groups accompanied by teachers, and individual students holding identity cards of their respective institutions.

Free

(ii) Public-at-large

Re. 1/-

(iii) Children

Re. -/50

CAPT. MUSHTAQ JILANI
Role of Armed Forces Museums

Definition

Museum, or whatever name you may give it, in its simplest form is a place to house collections of objects for inspection, study and enjoyment. These objects may be of any any kind, type and belonging to any part of the country or from all over the world. In other words museum gathers these objects, scattered through time and space, arranges them systematically, identifies them authentically and displays them aesthetically. A museum brings before the eyes of the visitor the story of the man's past, showing how he built up his knowledge of the world he lived in and how he developed his family life, his arts and crafts his culture and civilization.

Introduction

Making collections has always been a characteristic hobby of human being even from the early stone age but the development in the idea of making museums, art galleries etc. came at a much later stage. Food, clothing and weapons have always been essential to him and he has always been storing them for his future need. Later on a stage came when individual collections were considered a demonstration of personal wealth and a yard stick of personal prestige. With the rise of civilised world and the introduction of arms and ammunition, the aristocrats started gathering valuable objects like ornaments, jewels and different type of arms. The Industrial Revolution in Europe paved the way for the coming up of ordinance factories which also travelled towards the Middle East and India. The individual himself in a prototype of fashion reflects his taste. The same was the case in the medieval world because collection of objects was as good part of the fashion of the day as it was reflection of an individual's good taste, culture and wide interest. However, such collections gradually became a burden for the individual as he was not in a position to preserve and display these objects in a befitting manner and was not aware of the use of chemicals and the science of restoration.

Such reasons coupled with many more made the collectors realise to expose their valuables to the wider public inspection through the institutions popularly known as Art Galleries or Museums.

In the early 20th century efforts were made in almost all the countries to open new museums and re-organise the National Galleries. There were a good number of regional, site and University museums but National Museums were few in number. In 1913 National Army Museum, London, was established. Though there were many regional and regimental museums but the establishment of

National Army Museum, London under the guidance and patronage of Field Marshall Templer paved the way towards the establishment of other National Museums. In the sub-Continent of Indo-Pakistan the National Museum of India, New Delhi was established in 1948 though regional, site and regimental, museums existed all over the sub-Continent. The National Museum of Pakistan, Karachi was founded in 1950. Both these museums are famous for their native antiquities.

The Establishment of Army Museum

The Pakistan Army following the example set by the National Army Museum, London and the National Museum of Pakistan at Karachi, thought of preserving the past of the Army of this country. The Pakistan Army is known all over the world for its gallant and brave soldiers. It is not a new army. Its history goes back to centuries. Pakistan, being inhabited by martial races, had produced outstanding soldiers who had fought all over the world not only in the 19th and 20th centuries but even much earlier. The defeat of a Pakistani soldier was considered to be the defeat of whole of the sub-Continent. The ever-first Indian to get the Victoria Cross -the highest British gallantry award, was a muslim son of this soil.¹

The Northern part of the country which, since the dawn of history, has always stood against foreign aggression, has a glorious past. In order to preserve this proud and glorious past of our Army, the General Head Quarters, in the early 1960's, entrusted to the Historical Section the work of establishing an Army Museum at Rawalpindi.

It was not an easy job to collect exhibits for this museum. The requisite material was scattered all over the country and in some other countries of the world also. A general request through press, T.V. and Radio was made to the public in general and retired officers and ORs of the British Indian Army in particular. The British Officers and OR's who had served in the British Indian Army were also approached. The response from all concerned was generous. The regimental centres came out with the maximum of contribution. Most of the material captured during world Wars I and II kept in different centres was donated to the Museum. Our diplomatic missions in various countries also approached different governments for such help. General public and individuals having personal collection also donated many of their valuables. The Department of Archaeology, Pakistan also contributed in the making of this Museum.

General Muhammad Musa, the then C-in-C who took keen interest in the building up of this museum, in his inaugural address at the 13th Museum Conference held at Army Museum, Rawalpindi on 12th April, 1963 said :—

1. He was Subedar Khudadad Khan, a resident of village DAB, Tehsil Chakwal, Distt. Jhelum. He was awarded Victoria Cross at Holbecks, Belgium, during the World War I. He died only a few years back at the age of 80 in his native village. His bronze statue, originally fixed in a public place in Karachi, is now displayed in the Army Museum, Rawalpindi (Editor).

“We in the Army are particularly conscious of the past as it relates to us. I think, I would be right in saying that no group is more aware of traditions than the Army. As Army grows in tradition, lives by traditions and can be predicted to act in accordance with its traditions. Traditions are its whole existence, the source of all its inspirations, its lesson for victory and its warning for defeat. The pride of every officer and man in his unit radiates from the unit's traditions. He lives and often dies by these traditions, a ready and willing participant in the way of his unit's conception of man's behaviour, a way that may never be written down in words but nevertheless is known and digested by all. It is his traditions which keep a soldier prepared dutifully and cheerfully for the greatest sacrifice demanded by any human being, the sacrifice for his life, so that other may live. To us in the Army the symbols of our past are a living reality. For this reason we value our Museum and honour those scholars whose learning helps us to understand and evaluate our relics. We live surrounded by those relics if they are in museums. We encourage frequent visits there so that they remain in-grained upon our memory”.

The Army Museum within a short period of one year established its stature and was ranked as one among the best museums of Pakistan. It became a good place of recreation and basic education.

Educational Value of an Army Museum

Educational value of the museums is acknowledged by the world over. The aim of education is development of all faculties of mind and heart. The museum serves the purpose of an important centre of visual instructions. It gives a glimpse of history, which creates a desire for a thorough study of the past and going deep into the history of the past makes us understand how our present day life has been influenced by the results of human endeavours through the ages. The study of the past provides a basis for new inventions, new thinking and new planning without which further progress is unimaginable.

The educational value of Armoury Museum does not depend upon the collection but on a coherent and instructive display. It provides interest to all sorts of people belonging to different walks of life. Children and adults, literate or illiterate visit the museum with different aims and different levels of interest. An Armoury Museum throws light on the development of arms and equipments. It reveals the history of the arms in the chronological order. The objects on display give the visitors an idea as to how the military profession earned for itself the honour and esteem of people.

Moral Lessons

The army museums give the visitor some moral lessons also. The evidence of the destruction of war displayed through paintings, captured enemy equipments and other objects forces them to a conclusion that wars, though necessary, should

be avoided as far as possible. They start thinking that scientific advancement as in case of atomic energy, can do a lot for human civilization in creating peace and prosperity if evil designs of some people are checked. Such ideas will create sense of morality which is universally acknowledged as the highest attribute of humanity. A museum thus diverts the visitor's creative instincts towards constructive work for eternal peace and happiness. The general public visits the museum to be entertained, to satisfy its curiosity about the military objects and relics of the military horrors and to gratify a desire to learn something of nation's military history as long as this can be accomplished without too much of mental strain. The depth of the interest obviously depends upon the individual.

The serious students of weapons and military history view the museum as a research institution—a source of valuable information which can assist them in the pursuit of their own independent inquiry.

Value of the Museum for a Soldier

A soldier is very closely connected with the Army Museum. The Museum has a tremendous attraction for him because of his profession and close association with arms and ammunition. It invokes in him an interest in the military history which is so essential for building up background knowledge of every soldier. A soldier himself being the user of the weapons can see what techniques and methods were applied by his predecessors. He becomes aware of his abilities in the science of war and the means he adopts in the use of arms. The museum brings to his mind the lesson that gallantry and valour is another name of harmony between a soldier and his weapon. It is, therefore, only a soldier who easily understands the development in the methods and techniques of the use of military equipments. A soldier can easily visualize, while in a museum, his past which helps him as a guiding factor for the study of his future. The museum preserves the soldierly qualities of a man attached to weapons and so a sense of defence and patriotism automatically develops in the mind of a visiting soldier.

A soldier in a unit or centre passes a routine life but when he visits the museum and sees things around him his spirit of belonging to a noble profession evokes in him a sense of pride. He comes across memorials, captured equipments and paintings showing battle scenes and defence of his country. Such things beautifully displayed, infuse in his mind a true sense of patriotism and love for his profession. It is only a soldier who thinks himself better qualified to understand exhibits in an Army Museum because of his profession and association with the material around him. He learns many things and leaves the museum with a sense of pride. The museum thus serves as a visual educational institution for him.

Conclusion

The maintenance of the Army Museum is a continuous process and with the passage of time its scope is going to enlarge. It will become a source of information and motivation for the Armed Forces and a centre of attraction of scholars interested in military history and research.

PROF. F. A. DURRANI

**Role of Ethnographic and Ethnological Studies and Preservation of
These in the Museum**

Definition and Development

Originally the terms ethnology & Ethnography used to be treated as science concerned with the history and distribution of races. This definition has slightly changed. Now ethnology is regarded as a study of contemporary cultures. Ethnography, on the other hand, refers to the descriptive account of regional, tribal, customary behavior, traditions and material culture, etc. It is intimately related with the validity of social anthropological interpretation and improvement of techniques, theory and methods towards the middle of last century.

In ethnology emphasis is laid more on theoretical aspect of culture whereas ethnography is the reporting as well as evaluation of culturally significant behavior of a society derived from direct observation of field workers. Both are important subdivisions of cultural anthropology and closely related with archaeology, and physical and linguistic anthropology.

The first Ethnological Society of England was formed in 1843. Anthropological Institute of Great Britain and Ireland was formed in 1871 and the name Royal was prefixed to it in 1907. In U. S. the American Ethnological Society came in existence in 1842. American Anthropological Society was formed in 1879 and American Anthropological Association in 1902. In France Societe Ethnologie de Paris was formed in 1838 and societe de anthropologie de Paris in 1858. In Germany Gesell Schaft far Anthorpologie, Ethnologie, und urge sebichte came into being in 1869.

An early history of ethnological studies exist in the accounts of early travellers e. g. Herodotus (484-425 BC), Megasthenes (3rd cent. BC) and Tacitus (55-177 AC) etc. and medievel travellers and thinkers e.g. Al-Beruni, Ibn-e-Khaldun and Ibn-e-Batuta.

In Europe an interest in the reporting and documentation of 'primitive cultures' developed in the period of discoveries, through the voyages of geographers and explorers. It further stimulated with the accounts of missionaries and administrators of new colonies.

It got further streamlined towards the end of 18th century and middle of 19th century especially with people like Tylor (1832-1917) and Morgan a trend towards systematic study of these cultures initiated. Morgan's account of Seneca Culture is a classic example of such trend.

In 20th century people like Franz Boas (1958-1942), Barnsalan Malinoski (1884-1942) and Redcliff Browa (1881-1956) further set a pace of scientific analysis of ethnographic account derived through their direct participation in the activities of the societies that they studied.

In 1940's the development of Yale Cross Cultural Survey (later Human Relations Area Files or HRAF enabled people e.g. G. P. Murdock to write monumental works like 'Social Structure'. From there onward 'ethnology' involves a comparative study of contemporary cultures and largely excludes their bio-anthropology, archaeology and linguistics. In contrast ethnography is best used to describe the study of the culture of a single tribe or society.

The Scope of Ethnology and Ethnography in Pakistan

Pakistan remains to be a paradise for ethnological and ethnographic studies. The sciences of ethnology and ethnography have a very vast scope in our country. Pakistan is gifted with an environmental setting that is bound to have a mosaic of ethnic groups and cultures. Physically Pakistan is characterized with high glaciers, highland valleys, flood plains and alluvial riverine valleys, marshy deltas, deserts and rugged coastal belts, etc. All of these provide ideal habitats for regional tribal cultures. Further in the north and north-west it has several negotiable passes connecting Pakistan with Central and West Asia. These passes were frequently used in history by the invading armies and trade caravans that resulted into the influx of new people and cultural diffusion. At times the movements of new groups pushed indigenous ethnic groups into refuge areas e. g. Upper Swat, Dir, Chitral etc. where some of these cultures survive even today e. g. Kohistanis, Gujars, Kalash Kafirs etc.

Such a course could indeed play most vital role in the preservation of our history and heritage, provided further delay in this respect is avoided. At present these ethnic cultures are rapidly disappearing with the rate of socio-economic changes that are occurring.

Eversince the pace of developments in irrigation and agriculture was set up more than a century ago in the Punjab most of our semi-nomadic 'Jangli' cultures are gone with an influx of 'Abad Kars' or Settlers. Similarly, within our lifetime places like Faisalabad and Gujranwala, originally agricultural market towns, have been transferred into industrial cities and have completely changed their rural character. In urban environments, while Lahore has lost its multi-ethnic character, Karachi has acquired it more significantly after partition.

In regional tribal cultures we have cases of Gujars, Kohistanis and Pathans living in ecologic relationship in Swat and Dir. With the developments in communications and economic fields these may be merged into hybrid cultures. Similarly, in the Gomal Plain (D. I. Khan) the local 'Janglis' live in economic symbiosis with

1. Literally it means people who dwell in jungles. They were so named because they were mostly living in jungles alongside the rivers (Editor).

settlers subsisting on irrigational farming. The same environments are exploited by Nomadic groups of different ethnic background e. g. Pawindas and 'Changars'

With the introduction of Chashma Right Bank Canal and other irrigation schemes all these ethnic groups may gradually merge and result into a hybrid culture.²

The most classic case is that of Kalash Kafirs in Chitral, which has so far survived miraculously and needs the attention of ethnographers and ethnologists before it completely vanishes like the Red Kafirs of Hindu Kush who were converted to Islam in 1895 by Amir Abdur Rehman of Afghanistan. The Kalash Kafirs live in the South Western parts of Chitral, in the remote and not very easily accessible valleys of Bumboral, Biri and Rumber. They are both agriculturists and pastorals. The valleys are fairly green and well wooded. The main crops are wheat, barley and maize. Fruits grown are apple, mulberries, walnuts and grapes alongwith wild figs and vines. They consume corn, barley and wheat bread (wheat is seldom eaten except on festivals/feasts), ghee (fats), milk, cheese, and dried mulberries. Fish and poultry are strictly forbidden in Kalash society.

Hunting of ibex and Markhor carries great importance. In spring festival the Markhor hunting is upheld in songs and hymns. Goat occupies a prominent position in Kalash activities. It is the major animal of sacrifice on each occasion, its head is carved on important temples such as 'Jestakan' and Mahandeo and painted on the walls of temples and even carved on household utensils.

Stock raising of sheep, goat, short horned bulls and cow is practised. The villages are clustered around steep spurs. The houses are mostly double storeyed. The single room on the first floor is a store or sometimes an animal room, the upper storey consists of an open verandah that leads into the main living room-cum-kitchen, and a couple of other rooms. In the main living room are a few benches, stools, chairs and in the middle is wooden raised boxed platform. Next to it is the hearth with a smoke-hole above it. Around the hearth is the sacred area forbidden to the women. A woman is not allowed to step in this sacred area and pick up anything without first washing her hands and feet in running water. If that does happen, all the utensils must be broken. Timber is freely used in Kalash houses and wood carving in various designs is one of their most skillful profession. The door handles are especially of great interest reminding certain spiral motif on ancient jewellery.

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2. Pakistan still remains to be a paradise of ethnological or ethnographic studies. There are several ethnic groups in different inaccessible areas of Pakistan whose colourful Indigenous cultures are fast disappearing. Mir Bahra (Boatsmen) of Sind, Rohilas of Chollstan, Janglis, Changars and Oads of Punjab, Kafirs of Kalash, Brauhis of Baluchistan and Gujars of Kohistan are just a few examples to show how varied, rich and colourful are different regional cultures of Pakistan. Prof. F. A. Durrani, at Pages which follow hereafter, presents a case study of the most colourful of all these ethnological studies in Pakistan (Editor),

The religion of Kalash Kafirs is an admixture of idolatory and ancestors' worship in the form of wooden effigies. Their Pantheon consists of several gods and goddesses worshiped by singing hymns, sacrificing goats according to fixed ritual and by spectacular dances, in which both men and women take part. Fairies, demons and ghosts of ancestors are also conciliated in this manner.

Among the numerous shrines, and altars the chief temple is that of 'Jestak Han' (The House of Jestak). Jestak is the goddess of protection to the family, the children and the house. The new born child is initiated before Jestak. Kalash life revolves round this house and many ceremonies are associated with it. At spring family fathers pray here for the prosperity of the family. When the deads are taken to the cemetery, where they are placed in wooden coffins in the open, they are first commemorated through a particular ceremony. If it is a male, all the relatives feast here alongwith dancing. In case of a female, only dances are performed and no hymns are sung. The body lies here while offerings of loaves and dried mulberries are made by a tower of pine torches built outside the shrine. In case a boy marries a girl of the same lineage (which is only permitted if they are separated by seven generations) he has to throw a feast and build "Jestak-Han" building.

Another building that plays an important role in socio-cultural life of 'Kalash' is 'Bashali', which is the birth-house, reserved for pasturient and menstruant women. In most villages it is built by the river side. The house and its inmates are thought to be protected by goddess 'Dezalik', whose name is also used for a statue, said to be there. No man or even a women (in normal days) are allowed to enter this house. If a man accidentally passes by, or crosses the fields of this house, he has to undergo a troublesome purification ceremony and defray the expenses for a sacrifice. The woman who brings food must leave it outside the thresh-hold of the house. In case she has to help inside during a delivery, she must have bath in the stream nearby and leave all her clothes outside.

Kalash have several festivals all reflecting the prominence and the domestication and exploitation of plants, cereals, fruits and animals, notably Markhor and goat etc.

The hymns are valuable for historical and ritual purposes, providing immense information about social, political and mythical back ground.

CALENDER AND MAJOR FESTIVALS

The Kalash Calender is more of a vegetation cycle like many indigeneous people.

Ghoumose (Ghitrmos) : THE GREAT FESTIVAL OF KALASH

The Kalash New Year begins with winter solstice when 'Ghoumose' is celebrated. It is divisible into two parts : (a) the sacrifices, ceremonies and festivities during the last ten days before winter 'solstice' ; (b) the celebration of the sun's stay in its winter home. It covers fifteen days and during this period

the people will not go out of the house-doors. The men remain in the goat-houses, the women at home. This presents an actual illustration of religious correlation between nature and man, so typical of primitive cultures.

During (a) above, sacrifices and prayers to 'Sajigor' (Fertility God) are offered for fertility among cattle and men, and for fine weather soot-drawings of men and goats with wet clay are made on the wall of 'Jestak-Han'. Making of small dough figures of animals, ceremonial purification of women by virgin boys who throw burning branches over their heads; cleaning of the houses and renewal utensils etc. are also parts of the rituals. On several evenings men and women meet to sing, dance and make merry. They volunteer teasing allusions to objectionable episodes from the past year; a husband may rebuke his wife for her extramarital adventures and a chorus of women will retort in her defence etc. Some men pose as women and girls dress in garments of men making fun of the oddities of the opposite sex. Several hymns and songs concentrate on prayers for fertility, and a kind of leave taking of the dying year and welcome to the new one.

'Joshi' : Spring Festival

'Joshi', the happy spring festival, takes place roughly at the beginning of May. It is spread over three days and nights and brings the entire population to one central place. The whole ceremonies revolve round sacrifices to gods and the cleansing and decoration of 'Shinghran' (goat-house) and carrying torch light processions and dances. The songs mainly signify the importance of Markhor hunting or the former people (perhaps during hunting stage?) and great feasts.

'Uchal' : The Autumn Festival

It is observed when the harvest of wheat and barley have been completed and stored. Leaves and cream cakes are taken to the shrine of 'Sajigor' (Fertility God). Offerings for the abundance of corn, walnut, grapes and fruit offerings are also made to other 'gods'. The remnants are brought back and consumed by all except women to whom it is forbidden. In the evening boys and girls dance at 'Jestak-Han'.

"Prr" : The Return of Herds from Summer Pastures

This festival, (a joyous one) is performed in September-October when the goat-herds come down from the mountain pastures and the grapes are ripe. Then goats are sacrificed to 'Praba' and two virgin boys press the grapes with their feet in a large vase, while the people sing of the different places where grapes are grown, harvested and pressed to wine. The wine is offered to 'Praba' and for three days there are dances, plays and festivity.

The young boys, who return after a long stay in the summer pastures in goat-houses in the mountains (where they gathered all the dairy products from the goats) occupy a prominent position in these dances. They disguise themselves with veils on their faces, some with horns and under the name of 'Budalak', they startle the girls and women, jumping about and crying 'ho' 'ho'. They chase

them into the bushes, catch them, and indulge in erotic and sexual pleasures. This privilege of 'Budalak', just for the period of festival, can never be denied and he is free to choose any body's daughter or wife.

MATERIAL CULTURE

The men wear grey woolen trousers, a black-brown 'ponchoan' and often a small cap. The women and the girls wear long black-brown shirts and the special type of woolen black-brown head gears, decorated with cowries and trinklets hanging down the back to the waist. The head-gear is the most important part of their dress.

DIVISION OF LABOUR

Men look after animals, prepare dairy products, do farming and other outdoor work, such as marketing and other manual works.

Women's duties are : bringing in fire-wood, grinding grains, weaving woolen cloth and helping in certain agricultural works such as weeding, watering etc.

'Kalash' are great experts in constructing irrigation channels, and they are often consulted in this trade in the rest of Chitral. They are also noted for building channels in the hollow logs for enormous distances.

They are fairly honest in dealing. An explorer, who saw a 'Kalash' leasing fruit trees to some one from other valley, where crops had failed, mentions that the owner was allowed to take as much fruit as he could reach by a stick of agreed length and when he asked whether the owner could be suspected of cheating, he was bluntly told, that people around there were unaware of such a thing.

Thus, here in Chitral we have a people who differ in their religion, language custom, rituals, and many other aspects of life from the rest of the population and whose cultural study is most fascinating and of immense interest to the social scientists.

UXI MUFTI

Role of Folk Heritage Museum in Pakistan

Pakistan is a developing country. Unlike Japan it is not highly modernised or industrialised. Curiously, underdevelopment has its blessings. One great advantage of being underdeveloped is that Pakistan's folk culture is still a living tradition practised by a dominant majority of its people. We Pakistanis, therefore, do not have to go looking for folklore ; it is all over. In fact it is so commonplace that an average rural Pakistani may have no awareness whatsoever of his folkloric culture and the richness of his folk heritage, just like the fish in water.

The folklore of Pakistan is the product of centuries of communal expression and not an individual expression. Folklore as such is not the invention of one man. It is not hand-made nor created by a group of individuals. It is rather evolved, commonly shared and practised over centuries by an entire community.

Our folklore has evolved over great lengths of time. Though living today, it has great antiquity. It links back to the ancient Civilizations of the Indus (Mohenjodaro and Harappa) and Gandhara. Our folklore is therefore deeply rooted and extends over many centuries.

A large majority of the people of Pakistan live in the villages. Their life is tradition-bound. Customs, rituals, ceremonies, beliefs, folk songs and dances form the matrix of their day-to-day sentiments. The reasons for which folklore is important for Pakistan are different. Japan has lost its folklore due to growth of urban centres and industry and so it is very important for it to rediscover the roots of Japanese society and preserve it. Japan must look back into its own heritage and preserve its identity for posterity. In Pakistan, however, it is the other way round though the situation is changing very rapidly. Folklore is important for Pakistan because seventy percent of its people live, think and feel folklore in their day-to-day life. It is the most potent media communication in our dominantly unlettered and tradition-bound society. It is important not merely because it is something of the past which must be salvaged from the ravages of transition and preserved for posterity but primarily as the dominant living culture of the majority today.

Pakistan is a land of great diversity. Our folklore is as varied as our geography, culture, languages and people. In the north we have the glaciers and the snow-clad mountains highest in the world, namely the Himalayas and the Karakoram. In the centre are stretches of fertile plains, green fields and broad rivers. In the South lie the parched desert lands, utterly barren having no rains or water for years. Further down south near the coast line lie the mild and

humid regions of Makran, while in the south-west are the rugged mountains of equally rugged tribal Pathans and Baluchis. Pakistan's folklore is extremely diverse. Its folk arts, crafts, songs, dances, rituals, ceremonies, customs, languages, dialects, musical instruments, everything varies from region to region and from community to community. The urbanised cities may look the same but one must step out of the city to meet real Pakistan.

One other characteristic of Pakistanis folkloric heritage is its remarkable continuity. The ancient civilisations of Mohenjodaro, Harappa, Ghandhara and the upper Indus valley legacy have not altogether perished. These survive not merely as archaeological ruins but also in the lives of Pakistani people today. As the historians put it. "We do not so much outgrow the past as we grow out of it". The wind instrument BORENDO, originally excavated from the ruins of Mohenjodaro is still blown by many shepherds of Dadu district. The famous Mohenjodaro, bullock-cart is still in use amongst the farmers of the valley. The beautiful Gandhara jewellery is to the present day a living tradition.

Continuity of Pakistan's folkloric heritage is perhaps its most amazing and remarkable aspect lending it unbelievable richness, piling, so to say, the folk wisdom of its people over centuries and transmitting it on to the coming generations. Innumerable invasions enriched it. Colonial rule could not disrupt it. Modern technological onslaught has not erased it.

I have so far described the salient features of Pakistan's folklore as DIVERSITY, ANTIQUITY and CONTINUITY. One other important feature is its ORAL CHARACTER. Pakistan's folk culture is essentially an unwritten culture. It is transmitted from one generation to another orally and is therefore often referred to as VERBAL ART. The oral character of Pakistan's folk culture is one of the major reasons of its failure to project itself to the outside world. Even within Pakistan it is difficult to obtain a book on 'How to make a Sarangi' or 'How to be a Sufi' because such traditions are oral and have to be learnt by sitting at the feet of the master. Similarly the skill to make jewellery, lacquer, wood, weave carpet cannot be acquired from any printed source. Even the great heritage of classical music is largely unwritten. Books on the subject are few. There are hardly any schools except for the practising families of musicians known as GHARANA who learnt the great art from their forefathers and will likewise transmit it to their other kiths and kins. In short, the only way to learn Pakistan's classical music is to sit at the feet of a great master. It can neither be read in books nor acquired through formal training in an academy or school.

When Alberuni, the great historian, came to Pakistan he was amazed to discover that there was no written record of history in the sub-Continent. Rather each Raja, Emperor and feudal lord maintained his own fleet of 'Bhatts' (folk singers) whose responsibility it was to commit to memory narratives of wars, family lineage and historical events in the form of poetry and music. This ancient practice gave rise to a special class of musicians known as 'Mirasi' derived from

the word 'MIRAS' meaning heritage while 'mirasi' as Keeper of the Heritage. This time-old institution has now degenerated but still survives. Family lineage, historical events, war narratives and ballads continue to form the oral art of the 'mirasi'. The fact makes folklore all the more important for Pakistan for a large part of Pakistan's unwritten history can now be traced in its folklore. Pakistan's folklore precedes written history.

One might tend to believe that what is not written is soon likely to die out or that the unwritten is inferior to the written, therefore unworth of serious consideration. This I must reject emphatically as nothing but urban snobbery. The fact that Pakistan's folk culture is not written, something inscribed in a book and preserved in cold print, but is actually lived, talked of, believed in, felt and transmitted, ensures its continuity as well as longevity over written cultures.

Some one may object that when Pakistan is so diverse, comprising of so many ethnic strains and cultures how can then Pakistan holds together as one people? Here again it is Pakistan's folklore, popular belief, popular religion, attitudes, common values and ideals, which make Pakistan one nation. Pakistan, paradoxically, is a unity within diversity. This is very difficult for a foreigner to comprehend. How could a diverse folklore comprising of multiple languages, races, communities, cultures be yet a unity.

The essential unity of Pakistan's diverse folklore is the contribution of the great mystics and sufis of Pakistan, of which there are many, having tremendous impact on the rural life of Pakistanis. There are hundreds and thousands of shrines as also living mystics who continue the tradition of their masters.

Many of these sufis were scholars, musicians, poets of the highest order and devoted their lives for the good of the common man amongst whom they are still revered. In fact the Sufis were the only ones who actively used indigenous folklore to communicate the Sufi message.

It is a fact that the bulk of Pakistan folklore is the contribution of the sufis. A large number of folk songs, devotional songs, dances, musical instruments—now popular heritage, are the innovations of these mystics. Almost all folk festivals held in Pakistan relate to their shrines. These festivals are known as Urs or anniversary celebrations and are accompanied by spontaneous singing, dancing, acrobatics and other expressions of folkloric art. Though the language and the form of their message may vary from region to region yet the contents of their message and the underlying values remain one. The festivals around the shrines of the mystics are not religious in character nor is so their music. It is folk and appeals to all sons of soil equally regardless of race, creed or religion. The mystic folklore imbibes the message of oneness synthesis, and completeness for all.

SALIMA HASHMI

The Fine Arts and Our Museums

Henry Ford once said "Museums are like graveyards, full of dead things". Henry Ford was a great maker of cars but a lousy maker of sayings. We are unfortunate, we have banned his cars and taken his sayings to heart.

It is now an established idea, that museums are more than mere repositories of artifacts produced in earlier times, more than ware-houses of antiquities, they are an effective media of communication like the written word, television and film. They are concerned primarily (though not exclusively) with the visual communication of objects of cultural and scientific interest.

The Fine Arts tradition in Pakistan, is a rich and varied one, and I include in this not only paintings and sculpture but the applied arts of carpets, pottery, jewellery etc. But this tradition has suffered the tribulations that are part of the colonial heritage. The history of this part of the sub-Continent is a story of succeeding civilisations bringing their own traditions which, mingling with the local folk-culture produced a fabric which was at once indigenous, yet distinct from that which had gone, before it. The Fine Arts tradition culminated in the imperial court of the Mughals whose influence was felt all over the sub-Continent and which dictated the aesthetics and the mores in all the arts, from architecture to music to painting. The ensuing decline and decadance of this tradition led to the rise of the provincial traditions, which were more local and less vigorous in nature and were eventually eclipsed by colonial considerations.

Although the concept of museums as a source of Public enjoyment is no doubt a western one and was introduced by the British into this area, nevertheless the collection of objects for the personal pleasure of monarchs and others, or for religious purposes, is common to most cultures and peoples. The objects which we now group together under the label of the Fine Arts were available in private collections, as colonial bounty, in the market place and lastly in archaeological sites.

However, the museums established by the British in this part of the sub-Continent were, I feel, primarily concerned with only archaeological artifacts. Paintings and sculpture were only important to them as an auxiliary of archaeological research and discovery (such as Gandhara sculpture) and not because of their intrinsic value as objects of aesthetic excellence. This from foreign rulers, unaware of the visual traditions prevalent in the area, is not surprising. Just as our classical music needed the 'Beatles' to make it comprehensible to the Western Public. The museums of this area therefore became archaeological museums rather than museums of Fine Arts, the collection of which was of secondary importance. No

great need was felt to establish separate Museums for the Fine Arts as a result of which collections disappeared abroad or were simply destroyed, together with the traditions which withered away for lack of patronage (e.g. a Mughal drawing was valued at 25 Pounds by Sothebys in 1963, but because of the recent fashionable interest in the arts of the sub-Continent the same drawing was recently priced at 1000 Pounds).

The store of painting, sculpture and the applied arts was not systematically organized, has obvious gaps and could hardly be termed collections. This then was the state of affairs in 1947, vis-a-vis Fine Arts collections in our museums. The exclusively Fine Arts Museum in Pakistan is still a long way off, it is still a luxury in terms of investment. However, Archaeological-cum-Fine Art Museums are in existence all over the world and have balanced both aspects very well, such as the Victoria and Albert Museum, or the Hermitage, which houses every thing from Greek antiquities to Picasso. What is essential is a fundamental reappraisal of our attitude towards the Fine Arts, which remains ambiguous at best and downright deprecating at its worst. This is a legacy both of the Victorian tradition which saw 'native art' through colonial eyes and of those elements within us who are unable to link the love of the beautiful with a love of religion.

As I see it, the problem of the Fine Arts in our museums has three aspects :

Firstly, it is necessary to proclaim the Fine Arts tradition, to own it, to collect it systematically, and finally, to express it. The collections we have are scattered, smatterings of this, that and the other, arranged in bits and pieces with no formulation of an attitude. This confusion is then reflected in our exhibits and is communicated to the public who see unrelated series of objects, occasionally forming little islands of a particular period, existing in no particular relations to themselves, and having no real relevance to their past. This, then is the first step. We need to own up to what is in our past, state it in unequivocal terms, with pride and vision, leaving no convenient gaps.

The Second aspect of the problem is that as a country we are now 34 years from independence and what have we to show for it in terms of the Fine Arts ? To be sure the Lahore Museum is perhaps the most adventurous in this respect and has, casually arranged comprehensive shows of contemporary Pakistani art and has patronised one modern painter, which is more than can be said for any other museum in Pakistan. This attitude on the part of our museums is not accidental, it is part of our general attitude towards ourselves and those amongst us, who are creative. Brawne says, in his book 'the New Museum' that a museum needs, and, I quote, 'the ability to come to terms with some of the greatest examples of the past without in anyway compromising the present'. Our museums, while struggling to come to terms with the past have very successfully ignored the present. It does not exist. The ambiguity in attitude towards the Fine Arts is reflected not only towards the past but even more so in towards the contemporary.

Firstly, the public (both foreign & Pakistani) visiting our museums may well come away with a sketchy idea of the past tradition in Painting and Sculpture but they will certainly remain unaware of contemporary work, and, what is more important, be unable to trace the links between the visual past and the contemporary plastic expression.

The Second drawback of this neglect is that contemporary artists have had no forum for serious evaluation of their work. Consequently, the public is quite unfamiliar with their work and its relevance to them. The lack of evaluation, lack of interaction between the modern work and its public has isolated the contemporary painter and sculptor, and left him at the mercy of the media-men, the television crews, the journalists, the radio-comperes. The Museum differs in this very important respect from the other media, in that it is a more immediate mass medium, since it creates not an image before the audience but presents the objects itself. It is a direct encounter between the object and the viewers, there is an immediacy which is lacking in the television image or the photograph.

It can be pleaded that there are Commercial galleries where our artists exhibit, but I feel commercial galleries can in no way perform the role that a museum does, their role by definition is a totally different one. They are not in the serious business of an appraisal of the past and an analysis of the present. They are not established to educate, to communicate, to create a vision, their considerations are quite different to that of a museum. A word here about the National Gallery in Islamabad, an hour spent there will demonstrate, that it is catering to foreign visitors and is much too remote from our museum-going public. It can be argued as I have often heard done, that we have yet to produce work of enough importance to be viewed in museums. But this is a view of those who have only a superficial acquaintance with the development of the plastic arts in the last 30 years. It is possible to make out a very solid case for the work done by contemporary Pakistani artists done against great odds, lack of public and government interest and financial hardship. The appearance of several trends became apparent with the first decade after independence. The continuation of the romantic Lahore School of the 40's headed by Chughtai, the Victorian realism of Allah Bux, and the emergence of the Cubism of Shakir Ali, had been around for quite a while. However, the ambitious exhibition of contemporary art in 1962 at the Lahore Museum displayed a surprisingly vigorous modern movement both in Painting and sculpture. It is unfortunate that our museums have not continued this tradition and our public, largely remains ignorant of the issues with which our painters and sculptors are involved today. The bronzes of Shahid Sajjad, the primitive paintings of Shakira Hadi, the miniatures of Bashir, the influence of folk art on Ahmed Khan and Zahoor ul Akhlaq all this and much more is unknown and unevaluated.

This, then is the second aspect of the problem vis a-vis Fine Arts. The third aspect does not apply strictly to the Fine Arts but for the purpose of this paper, and because of the influence on contemporary art. I am including the applied arts among the Fine Arts. I mention these not because of the rich and

varied tradition but also because in many cases, the links with the contemporary applied arts are strong and healthy. The craftsman's place in our society is not an enviable one. While the painters and the sculptors have begun to get grudging social recognition, the craftsman remains unsung and un-honoured. To create an understanding of, and a pride in the crafts of Pakistan, it is necessary for museums to re-interpret their rich collection of crafts and to make them relevant to those crafts that still flourish today. It is a matter of vision, coupled with technique. The art of the ceramicist, the wood carver, the carpet weaver, can and must be eulogised, if we are to create a national pride in these and other traditions. It must be a story of elevating the everyday object, a story of visual surprise, a story of the continuing legend.

For all of this, apart from the craft of display (of which we shall no doubt hear a lot) is needed, I feel a total method, a vision of the social role of the museum. Some one said "art in a museum is like a performance of a symphony in a concert Hall" i.e. it is more than a matter of good accoustics, or the musicians, it is the total encounter, the visual excitement of the orchestra, the anticipation, the crowds in the foyer, the sense of occasion, and then the music. In other words the totality of the experience both personal and public.

May I sum it up with yet another quotation? (Sandberg-"Art and Its Function in Life", 1959). Let us try to creat surroundings

Where the vanguard feels at home
 Wide
 Clear
 On human scale
 No large halls, pompous stairway, ceiling lights
 Doorlike gates, uniformed officials
 But a place where people dare talk, laugh and be themselves
 A real centre for present life
 Generous
 Elastic
 Music's home, home also for photography
 Painting and sculpture, for dance and movies for experiment
 And for everything that will brighten the feature of the face
 Of our time, for every contribution to the form of the present.

MUSEUM COLLECTIONS

DR. CH. ABDUL REHMAN

The Role of Palaeography and Epigraphy in Pakistan

The art of writing is one of the most significant and useful inventions ever made by man. It has shaped the destiny of man, and, besides putting him on the way to progress, it has provided him with an instrument for preservation, augmentation and transmission of knowledge from generation to generation. By its very nature it has proved to be the most stable medium of propagation of knowledge and the diffusion of human culture. Think of the world which has no writing, you will instantly understand its importance. The study of this art which in the past appeared in a variety of different forms or scripts (i.e. systems of writing) is called palaeography. As a discipline dealing with the art of writing, which during the march of civilisations distinguished man from animal, palaeography is one of the most fascinating and instructive studies.

The history of the art of writing in Pakistan is very intriguing. This is largely due to many gaps in our ancient records and the scarcity of materials on the subject for study. Even the date of the origin of writing in Pakistan, and for that matter in South Asia, had been differently understood by different scholars in the past. Max Muller, one of the earliest orientalists, for instance maintained that writing in this part of the world started as late as the 4th century BC. Similary Burnell, another well-known European orientalist, held the view that Brahmi was introduced in India not earlier than the 4th century B.C. Buhler who had a better knowledge of Indian palaeography, than the first two writers, however, placed the origin of Brahmi between 800 to 1000 B.C. But these opinions were expressed at a time when Brahmi was looked upon as the earliest writing system of South Asia. The momentous discovery, however, of the Indus Civilisation and its script in 1921 has changed the picture altogether. It has not only conclusively proved that the Ashokan Brahmi is not the earliest script of Pakistan but also shown that the art of writing dates back to at least the third millennium BC.

The Indus script which is partly pictorial and partly linear still remains, so far as its decipherment is concerned, very much of an enigma for the world of scholars. But its extant form is certainly not the earliest. One may assume therefore that there were still earlier stages which preceded the Indus script. Let us see what did these earlier stages represent and how did writing originate.

It is common knowledge that man as a social animal likes to live in the form of groups. With the lapse of time these groups increased in size and number and let the complexities of urban life. Since human memory has its own limitation, all the records pertaining to different aspects of urban life cannot be memorised. Therefore the march of culture made it imperative to devise ways to help

and take the main pressure off the human memory. This in fact was the germination of the idea of writing.

Although there is no concrete evidence in Pakistan, albeit elsewhere it is quite well known that the earliest efforts at writing took the form of pictures. A farmer, for instance, wants to keep a record of the number of baskets of grain paid to the government as tax would draw the picture of a basket representing grain and some vertical strokes indicating the actual number of baskets paid as a measure. But this is certainly not a very accurate system. For, the pictures at the best give a rough idea but do not represent the actual words and they can be read in many different ways like baskets of corn, wheat, barley etc. This is called the pictorial stage. This, then, seems to be the humble first step towards writing.

Man learns by experience. So the pictures gradually took definite shapes. At this stage each and every picture stood for a definite object and it was universally understood so. The ambiguity of meaning had gone. For instance the picture of the head of a man meant only head and not man or human being. Similarly the picture of donkey stood for donkey only and not for animal. Now it could not be read in two different ways because its meaning has been determined by general practice. This was a great step forward.

Repeated use of the same pictures over a long period of time led to a very significant development which brought the pictorial stage very close to real writing. People had by this time learnt that the pictures of bee and leaf, for example, stood for the sound 'be' and 'leaf' and not for the actual bee (insect) and leaf (foliage). Now 'be' and 'leaf', were two syllables. Having fixed the sound values of different syllables, it became easier to write words of which pictures cannot be made, like abstract nouns. A way was thus found, for instance, to write the word 'belief' by combining the picture of bee and leaf. Similarly the words 'Sarcar' and 'Kharkar' could be written by combining the picture of car with that of 'head' and 'khar'.

From the time of the Indus Civilisation till today as many as nine major scripts had been in use in Pakistan. These are :

- (i) The Indus Script,
- (ii) Brahmi,
- (iii) Kharoshthi,
- (iv) Bactrian Greek,
- (v) Sarada or Sharda,
- (vi) Devanagari,
- (vii) Arabic,
- (viii) Gurumukhi,

(ix) Roman or English, besides many other minor scripts.¹

Except for the scripts still in use (No. vi-ix), the rest had been totally forgotten before they were rediscovered by scholars in the modern age. Some Indian scholars of Sanskrit and Prakrit with great efforts could read the manuscripts belonging to the 8th or 9th centuries AC but not earlier. The Gupta and Brahmi scripts were sealed books to the Indians. When Firoz Shah Tughlaq shifted the Ashokan Pillars from Topra and Meerut to Delhi, he invited a number of Hindu Pandits to decipher the inscriptions on these pillars but all showed their inability to do so. Similarly Akbar, the great Mughal, was inquisitive about the writing on these pillars, but even in the 16th century there was nobody to help him. People were satisfied with the fanciful legend that these were the staffs of Bhima and their writing contained the instructions of Sri Krishna.

The earliest script of Pakistan, namely the Indus script, has not been deciphered as yet. This fact alone has rendered the situation more difficult. Some scholars (H. Heras and J. Marshall) who think that the Indus culture was Dravidian, regard this script of Dravidian origin. Heras in fact attempted to read the script from left to right and transliterated some of the inscriptions into the Tamil language. But the difficulty is that we have absolutely no knowledge of the Tamil spoken or written in the third millennium B.C., and therefore, the reading proposed by Heras cannot be verified. Some scholars (like L.A. Waddell and Pran Nath), who trace the origin of the Indus people to Sumeria, consider the Indus writing as an alien script which was introduced by the new settlers. According to another prominent writer (D. Diringer) it is impossible to decide whether the Indus script is truly indigenous or imported. A connection between this script and the common ancestor of the cuneiform writing and the early Elamite script is probable, but it is impossible to determine what the connection was. Perhaps the Indus script was derived from an early script which was the common ancestor of this and the cuneiform and early Elamite writings.

The decipherment of Brahmi and Kharoshthi owes much to the dedicated efforts of some European scholars who first equipped themselves with the knowledge of Sanskrit language. After Alexander's invasion the Greeks had become to some extent acquainted with the learning of what they call India. This acquaintance seems to have persisted as late as 1651 when Abraham Roger translated the Sanskrit poet Bhartrihari into Dutch. But much skepticism and doubt was created

1. Among the so-called minor scripts we must include such important scripts as Aramaic (Bhal Khan Inscription in the Lahore Museum & Taxila Inscription in the Taxila Museum); Greek (Bactrian Greek) known in Pakistan only from legends on coins but otherwise well attested from numerous Greek Inscriptions from Al Khanum, Qandhar, Surkh Kotla etc all in Afghanistan; Pahlavi from a coin of Vahitigin from Taxila and of another Shahi King Sr Tjino Shovo from elsewhere and Bactrian Cursive Script of Tochi Valley Inscriptions in the Peshawar Museum. Beside the present day English script, the true Roman script in antiquity is attested from Latin legends on Roman coins discovered from Taxila and Manikyala and many other Roman coins known in the Lahore Museum (Editor).

about the real existence of Sanskrit when it was discovered that the much famous work, called Ezour Vedam, was in fact a forgery made by a Jesuit Missionary in the 17th century.

The first impulse to the study of Sanskrit was given by the practical administrative needs of the British who wanted to rule India according to its own traditions. Thus Charles Wilkins at the instigation of Warren Hastings acquired a considerable knowledge of Sanskrit at Benaras and by 1785 published a translation of the Bhagavat Gita. The pioneer of Sanskrit studies in Europe was, however, William Jones (1746-94), a brilliant young scholar, who laid the foundation of the Asiatic Society and later on contributed to a very large extent in spreading the knowledge of Sanskrit. We next come to the great name of Henry Thomas Colebrooke (1765-1837), the first European to handle the Sanskrit language and literature on scientific principles. The introduction of this knowledge on the Continent however owes much to Alexander Hamilton (1765-1824), an Englishman who had acquired a good knowledge of this language in India and, by the time the war flared up, happened to be passing through France on his way home in 1802. He was detained there by the orders of Napoleon. During his long imprisonment in France he taught Sanskrit to some scholars and especially to the German poet Friedrich Schlegel. Schlegel's book *"On the Language and Wisdom of the Indians"* produced nothing less than a revolution in the science of language.

With the establishment of the Royal Society started the proper decipherment of the South Asian Scripts. In 1785 Charles Wilkins read the Bodhi Pillar Inscription and in the same year Pandit R. Sharma read the Topra-Delhi inscriptions. But so far the work was easy as the inscriptions were of comparatively recent times. In the same year J.H. Harrington discovered the Nagarjuni inscriptions with quite unfamiliar archaic characters. Charles Wilkins' persistent efforts once again bore fruit and by 1789 he was able to read almost half of these characters which later became known as the Gupta Brahmi. More substantial and successful attempt at reading the Gupta Brahmi was made by Prinsep who deciphered a number of these inscriptions.

The main clue for the decipherment of Kharoshthi was taken from the Bactrian Greek coins which had bilingual legends on them : Greek and Kharoshthi. Difficulties were experienced in the beginning as to the language of the Kharoshthi script on these coins but thanks to the untiring efforts of Masson who correctly observed that the Greek legend on one side of the coins was identical with the Kharoshthi legend on the other.

Prinsep followed the researches of Masson and was able to read twelve names and six titles of the Greek kings in the Kharoshthi script. He also fixed the direction of the script from right to left. This discovery ultimately led to decipherment of larger inscriptions. The credit of preparing a systematic comparative table of the Kharoshthi alphabet goes to Buhler.

The Bactrian Greek was probably not a very popular script, although a number of inscriptions dating from the time of Kanishka to about the middle of the 9th century have been found in Gandhara and Afghanistan. Side by side with this script the Brahmi continued to develop till a new style called the Sarada or Sharada came into being.

The Bactrian Greek¹ was dropped out of use with the arrival of Arabic in Afghanistan and Gandhara, but Sarada continued to flourish for some time.

Sarada, as the name of a script, was not known in the 10th century AC. At least Alberuni does not include this name in the list of the scripts known to him. But he mentions Sarada as the name of the Kashmiri goddess of learning. Since writing was considered to be a gift of the goddess of learning, it came to be known after the name of the goddess.

After the eleventh century AC Sarada went into the background to degenerate into various local styles like Gurumukhi and Kashmiri whereas the main field was taken up by the Devanagari script which at present has become the national script of Bharat.

1. Probably the author means here Bactrian Cursive also known as Cursive Greek, Tocharian, Ephthalite writing, Central Asian Script, Graeco-Bactrian Cursive, Kushano-Greek Writing etc. (Editor).

DR. MUHAMMAD BAQIR

Studying Miniature Paintings and Miniaturists of the Sub-Continent

The term "miniature" has now come to refer to anything small, whether it be an automobile or a painting. Originally (1586) it was applied not to a small portrait but to the vermilion coloured (from Latin *minlare*, to colour with red ochre) decorations on the borders and initials of illuminated manuscripts. These illustrations being on a small scale, it is possible that a confusion arose with Latin *minuere*, to diminish. The sixteenth century Western portrait miniaturist, however, were called 'limners' (illustrators). The current connotation of the word "miniature", that is, a portrait in miniature painted on a small scale and with minute finish, usually on ivory or vellum, came into vogue in 1716. It was then also applied to such paintings done in Iran, Turkey, India and other countries, where these were never styled as such.

The miniatures of Indo-Pakistan sub-Continent, which form the subject of study in these pages, are like those of West in that they are book-size and often illustrated a text, but there the similarity ends. There are two traditional forms used by the Indo-Pakistan artists, namely, that of fresco and that of the separate pictures to be kept in an album or to illustrate a manuscript. The easel painting destined to be framed and hung on the wall was unknown to the miniaturists. The album pieces or manuscripts were designed to be seen close at hand and to be studied with leisure and in detail.

Indo-Pakistan miniatures are broadly divided into two groups, the Hindu and the Mughal. The earliest extant paintings of importance are in the Ajanta cave temples in the Deccan. These are mural decorations painted over a period from 200 BC to the seventh century AC. They depict realistic scenes from Buddhist life and parables from the Buddhist religion and as compositions are among the great works of art of the world. Even during the period of Muslim domination, from the thirteenth century onwards, Hindu schools of painting continued to flourish at Banares, in the Punjab, the Deccan and South India. Tradition was especially strong in Rajputana, and Rajput painting, derived from the traditional mural art, was devoted to illustrating the stories of legend and religious epic.

THE MUGHAL MINIATURE

The Mughal emperors gave a new impetus to miniature painting in the sixteenth century. The conquest of India by Babur, a descendant of Timur, brought the Islamic civilization to Hindustan. Little is known of the paintings produced at the court of Babur, although we learn from literary sources that this emperor was a patron of the fine arts as well as a learned philosopher, a wide traveller, a

hunter, and a lover of nature. Very few miniature paintings may be attributed to his time. Kuhnelt assigns to this period a painting of a sea fight in an album of paintings once owned by the Emperor Jahangir and now in the State Library, Berlin. This painting shows clearly the influence of Behzad and the School of Bokhara.

Babur's successor was Humayun, who was forced into exile from 1540 to 1555. He spent his years of exile in Iran, where he was hosted by Shah Tahmasp. At the court of the Iranian monarch, Humayun became acquainted with the work of some of the greatest Iranian painters. In Tabriz he met Khawaja Abdus Samad of Shiraz and Mir Sayyid Ali. In 1549 these two masters were invited to Humayun's court at Kabul to illustrate the Persian romance *Amir Hamza*, a fantastic narrative of adventure. Thus they became the actual founders of the Mughal School of Painting.

Mir Sayyid Ali (C. 1540-75) was a Muslim from Tabriz. He met Humayun when the latter was in exile in Iran, joined him at Kabul in 1549, and went to live at his court in 1555. Here he was placed in charge of the fifty painters set to work on the huge romance *Amir Hamza* (in 16 volumes) which was to contain 1375 miniatures. The surviving illustrations, which were actually large paintings on cloth, (each one yard in length) are now scattered in several collections, the greatest number being in the Industrial Museum, Vienna and the Victoria and Albert Museum, London. In the United States of America there are about fifteen paintings from this manuscript, of which five are in the Metropolitan Museum of Art, New York.

Khawaja Abdus Samad (C. 1525-1600), on the other hand, was a Muslim native of Shiraz, and came to India to serve under emperor Humayun, who bestowed upon him the title of *Shirin Qalam* (Sweet Brush). After the retirement of Mir Sayyid Ali, Abdus Samad took over supervision of *Amir Hamza* from him. In 1577 Akbar appointed him Master of the Mint and in 1587 Revenue Commissioner. He gave Akbar lessons in drawing when the emperor was a boy and remained his confidant and advisor. Besides being influential in Akbar's court, he was an expert calligrapher and designed the beautiful coins the emperor issued around 1577. It is said that he excelled in portraiture, notably in delineating the features and expression of the emperor. He also taught the Hindu painter Daswan II.

As a teacher he had the responsibility of training more than one hundred Hindu and Muslim artists, who collaborated on the great *Hamza Nama*, the romance of Muslim hero, *Amir Hamza*. Nearly 2,000 very large illustrations (22 x 28½ inches) painted on cotton were turned out by painter recruited for the task from every section of India. With a group from such different backgrounds, it was natural that the final result should reflect a certain amount of confusion. The compositions were elaborate, with many of them full of action. The costumes, weapons, trees and strong colours were of indigenous inspiration; architectural ornament, most of the conventions of perspective, and the love of detail and design stemmed from Iran; and European influence is obvious in the use of shading to suggest volume and depth, and in some figure groups copied from Biblical illustrations.

In later years these three strong currents were blended in paintings of greater clarity and true Mughal taste ; this was the first rather awkward and ambitious step in that direction.

Miniature Portraits

Strange though it may seem, yet emperor Akbar (1556-1605) did pose for his court-artists for the miniature portraits that were being painted for inclusion in the various manuscripts prepared for the royal library. He also ordered to have likeness taken of all grandees of the realm. The story of Hamza was represented in twelve volumes, and eleven painters made the most astonishing illustrations for no less than one thousand and four hundred passages of the story. The *Changiz-namah*, the *Zafarnamah*, the *Razmnamah*, the *Ramayana*, the *Nal Daman*, the *Kalileh* and *Demneh* and *Eyar-e-Danesh* etc., were all illustrated.

The original manuscript of Faizi's Persian *masnvi*, *Nal Daman* prepared and illustrated with miniature paintings for Akbar now belongs to Sahibzada Ahsan Ali Khan of Kunjpura, at present residing at Khanewal (Pakistan). It responds exactly to the description given by Abul Fazl and another contemporary historian, Mulla Abdul Qadir Badayuni.

The manuscript under discussion is 28×17 cm., comprising 162 folios with 14 lines to a page. The lines are 9 cm long. It is written in beautiful Nasta'liq. There are gold margins on all pages with gold sprinkled on the text portion. The central margin is paginated which is an uncommon sight. Folios 1b and 2a are illuminated with gold, and fairies and birds are painted on the margin. Extremely delicate colour combinations are employed in painting birds. The headings are written in red, green, blue and gold.

There are eighteen miniature paintings in the manuscript all done exquisitely. The second miniature painting (43a), viz, *Raja Nal on throne in his court*, is auto-graphed :

عمل سليم قلی عرف امام قلی

(Work of Salim Quli alias Imam Quli)

Abul Fazal has picked up and named only eighteen contemporary artists out of the few hundreds he records to have existed during his time. Salim Quli alias Imam Quli, is unfortunately, not mentioned by him ; nor I have been able to find any details about him from any other source. There is a copyist of the name of Quli Kunduri b. Daulat Qadam, who wrote manuscript No 1417, preserved in the India Office Library, in 1006 A.H., i.e., three years after *Nal Daman* of Faizi was completed. But it cannot be asserted with certainty if the artist of *Nal Daman* is the same person, who wrote the India Office Library manuscript.

Among the 18 contemporary artists mentioned by Abul Fazl, a few are mentioned here ;

Muhammad Ali (AC 1600)

He was a Muslim painter in the court of Akbar. His miniatures reflect Persian style in many respects, but he uses the large, true flowers that delighted the Mughals. It thus represents a singularly successful blend of Persian and Indian modes.

Basawan (AC 1590)

He was one of the three best Hindu painters in the court of Akbar. He was trained by Abdul Samad, but his autographed paintings show no Persian influence. He was unsurpassed in original sketching, portraiture and colour blending, as well as fine background painting, which he had imbibed from European art, as well as draughtsmanship and representation of volume. He collaborated on at least twenty nine of the illustrations of *Razmnama*, illustrated in 1598. He preferred to include architectural interiors in the Italian Renaissance style, although the ornamentation was in the typical Mughal manner. The forced perspective angles and cramped relationship between figure and setting are disconcerting, but the expressiveness of each face and the splendid animals and birds give a great charm to his justly famous art.

The Metropolitan Museum of Art, New York, has a charming miniature by Basawan and the roundness of the figures undoubtedly reflect the European influence.

Daswanth (d. 1584)

He was a Hindu, who rose from the humble position of *Kahar* (palanquin-bearer) to be regarded as the ablest painter of his time. Akbar placed him under the tutelage of his own drawing master, the famous Persian Abus Samad. He soon outstripped the other painters. No work solely from his hand survives. He collaborated with others, as was the custom, on the great projects of Akbar's atelier, including the *Razmnama* preserved in the Jaipur State Library and the *Timurnama* belonging to the Bankipur Library.

Kesu (AC 1590)

He was another *Kahar*, named variously Kesava Das, Kesu Dasa, Kaisu and Kesu Kahar. He was a Hindu belonging to Gujrat, who became a painter in the court of Akbar. He was interested in European paintings, and in 1588 did an entire album of copies, including the St. Martin by Maeretin van Heemskerck brought to India in the court of Akbar by Jesuits.

Kesu also worked in Indian styles: one study of pheasants, done with his friend Kanakah is typical showing the early flat style in which colour rather than graded line was used. He also drew the outlines for an illustration for the *Akbarnamah*, in which Akbar is receiving the news of the birth of prince Salim (Jahangir).

Lal (AC 1600)

He was one of the three leading Hindu painters at the court of Akbar. Besides collaborating on twenty-nine miniatures painted in 1598 in the *Razmnama*, an illustration in 1590 in the *Baharestan*, and one in the 1593 *Khamasa*, he contributed to the 1605 *Akbarnama*. To judge by the few paintings for which he alone was responsible, he painted in a vivacious manner, using loud colours and animated figures. Typical is the abrupt transition from the foreground plane (usually occupied by a number of courtiers, sequestrains etc.) to distant hills; except for the graded tones that accent convolution, which represents the Iranian tradition. Nearby, however, there are likely to be castles and walled cities inspired by Northern European paintings; and another portion of the scene may suggest a fairytale copied from a Book of Hours. He was an experimenter, ready to repeat a detail from one spot to another. The result is native and beguiling.

Madho (AC 1600)

He was a Hindu painter, who worked in the service of Abdur Rahim Khankhana, the Commander-in-Chief of Akbar. His first dated work is the illustration in the 1585 *Timurnama*, and three years later in the '*Eyar-e-Danish*. With other leading painters in Akbar's school he worked on the *Baharestan* of 1590 and the *Akbarnama* of 1605, for which he painted eight portraits. Following the Persian traditions, his work is always delicate and conscious of surface patterns. In the 1610 *Anvar-e-Soheli* he shows himself an accomplished bird painter. His compositions, typical of the early phase of Mughal painting are too complex for true beauty.

Miskin (AC 1600)

He was a Muslim court painter, whose work appears in most of the illuminated manuscripts from 1570 to 1605. His early style shows little individuality, but by the *Baharestan* of 1590, his illustrations are notable for grace and fluidity of line. Many of his preliminary sketches have been preserved. One of his signed paintings now preserved in the Bodleian Library is typical of early Mughal composition and figure study.

Padarath (AC 1600-25)

He was a Hindu, who contributed a large picture to the 1605 *Akbarnama*, showing an interest in surface design that carries the eye upward through the composition. In a collection that belonged to Jahangir and Shahjahan, he is represented by a painting of the clear, realistic kind much preferred by Jahangir; it shows a long-haired sheep done with emphasis on the mass wooliness of the animal as seen against a soft rose background. He is also represented in the 1610 *Anvar-e-Soheli*.

Sanvlah (AC 1585)

He was a Hindu painter in the court of Akbar. In 1573 he accompanied the emperor on a forced march in order to paint military campaign. His works

appear in the *Darbarnamah* and the *Baburnama* of 1570. He also contributed to the 1588 *Eyar-e-Danesh* and the 1605 *Akbarnama*, and painted princess Humay playing polo. He used a considerable variety of styles : at times he experimented with the kind of atmospheric effect he saw in the European paintings he copied ; other studies reflect the strength of an intensity of the true Rajput manner. This tendency to experiment is characteristic of the Akbar era.

The other noteworthy miniaturists of the period of Akbar are Farrukh Beg, Nar Singh, Manohar, and Khem Karan.

Followings are the famous artist of Jahangir Period (1605-28)

Abul Hasan (Abdul Hamid Mosavvir) (1605-27)

He was a Muslim and the favourite portrait painter of Jahangir with the title of *Naderal Zaman* (Wonder of the Age). He was the son of the Persian painter from Herat, Agha Reza. He first worked for Akbar, but Jahangir patronized him as a prince and felt responsible for his career. Abul Hasan's skill in portraiture is evidenced by the likeness he made of Jahangir, surrounded by symbols in a varied Album of Painting, and by the delicately drawn and coloured illustration of the King and the Brahman, frontispiece of the *Anvar-e-Soheli*, done in 1610. One of his most beautiful paintings, Bullock Chariot, was drawn from the life that he saw on an expedition with Jahangir. Attributed to him is another masterpiece, the *Chenar Tree*. In this, there is a subtle combination of Persian, Chinese and indigenous traditions.

Jahangir's Album

During one of my visits to Iran I enjoyed the proud privilege of being shown round the former Imperial Palace of Gulestan in Tehran, where some of the finest manuscripts of the Imperial Library of Iran were also displayed. These, among others, included the world famous autographed Album of Jahangir, styled as *Moraqqa-e-Gulshan*. This album contains miniatures by Mughal artists and was shown to the public for the first time, when it was sent over to the Exhibition of Iranian Art held at Burlington House, January through March, 1931. "It contained ninety two folios, so arranged that a double opening of Calligraphy alternated with two pages of miniatures, and measured 40 x 24.5 centimetres. It was bound in a nineteenth century Persian binding but the mounting, and therefore the compilation was evidently the work of the Imperial Mughal Library" (Laurence Binyon).

We find such like albums in some other famous libraries of the world, which show that Mughals were also arranging to compile albums of miniature paintings to preserve the artists' works. I found that this album contained only eighty-eight folios and not ninety-two as mentioned by Laurence Binyon and out of these there were forty-nine miniatures done during the reign of Jahangir by famous artists including one by Nanha, the well known artist of the reigns of Akbar and Jahangir. In this miniature two camels are interlocked head-on while their two keepers endeavour to separate them. The two camels are in contrasting shades of light and dark brown, and have silk saddle cloths.

Bishandas (AC 1615)

He was a Hindu artist and one of the chief portrait painters of Jahangir, who had previously worked in the court of Akbar. In 1617 Jahangir sent Bishandas as an ambassador, Khan-e-Alam, to Iran to do the portraits of the Shah and his court. In his *Tuzuk*, Jahangir says of Bishandas that "he was unequalled in his eye for taking likeness". Almost a dozen examples of his work are known and autographed. An early picture of Babur laying out the plans for his garden was done with Nanha (who painted the faces): it is minute in detail, still very Persian in many respects. Later paintings have a breadth of vision, clarity and serenity that mark the peak of the seventeenth century Mughal style. In another, the house of Shaikh Ful, a "mad devotee who lives in Agra" the rather complex setting of houses and trees is presented in line and graded on; it is a series of abstractions in which the finely-drawn portraits of the Shaikh and his companions take their place in a unified scheme full of majestic atmosphere.

Daulat (AC 1625)

He was a Hindu, who successively worked in the courts of Akbar, Jahangir and Shahjahan. One of Akbar's finest painters his portrait (showing a bearded, intense-looking man) appears on the frontis-piece of the 1605 *Khamasa*. His work is in the 1588 *'Eyar-e Danesh* and the *Akbarnama*. Although there is a great deal of detail, each small figure is expressive. The colours used are the reds and yellow of the Rajput tradition.

Farrokh Beg (AC 1580-1620)

He was a Muslim from the Qalmaq tribe of Central Asia. He began his work under Akbar's brother, Hakim, but on his parent's death in 1585, he entered Akbar's service. He contributed in the royal atelier under Jahangir and when Abdus Samad and Mir Sayyid Ali died, became head of the school. One painting attributed to him is an album piece depicting a page-boy, done in the Persian tradition. His works show the open spacing of the Persian tradition rather than the confusion of the Indian style of this period and also a stylized rather than a realistic approach to figure representation. He included minute architectural ornamentation and typical Persian rock formations and floral motifs. An effort to achieve individuality in each face indicates a development toward a later Mughal style of portraiture. He is an admirable transitional artist.

Govardhan (AC 1600-25)

He was a Hindu, son of the painter Bhivani Das and was one of Jahangir's chief portrait painters. Before that he worked for Akbar for a short while. His paintings integrated Indian, Persian and European styles into a true Mughal approach. Many works are attributed to him, doubtless not all his, but the best are clear, with interesting, expressive faces and autographed. One of the best known, and typical, is the record of a court function presided over by Jahangir, in which the currency of the Sprinkling of Rosewater (commemoration of an old

Persian festival) took place. The emperor is dressed in court robes, with the usual golden hat. Courtiers, girl musicians, the bearer of the scented water, and a scribe, are arranged in a series of verticals on each side of the imperial throne. A flowered carpet runs straight up the page in the old Persian fashion, but architecture and sky betray European influence. Each face is an exquisite portrait. The old vitality of India is there, but the intensity of Rajput style has given way to a more serene approach and ordered elegance.

Manohar (AC 1575-1650)

He was a Hindu artist who entered the atelier of Akbar, but worked mostly for Jahangir and later on for Prince Dara Shokoh, during the reign of Shahjahan. He was known as one of Jahangir's chief portrait and animal painters. His work always shows much Indian tradition. In group scenes he seems more interested in making each face a portrait than an effective composition. One such painting, a procession with two black elephants at the centre of equestrians facing behind banner-bearers and musicians, is awkward in perspective and foreshortening but gives an excellent idea of the men and women in Jahangir's court. It is less confused than the large scene in paintings of the Akbar period, but it lacks the clarity of most of the works from the period of Shahjahan.

Mansur (AC 1555-1630)

He was a Muslim and one of the chief painters of the reign of Jahangir. Of the work he had done for Akbar, several small botanical drawings appear in the *Baburnama* of C. 1600. The greater part of his work, however was undertaken as a record of the beauty of the visible world for Jahangir, who liked the 'living present'. Master of drawings, a keen observer of birds, animals and flowers, he painted with objectivity and clarity. He went to Kashmir with his sovereign and made studies of more than one hundred flowers in the fabulous gardens there, a work he started about 1620. The Red Lilies doubtless was painted then against a sandcoloured background, the red blossoms and green leaves are shown as a botanical specimen, and not as a plant bent by the wind as in a Chinese painting. A dragon fly and a butterfly, exquisite in colour, but motionless seem to be suspended above the flowers. Everything is precise; this may be the result of his long training as a designer, for the *Naqqash* of his stature implies that he was one of a group who worked out patterns to be used in fabrics, leather, architectural inlay, such as the floral motifs in semi-precious stones in the Taj Mahal and Naulakhkha of Lahore Fort. Impeccable craftsmanship, rather than rhythm of poetic suggestion was therefore essential. Two drawings of musicians indicate his skill in figure studies, and a delicate painting of a chameleon on a bough hints at his fine sensibility in capturing the sky, and tentative character of rather unlovely creature. Indian cranes, a splendid cock, and other bird subjects place him in the forefront of specialists in nature studies.

Mohammad Nader (AC 1620)

He was a Muslim from Samarqand who was one of the chief portrait

painters in the court of Jahangir and who also worked for Shahjahan. He and Mohammad Murad developed portrait painting with black outline—later on styled as *Siah Qalam*. His portraits are very expressive ; one man looks vapid, another tragic and a third spiritual. Typical is the three-quarter-length study of the seated figures of Sher Mohammad Navab, preserved in the British Museum ; the body is sketched with a few clear lines and a little hatched shading in the stripes of the robe ; and the face beneath a round turban is most exquisitely modelled. A dark beard, moustache and dark eyebrows call attention to the wonderfully animated eyes and mouth. The left hand is raised to punctuate some important point in the conversation. There is no indication of background, no other object competes with the man himself in this little masterpiece.

Bichitr (AC 1630)

A painter under both Jahangir and Shahjahan, but principally under the latter. He painted telling portraits of Jahangir, Shahjahan and their nobles as well as garden scenes in which his vital interest in character delineation is always apparent. A drawing in gold, showing Prince Murad on an elephant, is an early work. Later, he did a number of 'apotheosis' portraits very much influenced by European painting, with singing cherubs and symbols of kingship surrounding the Emperor. One of the most striking portraits is that of Shah Daulat, a celebrated Muslim saint credited with magical powers. The holy man in white robe and turban is placed against a black background. As is usual in early seventeenth-century portraiture, the body is turned to a three-quarter view. A border of gold arabesques on a rose-coloured ground separates the black area from margins adorned with flowering plants painted in the 'botanical study' manner that marked this period.

Mir Muhammad Hashem (AC. 1630)

A Muslim who was one of the foremost painters in the court of Shahjahan and had before that worked under Jahangir. He was a portrait painter who sometimes reached the heights of naturalism, as in the picture of nobleman with a bulbous nose or that of a crafty courtier of Jahangir. His portraits of both Emperors are in a more official manner and make the men look stern and regal. His painting of Timur, Babur and Humayun in a garden (done in the Shahjahan style) is an interesting mixture of Indo Persian and Rajput styles combined in a purely Indian and individual manner.

Inayat Ullah Sayyid (AC 1631)

A muslim painter who worked under Jahangir and Shahjahan. He appears once in the 1605 Akbarnama with a painting in which there is the usual confusion of figures. His later work, however, is in the mature Mughal style, clear, serene, and with the open space that came in during the seventeenth century, European influence may have been responsible for this ; it surely was the inspiration for his firelit study of ascetics in a darkened landscape. Torchlight or firelight in darkness, makes a new interest in light-dark problems such as one seldom

seen in any other Asiatic Art. Nativity scenes and northern European painting brought this to the attention of Mughal artists. His Group of Ascetics is completely Indian in theme, the oneness of nature is brought out in the similarity between the roots of the banyan tree and the lean arms and legs of the ascetics. Each one of these men is portrayed as an individual. The overall colour tone is beige and golden brown except for a few dark green notes in clothing and background plants, and the same colour is repeated in the massive foliage of the tree.

Bal Chand Awal (AC 1625)

A Hindu court painter whose work first appeared in the Akbarnama and then in the albums of Jahangir and Shahjahan. The portraits he did in his later years were done in the clear outlines and soft colours of the mature Mughal style.

Following painters worked only in Shahjahan's period (1628-58) :

Kehardas (AC 1650-75)

With the painter Shamdas he fled in the train of prince Sulaiman Shokoh from persecutions of the Emperor Aurangzeb to the hill town of Srinagar. Both fathered a line of painters who belong to the local Rajput school of painting rather than the Mughal of their fathers. None of the paintings of Kehardas is known.

Mohammad Fakherullah Khan (Mohammad Khan) (AC 1640)

A Muslim who was the leading artist under Shahjahan. In a portrait album for the Emperor he appears as a middle-aged, handsome, serious and serene man. He inherited and carried on definite Rajasthani tradition so much so that he has been called a Muslim painter working in Jaipur.

Provincial Variations

During the sixteenth and early seventeenth centuries several schools of painting developed in northern and central India, parallel to the development of Mughal School. They fall into two main groups, the Western Indian and the Deccan Schools. Unfortunately precise dates are lacking for the task of arranging the chronology of these schools.

There is some evidence pointing to the origin of the late sixteenth century Western Indian schools in Central India, where a manuscript *Mahapurana* from Palam, near Delhi, dated 1540, seems to fall between the old Gujarat style and the tense and musical style of the illustrations of the *Caurapancasika*. A similar halfway house to the fully developed Deccan miniature style is seen in an undated manuscript of the *Nematnama*, a cookery book, prepared for one of the Sultans of Malwa, shortly after 1500, and now preserved in the India Office Library, London.

I-Deccan School

The only exactly dated manuscript of the Deccan School of the sixteenth

century is the *Nojmal 'Olum* of 1570, preserved in the Chester Beatty Library in Dublin. This is a compendium of the useful sciences, especially, astronomy, auspicious times, and magical arts, with no less than 876 illustrations even in its imperfect state. Many of these appear to derive directly from Ottoman Turkish originals, but other—and these are most important—are wholly Indian and show the influence of the medieval Hindu painting of South India, now almost entirely extinct. These have an opulence of line and colour that appears on a large scale in a series of *Ragmala* illustrations datable to the last quarter of the sixteenth century. In the entire group the emphasis is on statuesque, usually fine figures in slow but enviable movements. The background consists of an all-over pattern of small plant on a coloured ground.

II-Bijapur School

Bijapur is regarded as the locale of this Deccan School. Its Sultans of the Adilshahi house, were at this time notable patrons of the arts. Ibrahim II (1580-1626) is depicted in several striking contemporary miniatures of even greater opulence. Meanwhile at Golconda a similar style developed, with closer relations to the Persian schools and little or no Hindu influence. Symmetry is more regarded, and opulent effect is obtained more by texture, including transparency, and by a lavish use of gold than by sweeping lines. These schools of the Deccan undoubtedly contributed an element to the common stock of Mughal painting.

Although provincial in their gaucheries and repetitive compositions these miniatures show a realization of the value of silhouette and emphatic gesture in enlivening the nominal subject of food and wine tasting.

III-Bikaner School (17th-18th century)

Rokn al-Din (AC 1690) was a Muslim painter who worked in the Court of Maharaja of Bikaner. In 1690 he did a portrait of the Maharaja Anup Singh. Painted in an old-fashioned Mughal court style typical of the period of Shahjahan when the single equestrian study was popular, the Maharaja is portrayed as a military man riding a prancing horse. The head of the ruler is in profile, the torso in a three-quarter view, while the horse is so slightly modeled as to suggest a silhouette. The orange coat of the Maharaja, a black circular shield, strings of white pearls, and golden turban, belt, and slippers are the dominant colour notes, for the sky is grey and the ground a light green. Depth is suggested by the walls and domes of a distant town; a few puffy clouds are outlined in the sky, and a curious group of ghostly riders, perhaps on a dim mountain top or in the sky itself, are almost lost in a haze.

Another painter of the School of Bikaner was Ustad Mohammad Rafiq (AC 1700). In about 1700 he did a portrait of Raja Kesri Singh, brother of Anup Singh, showing him attacked by a lioness. Painted in a modified Mughal style, the subject is shown in profile, astride a dappled horse, as he pierces the lioness with his lance. The theme might have come from ancient Persian art, but the soft grey-green tones are part of seventeenth-century Mughal tradition, and

the heavy rain clouds beyond a distant hill recall the indigenous Ragmala art of the Rajputs. Realism is still present, since it is the portrait of an individual, and the blood flowing from the wounded lioness looks natural. A simplification of forms makes one aware of contour lines, especially of the beauty of the line in the bodies of the animal.

VI. Rajput School

Coomaraswamy divides the later school of Rajputana into two main groups, namely, Rajasthani (Rajputana and Bundelkhand) and Pahari. The latter is subdivided into Kangra, Basohli, Guler, Jammun etc.

Rajput paintings, of which the oldest known specimens are from the late sixteenth century or the beginning of the seventeenth, differ in style from those of Mughal School. Based on the traditions of the native schools of wall painting which produced the famous frescoes at Ajanta and Bagh, they have many of the characteristics of folk art. The subjects also differ from those of the Mughal school. The latter was concerned mainly with portraiture and the recording of historical events, while the Rajput School derived its subjects chiefly from folklore and the great Indian epics.

The best examples of the Rajasthani School are the Ragmala paintings illustrating the thirtysix Ragas and Raginis, or musical modes, and assigned to the late sixteenth century.

V. Pahari School

When all northern India was in confusion after the political events of 1739-40, at least some of the painters found fresh patrons in the remote rajas of the Himalayan hill states. Before this date there are few signs of painting in the hills, except in Basohli, where a local school developed in the last quarter of the 17th century, inspired by the Mughal painting of an earlier generation but infused with the spirit of religious devotion of Krishna.

By 1694, the date of a series of illustrations to the *Rasamanjari*, the style was formed. The figures wear a kind of Mughal costume of forty years earlier, but the colouring is hotter and the setting is only a proscenium arch or a backdrop landscape, denying all recessions. In the early eighteenth century this style was enriched by the use of applique beetle wings to pick out the jewels. The dalliance of Krishna and Radha by the banks of the Jamuna became a favourite theme, and the landscape became still more conventionalized; trees, birds, and bees were used as symbols with no regard for scale. The Basohli School, which seems to have been the only one of note in the hills during the first half of the eighteenth century, thereafter faded away, yielding place to the School of Jammu, which originated of the Mughal artists from Delhi and to the Kangra School.

One of the best-known Pahari painters, Manaku (AC 1830), worked under the patronage of Sudarshan Shah (d. 1859) in the Pahari country of the Himalayan foothills. His work reflects in fine detail the beauty of mountain

scenery. One of his best paintings is *Blind Man's Buff*, in which Krishna and his friends and flocks of cattle are portrayed among flowering trees at dusk. A full moon rides in a sky scattered with stars, but the darkness does not dim the colour of the costumes or flowers. The human figures are set in likely action, and the cows are especially notable for the fineness with which they are drawn and the mood of contentment they convey. Thus a Hindu subject, a Persian delicacy in the flowering branches, and a bit of European realism in the handling of space and the night sky, are blended into a painting of universal appeal.

Mola Ram (1760-1833) was another wellknown Pahari painter. He was from Garhwal; a direct descendant of the painter Kehardas (see p. 253). He became court painter to Sudarshan Shah, whom the British had put on the throne of Garhwal when he expelled the Nepalese in 1815. An infant prodigy, he was known as a painter by the time he was fifteen. He in turn fathered a line of painters, including his son Javala Ram, grandson Atma Ram, and great-grandson Balak Ram Shah. He is the only Pahari painter we know by name, and the lateness of his work reflects the mid-eighteenth-century Mughal style as well as late Garhwal work.

Kangra School

The School of Kangra came to the fore only in about 1780. Meanwhile some offshoots of the Basohli school continued in Chamba and Kullu, but with no painters of the same quality.

Both Jammu and Kangra painters relied far more on line than colour, so that their products might fairly be called coloured drawings. They gained in lyric and sweetness at the expense of intensity of feeling, which was not again attained. Portraits and genre scenes at court increased. Illustrations of the *Ramayana* and *Mahabharata* were also numerous. The production of the Kangra school, in the time of Sansar Chand (1775-1823) was far greater than that of any of the other hill states, for in his prime (1785-1805) he exercised wide political power and was able to support a large number of court painters. Previously the school had grown up, at Kangra and in the minor state of Guler, as a direct offshoot of the Mughal school of Mohammad Shah ; only gradually did it acquire its special character of fluent line and delicate colour. The Sikh conquest and the advent of the British rule put an end to this last of the schools, but not before the middle of the nineteenth century.

The famous and learned artist Abdur Rehman Chughtai has a different story to tell about Pahari schools of miniatures. (A.R. Chughtai, *Lahore ka Dabistan-e-Mosavveri* or *Lahore School of Painting*, 20-30). He thinks the Sikhs captured the Punjab after Mughals and Ranjit Singh ruled here supreme from 1793 till his death in 1839. He (Ranjit Singh) also had annexed Kangra, Chamba, Basohli, and other Punjab hill states by 1798. From its capture in November 1621, Kangra fort remained in the possession of the Mughals till 1783, when it fell into the hands of the Sikhs. Sansar Chand, the ruler of Kangra, was helped by Ranjit Singh and after his death in 1823, his son Anorudh paid tribute to Ranjit Singh.

Chughtai challenges the oft-related story that Sansar Chand had in his employment a number of artists including Manak (Manaku). He thinks Sansar Chand and other hill state rulers never had enough resources to employ artists and historically it cannot be proved that Manak painted *Gita Govinda* miniatures. Quoting Moorcraft, Chughtai says that "Ranjit sends for Sansar Chand to his court once a year, he had to go to Lahore to pay his respects to the Maharaja, doubtless a galling duty to him, but he was always treated with every honour, though apprehensive that sooner or later he would be detained as a prisoner".

Chughtai himself visited Kangra, Nurpur, Guler, Chamba and Basohli in 1929 to personally investigate the facts and met the artist Hozuri in Sudhir, who told him that he or his ancestors were never employed by any ruler. Hozuri is mentioned by French (Himalayan Art, 101) giving a great prominence to him, but according to Chughtai Hozuri admitted that he and his ancestors were actually farmers and did painting as a pastime. Thus according to Chughtai Pahari painting is a myth, which is exploded by the fact that hill rulers never patronised any artist, otherwise the collections could have been preserved in some state palaces. Besides no autographed painting of Manaku is either available to prove that any artist with this identity ever existed.

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Unesco—ICOM Documentation Centre, ICOM, Unesco House, 1 rue Miollis, Paris 75015, France.

MUSEUM, UNESCO's technical quarterly for Museums, 1948—to date, has published many articles of value for museum reference.

The Museums Journal

Museums Association (Great Britain) publishes many technical articles useful for museum reference. It also publishes *Museums Association Information Sheets* which are invaluable and may be purchased at small price :
Address : 30 Bloomsbury Way, London WC1A 2SF,

Museum News

American Association of Museums also publishes technical articles of great value. It publishes books on museum technical subjects and has begun a series of *Reprints*, for sale at modest cost. Back numbers are available. Address : American Association of Museums, 1055 Thomas Jefferson' Street, NW Washington, D. C. 20007, U. S. A.

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APPENDICES

Address of Welcome*

It is my privilege to extend a warm welcome to the participants of the First Museology Course held by the Lahore Museum in collaboration with the Ford Foundation. Museology is a science which tells us how museums are to be organized, maintained and projected as a repository of our cultural heritage and a storehouse of accumulated knowledge. Though we, in Pakistan, are still accustomed to call a museum 'Ajaib Ghar' or 'House of Wonders', it is certainly not so today. A modern museum, indeed, is an educational institution where both grown-ups and young ones are taught by bringing them face to face the material remnants of the past and physical realities of the present. Frequent visits to museums of varied scope develops a habit of analytical observation and objective appreciation of what is offered for seeing.

The duty of a curator of a modern 'museum' therefore, is not merely to preserve and display what comes to his museum, but to present it to public in a way conducive to understanding by visitors of all levels and learnings. The real utility of museum exhibits lies in what they teach those who have eyes to see, hearts to feel and minds to appreciate. If this new role of a museum is grasped then it becomes clear that what a museum really depends upon for its success and usefulness is decidedly not its building, not its show cases, not even its exhibits but its curator. It is he and his staff who not only preserves what is in the museum but also make them understandable through neat and clean labels and meaningfully laid out display of exhibits. The Curator and his staff are the real life and soul of the Institution. It is upon them that its value in the last resort depends. It is therefore imperative that all museum curators must have academic and technical background to run a museum as source of education. Hence the need of proper training of curatorial staff of all types of museums. The present four week Museology Course is being arranged with the same purpose in mind.

Museum activities in Pakistan lag much behind the targets achieved even in some of the Asiatic countries. The causes are many and varied and this is not the time to devolve on them. But what is more serious than this is the way most of our museums are being maintained and projected. In the past there have been few attempts to keep our museums abreast with modern technologies and still less to make them public oriented. The reason for these shortcomings is that our museum curators and their staff seldom get any proper technical training. All over the world there are facilities available for teaching museology, before getting into the museum service. Gloucester University, Leister, for example,

*Presented by Dr. Saifur Rahman Dar, Director, Lahore Museum, Lahore on 2-9-1979.

offers one years' Museology Course, Baroda University (India) a two years' post-graduate course and Victoria and Albert Museum, London a four years' Course. But there is no such facility in Pakistan for those who intend to opt for museum service. Most of our curators get their training on the job or wait for their turn to go abroad for the same purpose. If we want to make our museum really public oriented this state of affairs cannot be tolerated any more. Lahore Museum being the largest and the oldest institution of its type in the country, felt it obligatory to take the initiative in this regard and hence today we are able to offer you this short term course on 'Museology'. This course, in the type of its syllabus, areas of its usefulness and extent of participation of institutions & individuals is definitely the first of its type ever arranged in Pakistan. Lahore Museum feels honoured to be the host of such a Course.

A detailed outline of the syllabus to be taught is in your hands.¹ Briefly it covers all possible aspects of museology such as Museum Administration. Museum staff and their functions, Documentation, Care and Storage of objects, Education Programme, Research Programme, Conservation etc. We are fortunate that we are able to get the services of a scholar and an expert like Dr. Grace Morley to teach this course. She is a veteran museologist. Before joining ICOM, she served in a San Francisco Museum for more than 20 years. As Head of the ICOM Regional Agency in Asia, she has been able to observe museum activities in Asia for more than two decades. Her first contact with Pakistani museums goes as far back as 1956. So she is fully aware of the potentials and problems of Pakistani museums.

The main syllabus has been prepared to teach the latest trends and techniques in museology. But how and to what extent these can be adopted in Pakistani museums depends upon the nature and strength of trained museum personnel, financial resources, social environment and climatic and geographical conditions. To postulate over this aspect of museology we have requested about two dozens eminent scholars, archaeologists, museologists, scientists, architects and artists of the country to address to the participants of this course and give them practical tips and guidelines as to how far they should go for 'modernization' of our museums.

When we initiated this programme we were a little apprehensive about the participation by different institutions. The response to our request from different institutions to send their nominees is, however, somewhat hillarious. The participants who have joined us here today represent a complete cross section of all types of cultural institutions in this country such as museums, art councils, archives, libraries and many learned bodies. In all some 20 institutions are represented here by their 38 nominees. We are greatly obliged to these institutions and heads of their respective departments for sending their representatives. As one single group the largest number of nominees is from the Department of Archaeology and

1. See *Infra* pp. 277-279,

Museums, Government of Pakistan. We are obliged to Mr. Muhammad Ishtiaq Khan, Director of Archaeology for his cooperation. I am also thankful to all those individuals who have expressed their desire to participate in this course. We have been able to accommodate only a few of them. To others we apologise from our hearts of heart.

The initial idea of arranging such a course came from Mr. B. A. Kureshi, Chairman, Lahore Museum. Ever since then we have been getting from him guidance and encouragement for better planning of this course. Those, who have kept themselves abreast with day to day development of museum activities in Pakistan, know very well that in Pakistan Mr. B. A. Kureshi and Museology are synonyms. But for his encouragement and guidance this course might not have seen the light of the day. We are greatly obliged to him for this.

The Ford Foundation, Islamabad. over last many years have been helping Lahore Museum in building up a Conservation Laboratory, enriching our library and helping training our staff abroad. This course is also being organized with the financial assistance of the Ford Foundation. We are greatly indebted to the Agency, and particularly its Representative in Pakistan Mr. Robert d'Arcy Shaw for his liberal grants for this purpose and active support. I must also thank Dr. Grace Morley, of the ICOM Regional Agency in Asia, for accepting the burden of teaching the main course.

My heartfelt thank are also due to my colleagues in the Lahore Museum who have toiled with me over a year or so in chalking out the syllabus and working out other details and taking all possible measures to make this course a real success.

At the end once again I welcome you all the participants to this Course and you too ladies and gentlemen who have honoured us by your presence at this inaugural function of the First Museology Course.

—: o :—

Inaugural Address*

It gives me great pleasure to join the distinguished participants of the First Course in Museology at this inaugural session. I congratulate the sponsors on their initiative in arranging for the much needed training required by museologists, archivists, librarians, scholars and scientists interested in the establishment, management and utilization of our museums.

Museums are a gateway to the knowledge of our history and cultural heritage and to an awareness of the physical and biological environment of man and how it has been shaped during time by natural phenomenon, as well as, human endeavour. They provide a record of the achievements of the past, identify the potential of the present and provide a glimpse of the prospects for the future of a nation. National museums, libraries and archives all over the world epitomise the record of the contribution which the great thinkers, scientists, saints, artists and historians—have made “to secure the moral intellectual and spiritual advancement of the human race”. These institutions make available to us the distilled essence of all that a nation has done to help humanity to evolve...If one wants to learn about the historical development of a nation and the salient features of its culture, the best places to go to are its museums, art galleries and similar institutions.

There are of course, many kinds of museums of Science and Technology, museums of Natural History, museums which are repositories of the works of arts and of archeological finds. Their optimum organization, management and utilisation would demand varying kinds and levels of expertise as each of these would have differing areas of emphasis and orientation but all of these have also common features requiring field surveys, collection and conservation, research and publications, display, public education and enlightenment. The most important function, however, in all museums is to instruct and entertain the citizen, as museums are effective means for the education of a people for giving them pride in their past and motivate them for greater endeavour in future to achieve excellence. All this can be achieved only if the exhibits are displayed in a manner that is attractive, instructive and inspiring. Museums have also to prepare and make available the necessary material in printed form, such as, catalogues and hand books, guide books and brochures. Equally important are the needs of the scholars and scientists, requiring a different treatment of the available materials. These tasks can be performed only by properly trained curatorial staff of a museum hence, the necessity of organising regular course of training in Museology.

In the past, museums in Pakistan have been generally linked with archaeology. This has created a wrong impression that museums are meant to preserve

*Delivered by Dr. Z.A. Hashmi, the then Provincial Adviser for Education, Science and Culture, Government of the Punjab, Lahore.

only the dead past. Fortunately there is now an increasing awareness of the necessity of a wider scope of museum activities. The National Museum of Science & Technology and another for Folk Heritage have been established. The project for the establishment of a National Museum of Natural History has been sanctioned and work on the Project has been initiated. There are Army and Air Force Museums as also Geological and Industrial Museums in the country. The pace of progress is, however, far from satisfactory. In all, there are about 40 museums in the country, out of which hardly two dozens are really public ones. We still lack municipal and city museums. There is no History Museum in the Country and no museum which is devoted to specific periods of our history. There are no type museum particularly concerning crafts like ceramics, textiles, metal-wares etc. A country so rich in artistic traditions as Pakistan has no museum devoted to fine arts and particularly the modern arts. Even the existing distribution of museum is very poor. There is concentration of museums in certain areas whereas other areas with greater claims have been totally neglected. Similarly, some cities have a number of museums whereas many others have none. For example, out of 40 museums, 28 are situated in 8 cities of the country, i. e., Lahore, Peshawar, Rawalpindi, Islamabad, Karachi, Quetta, Hyderabad, and Faisalabad. The remaining 12 are situated in small towns and isolated archaeological sites like Mohenjodaro, Umar Kot, Banbhore, Taxila, Harappa, Mangla, Chakdara, etc. etc. Many historical cities like Multan and Thatta have no museum at all.

Before I conclude I would like to stress the important role that museums can play in national integration by making people of one area conscious of the contribution of other areas to the development of a common culture. This is the main justification for the establishment of national museums in different parts of the country. In addition every provincial museum as well as local museums at the District level should be so organised that the special contribution of a particular area is seen in the background of the totality of the national culture. All due care should be taken that cultural diversity, which is quite natural in a large country, does not become a divisive force and affects national unity or solidarity. A major task for the Museum would thus be to contribute actively to the emergence of a distinctive yet progressive national culture based on national ideology and harmonious with contemporary needs.

I am confident that the present training course in museology, the first of its kind in the Country, will go a long way in acquainting our museologists with the latest techniques for the efficient management of a museum. I am also confident that the Lahore Museum will keep up the tradition of being a pioneer institution by continuing to offer this course in future as well as develop better course offerings.

I have now great pleasure inaugurating the Museology Course.

Pakistan Paindabad I

List of the Participants and Institutions

Bahawalpur

1. Mr. Muhammad Afzal Khan,
Bahawalpur Museum, Bahawalpur.

Hyderabad

2. Mr. Majid Hussain,
Deptt. of Archaeology, Hyderabad.
3. Mr. Abdul Razzak Memon,
Sind Provincial Museum, Hyderabad.
4. Mr. Muhammad Azim Chandio,
Institute of Sindhology,
Sind University, Jamshoro.

Islamabad

See under Rawalpindi/Islamabad.

Karachi

5. Nawab Muhammad Kazim Ali,
National Museum of Pakistan, Karachi.
6. Mr. Muhammad Qayyum,
Exploration and Excavation Branch,
Deptt. of Archaeology, Karachi.
7. Mr. Sahib Khan Channa,
Sind Archives, Karachi,

Lahore

- A. Lahore Museum, Lahore.
8. Mrs. Tahira Azam Beg.
9. Mrs. Nusrat Ali,
10. Mrs. Zarina Khurshid,
11. Miss. Humera Alam,
12. Mr. Shahbaz Khan,
23. Mr. Waseem Ahmad,
14. Muhammad Asghar,

15. Mr. Tariq Masood,
16. Mr. Salah-ud-Din,
- B. Other Institutions
17. Miss Salma Jaffery,
Ministry of Tourism, Government of Pakistan, Lahore.
18. Mr. Karamatullah Javed,
Industrial & Commercial Museum, Lahore,
19. Mr. Sajid Anwar Malik,
National Museum of Science and Technology, Lahore
20. Miss Shagufta Ghani,
National Museum of Science and Technology, Lahore.
21. Prof. Salima Hashmi,
National College of Arts, Lahore.
22. Prof. Zahoor-ul-Ikhlaq,
National College of Arts, Lahore

Mohenjodaro

23. Mr. Saeed Khan Jatoi,
Archaeological Museum, Mohenjodaro

Peshawar

24. Mr. Irshad Zamil.
Peshawar Museum, Peshawar.

Rawalpindi/Islamabad

25. Mr. S. Riaz-ul-Hussain,
Deptt. of National Archives, Islamabad.
26. Miss Syeda Fatima Hassany,
Deptt. of National Archives, Islamabad.
27. Captain Mushtaq Jilani,
Army Museum, Rawalpindi.
28. Mr. Farooq Qaisar,
National Institute of Folk Heritage, Islamabad.
29. Mr. Khalid Javaid,
National Institute of Folk Heritage, Islamabad.
30. Mr. Riaz-ud-din,
Pakistan National Council of Arts, Islamabad.

31. **Mr. Muhammad Rashid Khan,**
Pakistan National Council of Arts, Islamabad.
32. **Mrs. Manuella Fuller,**
American Consulate, Lahore.
33. **Mr. Giovanna Morville,**
American Centre, Lahore.
34. **Mr. Sibat ul Hassan Zaigham,**
Pakistani Punjabi Adabi Board, Lahore.
35. **Prof. Asif Khan,**
Pakistani Punjabi Abadi Board, Lahore.
36. **Tuyyaba Wajid Ali,**
C/o National College of Arts, Lahore.
37. **Syed Imran Arif,**
Deptt. Architecture, University of Engineering &
Technology, Lahore.
38. **Miss. Nighat Bano,**
Punjab Industrial Development Board, Lahore.

Outline of Syllabus*

First Week

- I. (a) History of Museology in the sub-Continent with particular emphasis on the development of museums in Pakistan
(b) Problems and prospects of museums in Pakistan
- II. **Museum and its Function**
 - (a) Definition
 - (b) Purpose : Collection, Recording, Preservation and Exhibition of Material and Education through it
 - (c) Scope of a Museum
- III. **Museum Administration**
 - (a) General Organization : Various Departments
 - (b) Personnel
 - (c) Collections : Primary Documentation, Study Research, Storage and Display
 - (d) Security
 - (e) Public Relationing
 - (f) Finances

Second Week

- IV. **Staff and Their Functions**
 - (a) Curatorial Staff
 - (b) Technical Staff : Conservation, Modelling, Exhibition Design, Library etc.
 - (c) Security Staff
 - (d) Public Relationing Staff
 - (e) Educational Staff
 - (f) Office Staff
 - (g) Lower Staff : Guards, Attendants, Cleaning Service

V. Documentation

- (a) Record Keeping : Registers or Cards or Computers
- (b) Temporary Accession
- (c) Permanent Accession
- (d) Record of Storage
- (e) Gallery Record

VI. Care and Storage of Museum Objects

- (a) Objects on Display
- (b) Objects in Stores
- (c) Storage Conditions
- (d) Accessibility
- (e) Record of movement of museum exhibits and objects in the Reserve
- (f) Care against theft and vandalism
- (g) Care against dampness, dust and temperature.

Third Week**VII. Museum Exhibition**

- (a) Permanent Exhibition
 - (i) Planning and setting up an Exhibition
 - (ii) Showcases designing
 - (iii) Labels
 - (iv) Lighting
 - (v) Background of Exhibits
 - (vi) Mounting Objects
- (b) Temporary Exhibition
- (c) Travelling Exhibition

VIII. Museum Education Programme

- (a) What is Educational Programme of a Museum ?
- (b) Where can it be done ?
- (c) Who will undertake the Educational Programme ?
- (d) When an Educational Programme should be taken up ?
- (e) How should they be given ?
- (f) Whom it should be given ?
- (g) Why should be given ?
- (h) Lectures
 - (i) Seminars
 - (j) Film shows
 - (k) Cultural Shows

XI. Museum Publication and Research Work

- (a) Research and publication in Art and History Museum
- (b) Research and publication in Science Museum
- (c) Nature and Scope of Museum Publications, maps, leaflet, brochures, booklets, guidebooks, catalogus, monographs & periodicals
- (d) Cultural Staff and Research Work
- (e) Facility for Research in a Museum
- (f) Museum Library

Fourth Week**X. Museum Conservation**

- (a) Requirements of the building
- (b) Conservation and Restoration
- (c) Record of Conservation

XI. Museum Architecture

- (a) Requirements of a Museum building
- (b) Relationship between Interior and Exterior of a Museum
- (c) Plan for a Museum
- (d) Museum housed in an old building
- (e) Storage facilities and connected problems
- (f) Service facility i.e. library, photography, offices, work-shops etc.
- (g) Public facilities ; Cafeteria, Gift-shop, Lavatories

XII. Practical

- (a) Setting up Exhibitions
- (b) Documentation

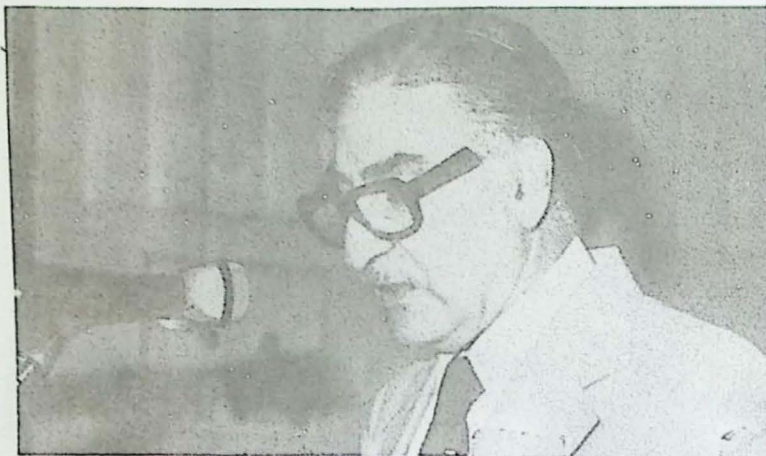
ILLUSTRATIONS



Dr. Grace Morley with Lahore Museum Staff

Seated left to right : Zarina Khurshid (Public Relations Officer), Humera Alam (Research Officer), Dr. Saifur Rahman Dar (Director), Dr. Grace Morley (Adviser ICOMASIA), Nusrat Ali (Display Officer), Salma Jaffery (Tourist Guide). *Standing left to right :* M. Asghar (Librarian), Waseem Ahmad (Chemist), Shahbaz Khan (Research Officer), Salahud Din (Modeller), Tariq Masud (Research Officer).

II. Speakers of the Museology Course



Dr. Z.A. Hashmi,



Dr. A.H. Dani



Dr. F.A. Khan



Dr. Grace Morley



Dr. M. Baqir

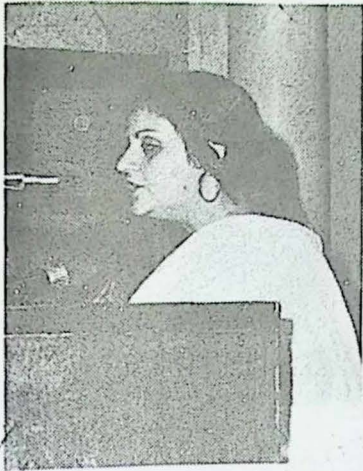


Dr. M.A. Chaghatai

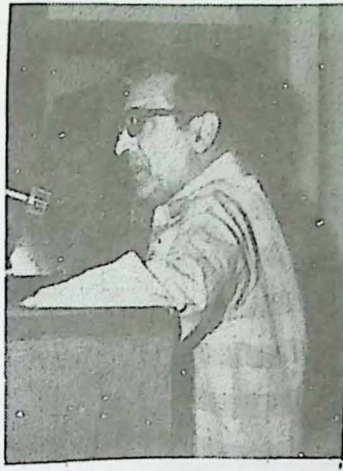


Mrs. Chiira Chongkol.

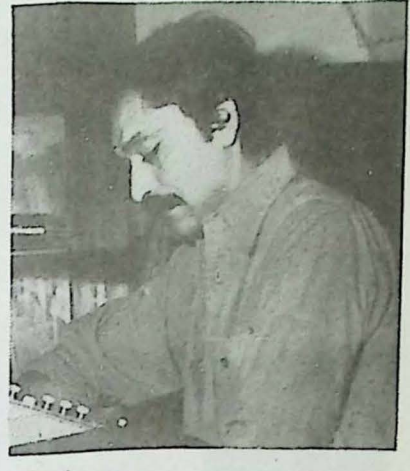
III. Speakers of the Museology Course



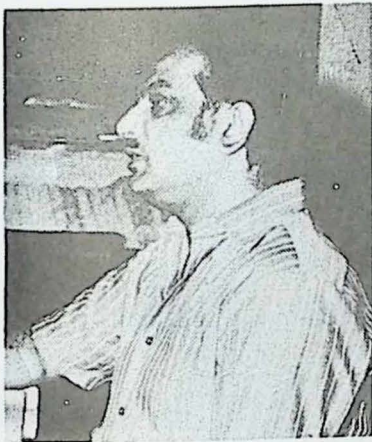
Prof. Salima Hashmi



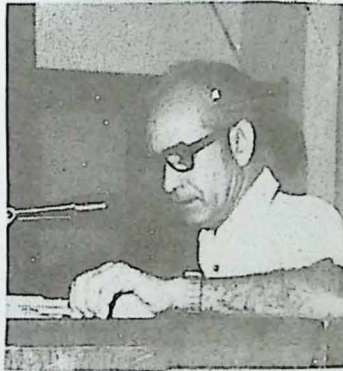
Prof. F.A. Durrani



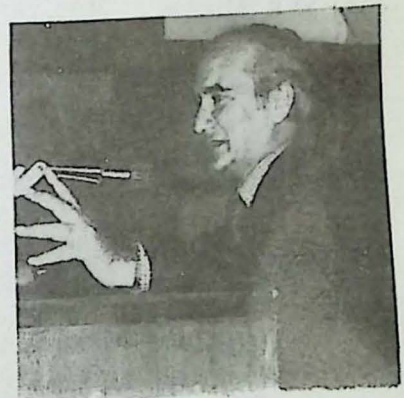
Mr. Kamal Khan Mumtaz



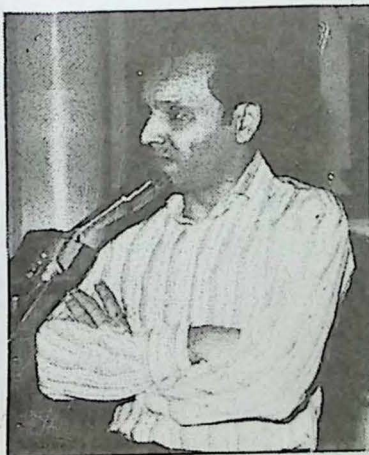
Mr. Atique Zafar Sheikh



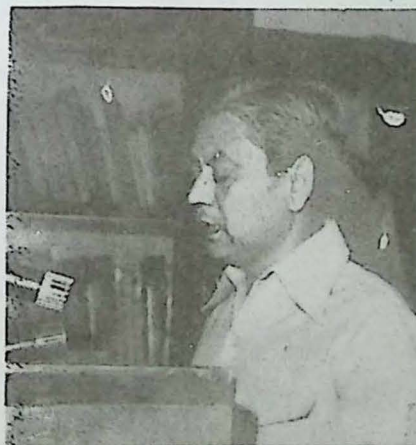
Mr. Muhammad Akmal



Prof. F.U. Sehrai



Mr. Uxi Mufti



Mr. M.I. Khan



Prof. Saeed Akhtar

IV. Speakers of the Museology Course and Contributors



Dr. M.R. Mughal



Dr. Ch. A. Rehman



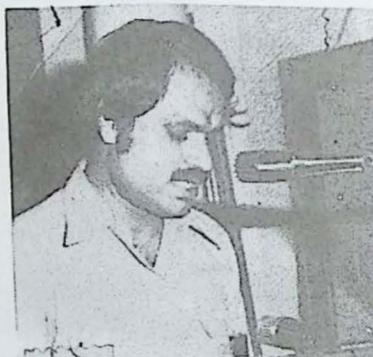
Dr. S.M. Ashfaq



Dr. A. Nabi Khan



Capt. Mushtaq Jilani



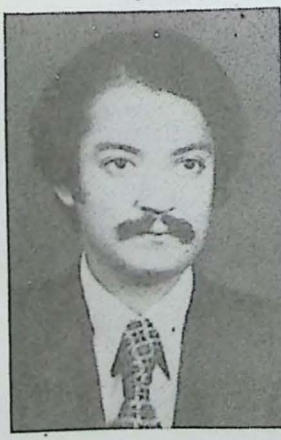
Mr. Waseem Ahmad



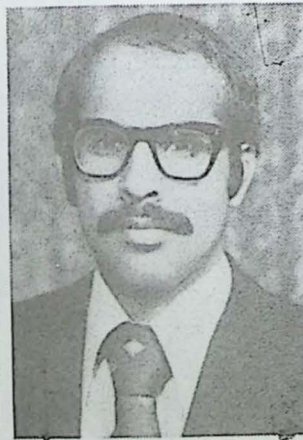
Mrs. Nusrat Ali



Mr. Tariq Masud



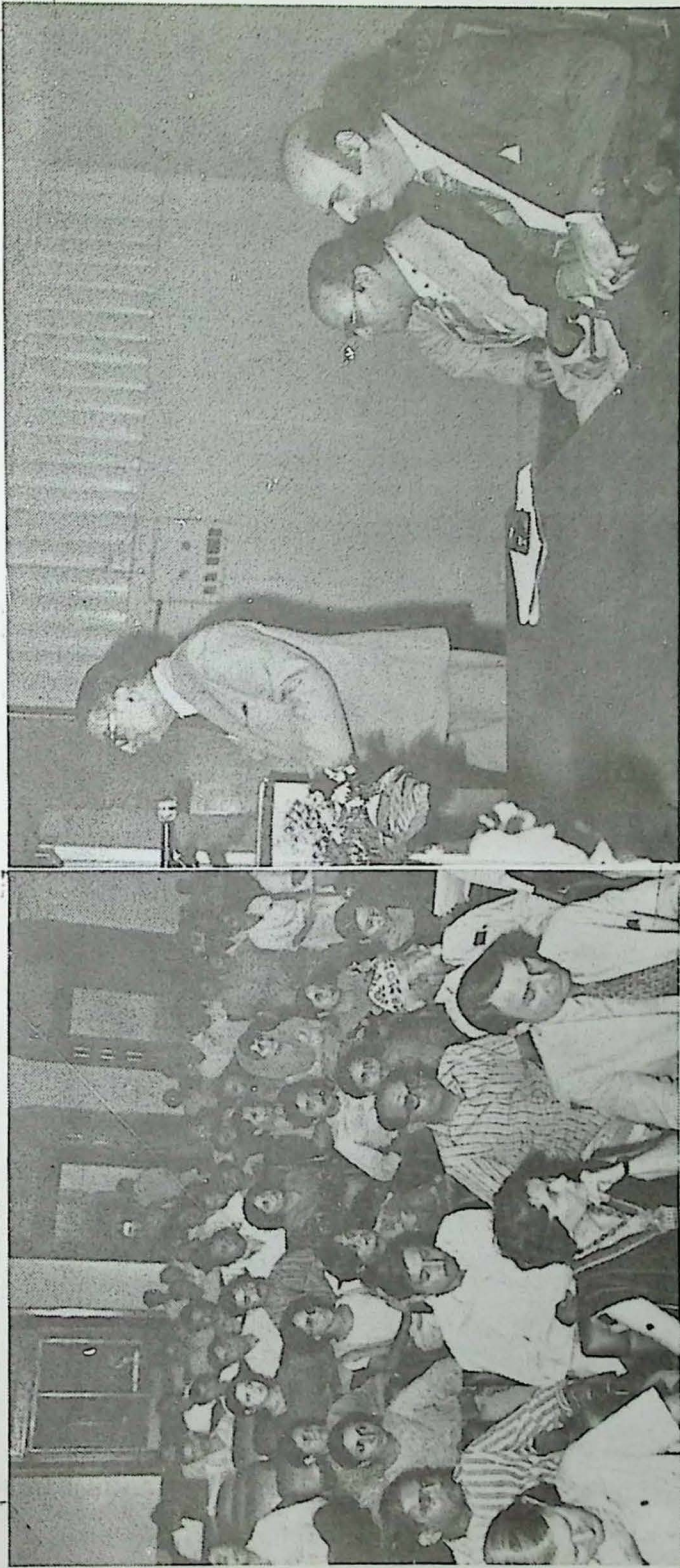
Mr. Shahbaz Khan



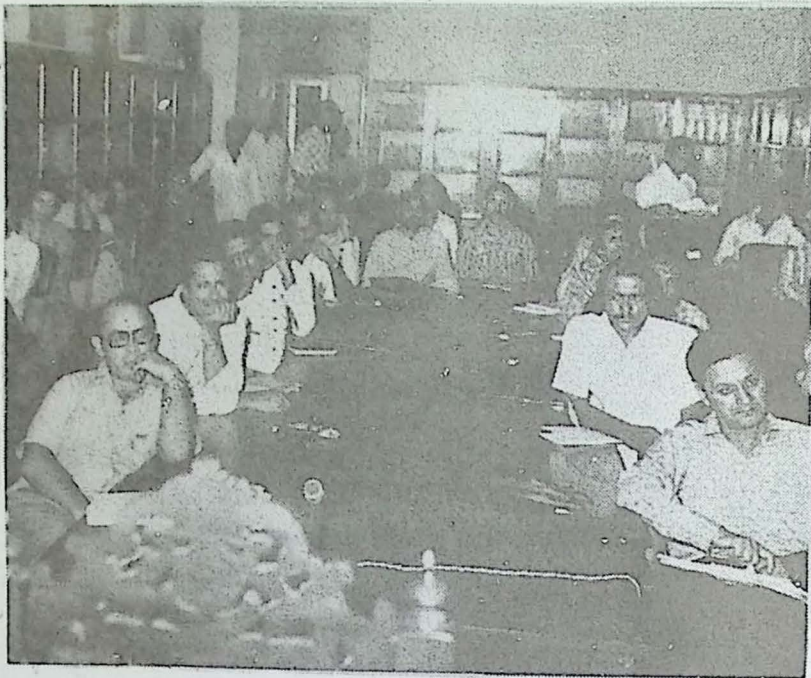
Mr. Muhammad Asghar



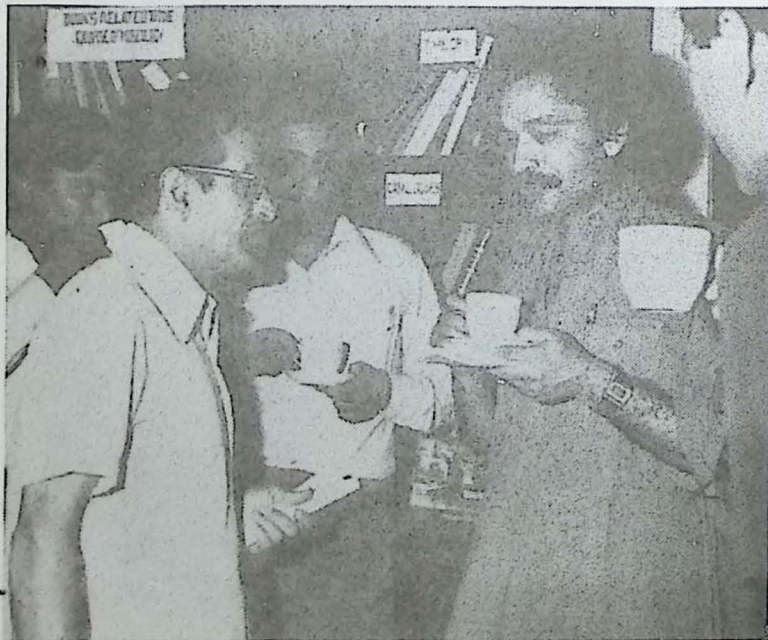
Dr. Saifur Rehman Da



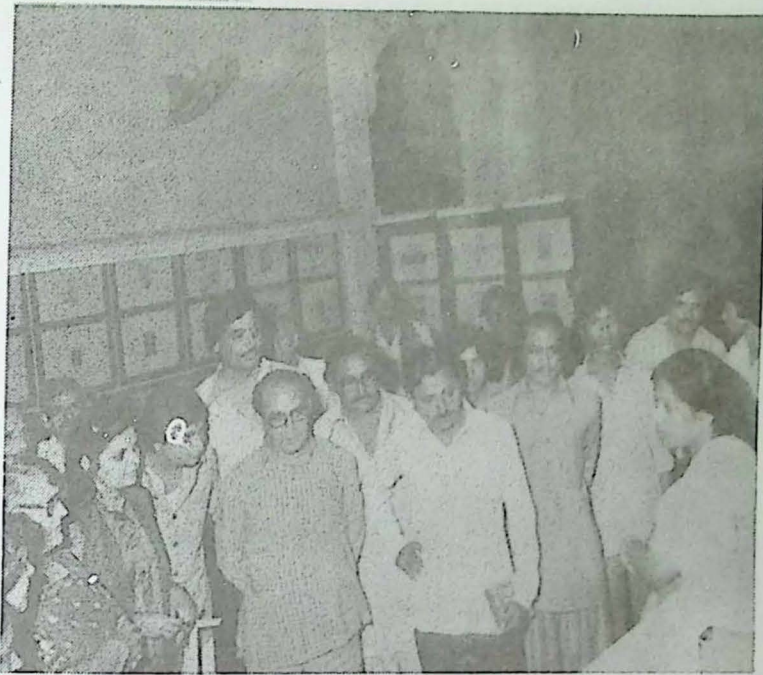
V. Dr. Z.A. Hashmi the then Adviser for Education, Science and Culture, Government of the Punjab, inaugurates the First Museology Course.
Mr. B.A. Kureshi, Chairman, Lahore Museum presides.



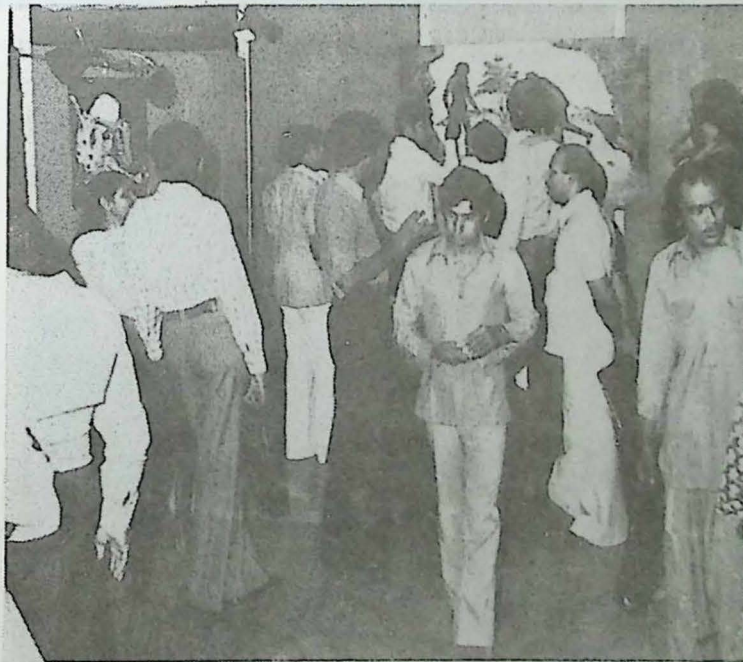
VI. (a) A view of the Class Room



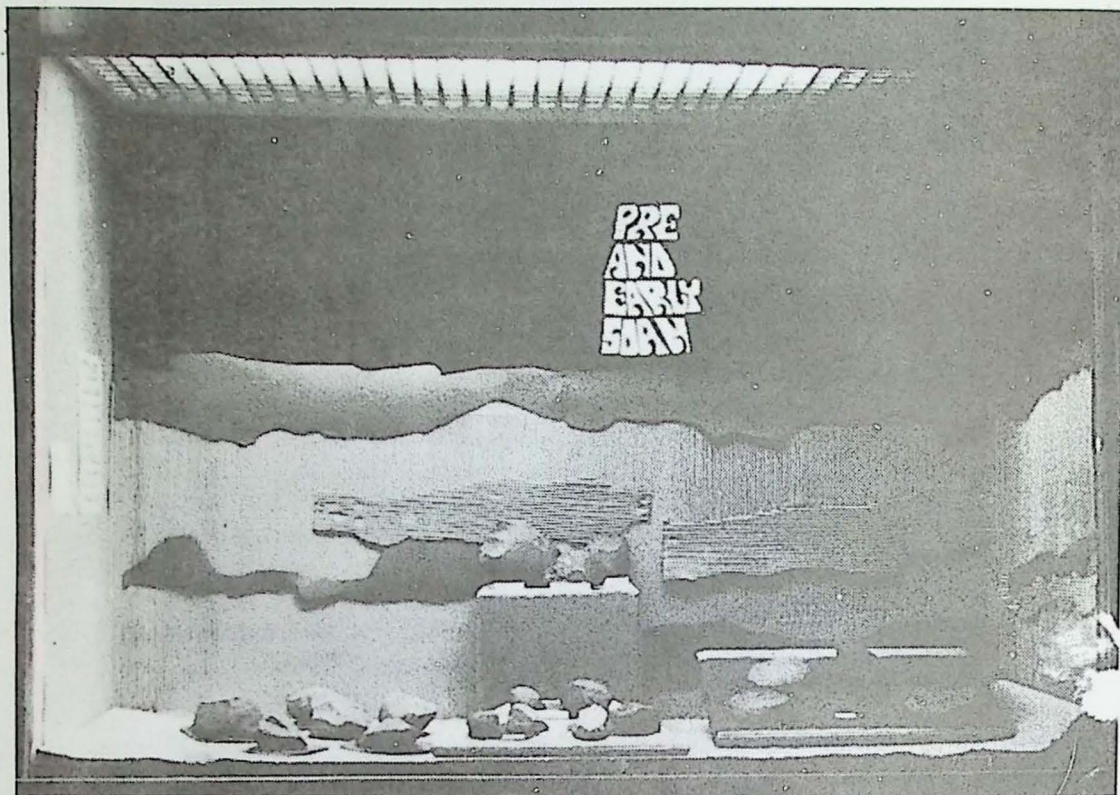
(b) After-class discussions between scholars and the participants:



VII. a. Problems of display of Miniature Paintings being discussed.



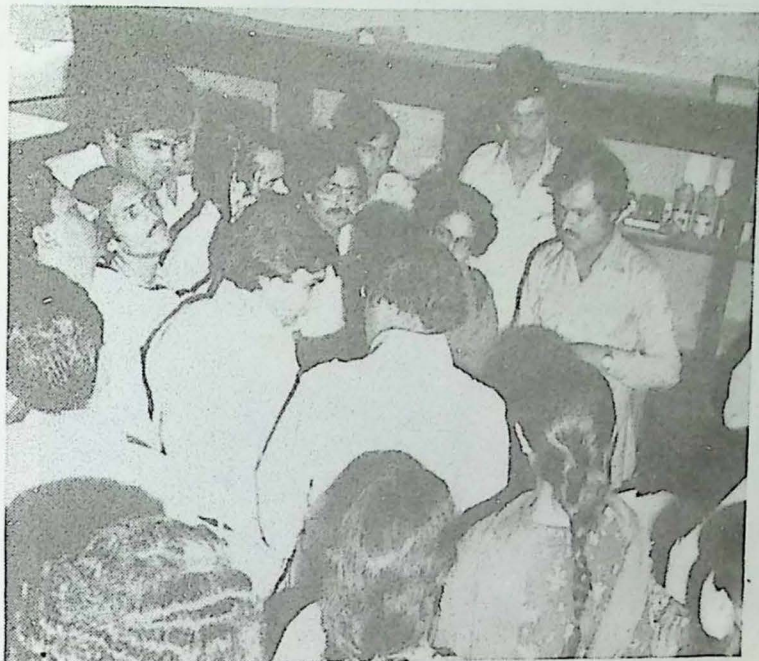
b. Problems of display of stone tools being sorted out by the participants.



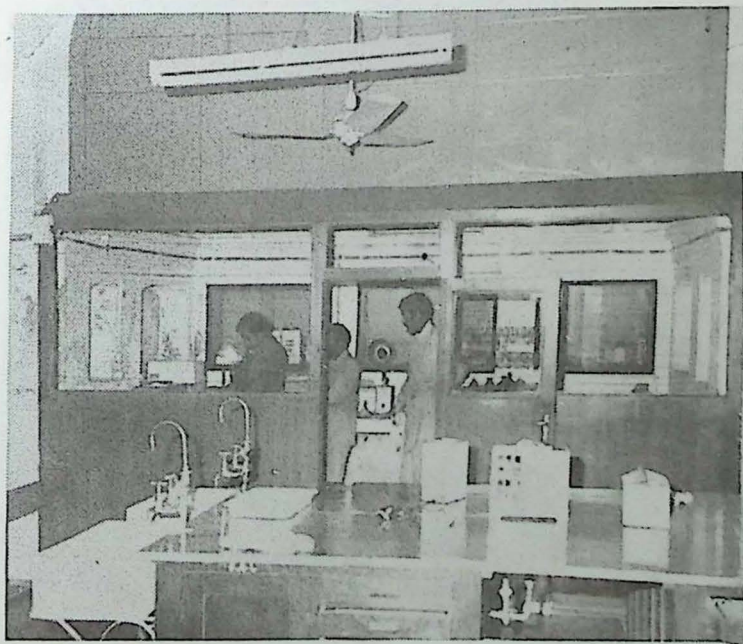
VIII. a. Part of the Exhibition of Pre-historic Stone Tools arranged by the participants.



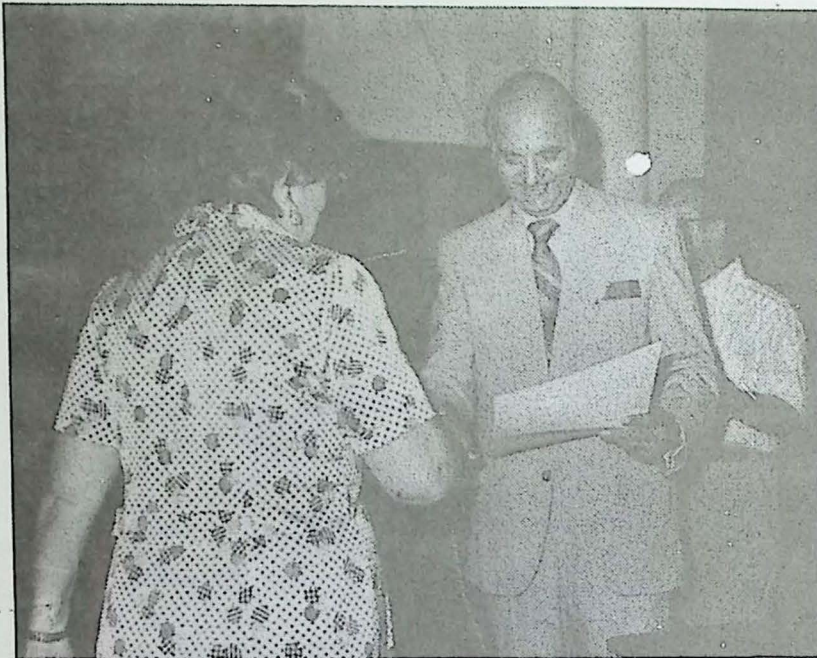
b. Lahore Museum Education Service.



IX a. Class in the Conservation Laboratory of the Lahore Museum.



b. A view of the Central Archaeological Laboratory, Old Fort, Lahore.



X. a. Mr. B. A. Kureshi, Chairman, Lahore Museum, giving away certificates to the participants.



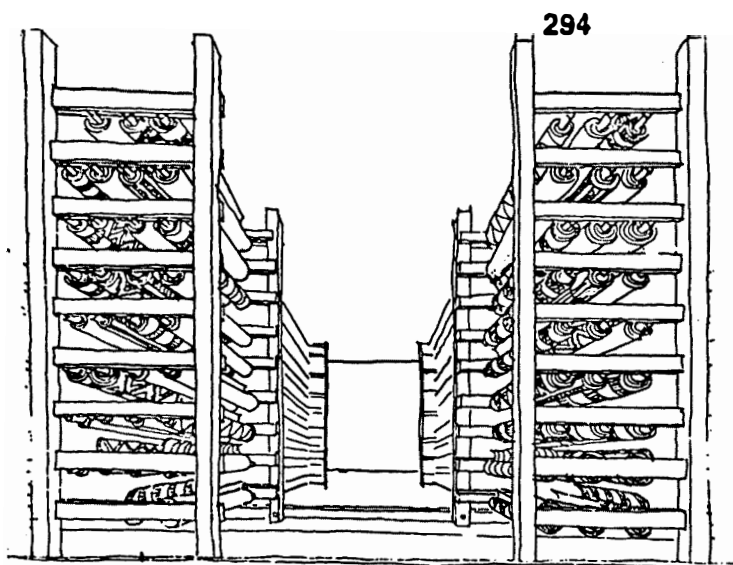
b. Dr. Grace Morley being presented with a set of souvenirs by the Director, Lahore Museum.



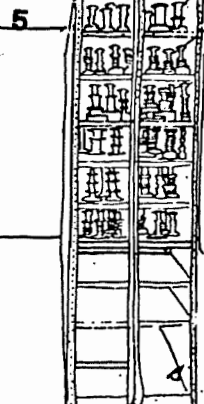
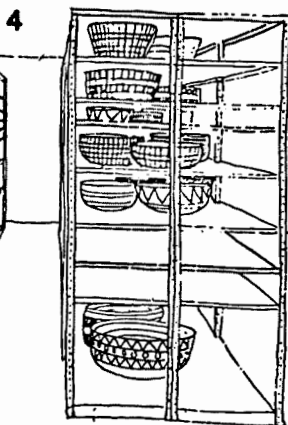
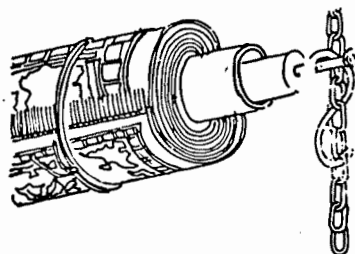
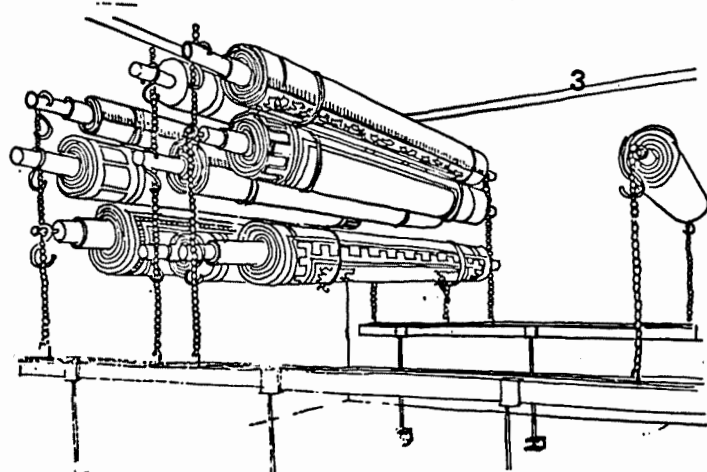
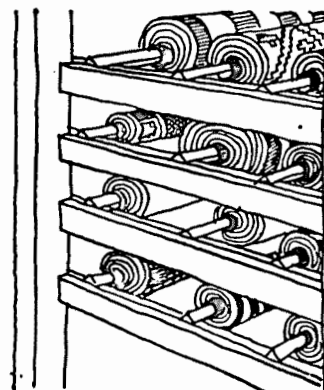
XI. a. A rare newspaper file badly attacked by termites and other pests.



b. A rare newspapers file being fumigated in the Lahore Museum Laboratory.



2

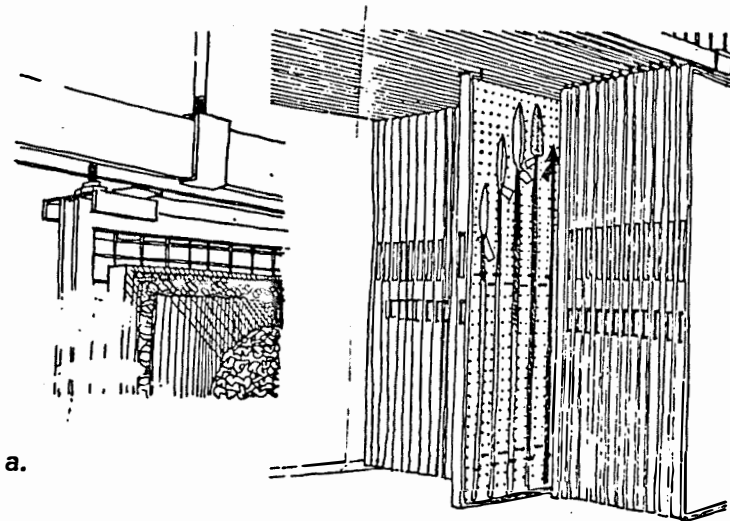
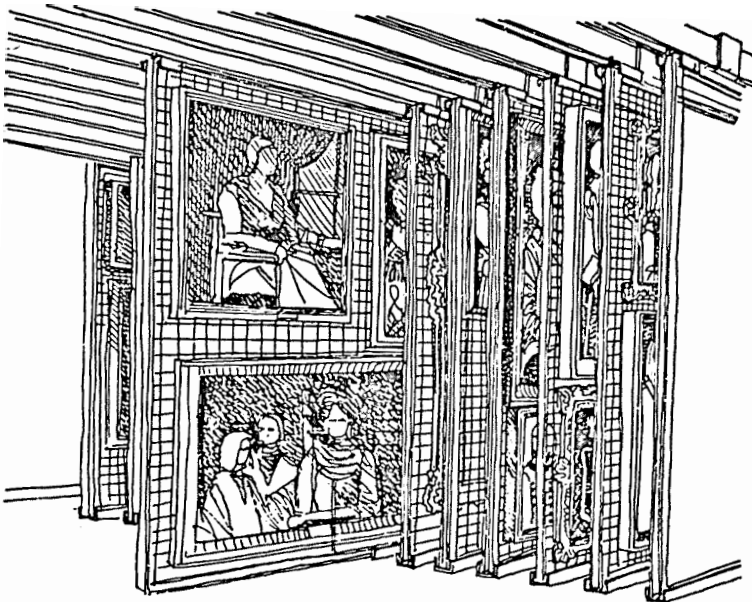


XII. a. Storage for Museums.

1-2. Fixed rolled storage for textiles.

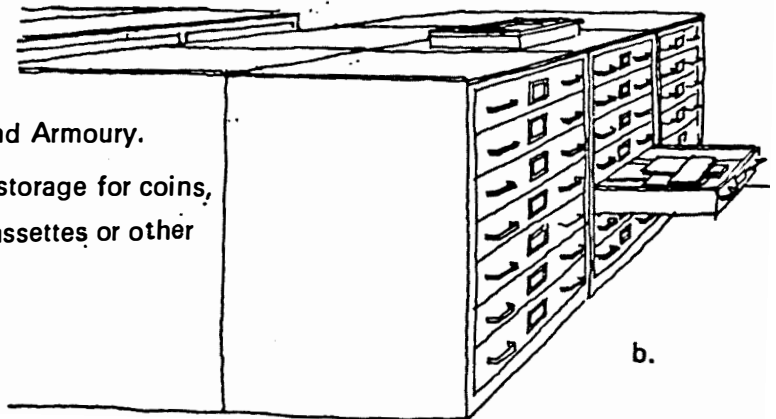
3. Mobile Hanging Storage for large rugs.

4-5. Adjustable shelving for storage of miscellaneous objects.



XIII.

- a. Storage of Paintings and Armoury.
- b. Flat-drawer or cabinet storage for coins, medals, calligraphy, cassettes or other small objects.



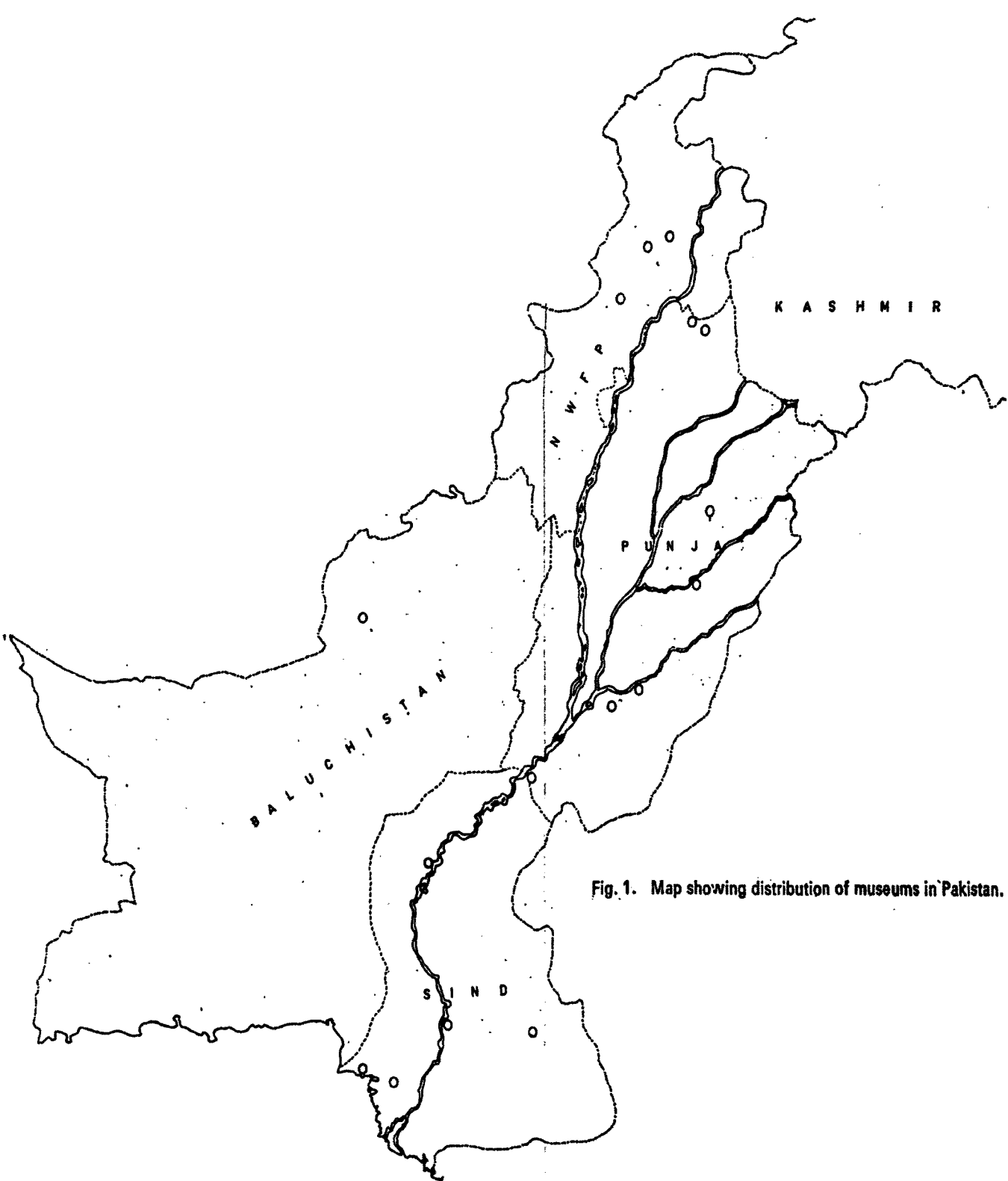


Fig. 1. Map showing distribution of museums in Pakistan.

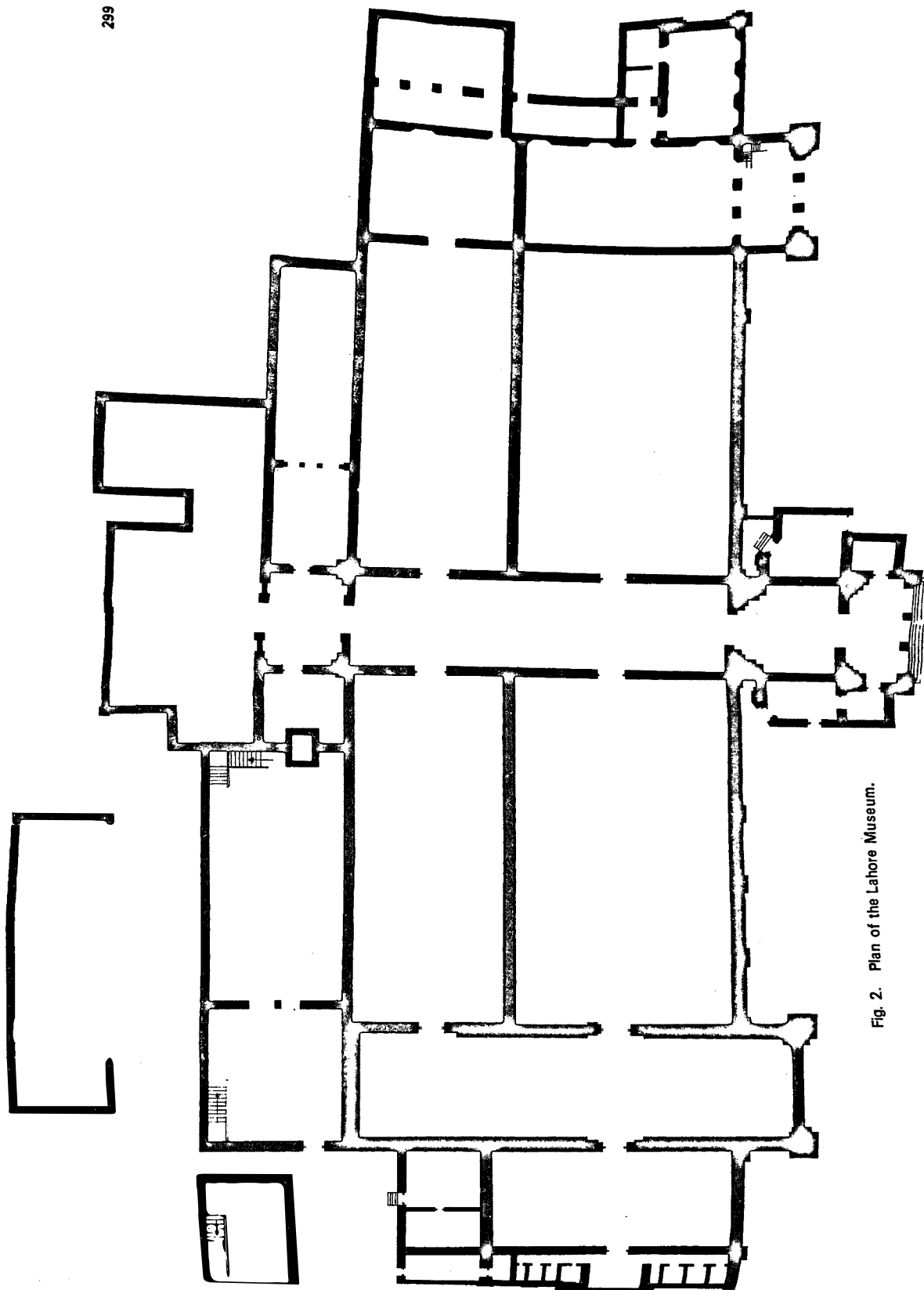
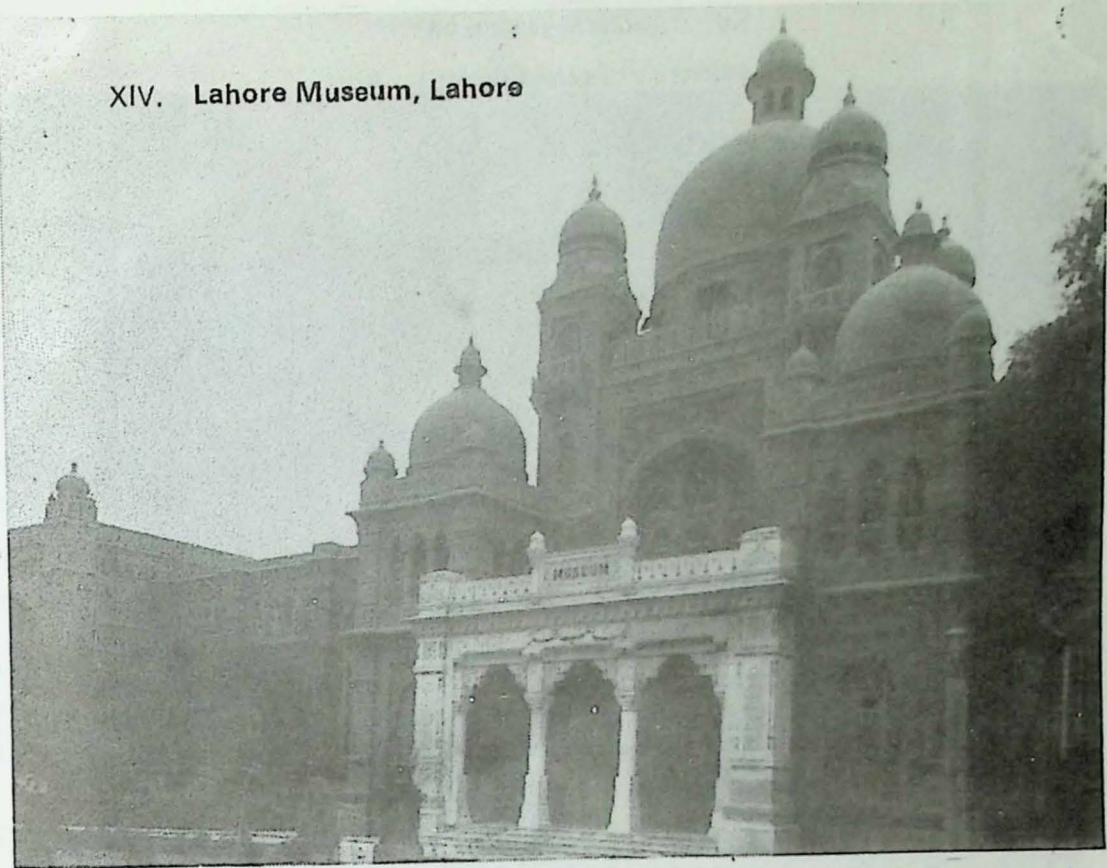


Fig. 2. Plan of the Lahore Museum.

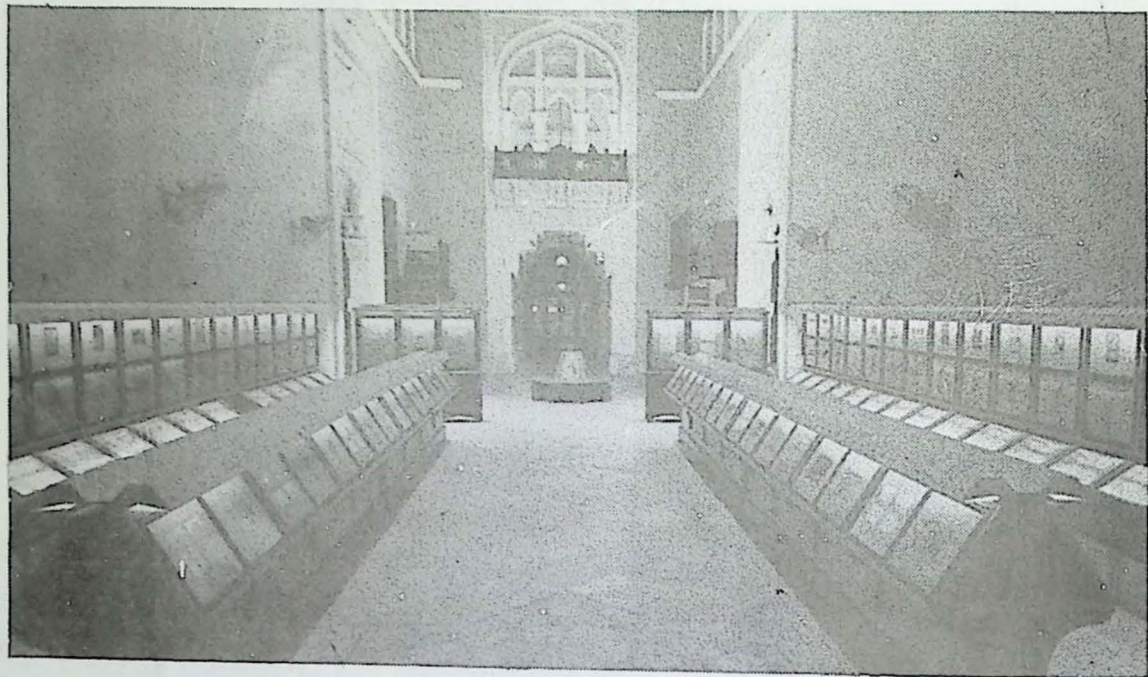
XIV. Lahore Museum, Lahore



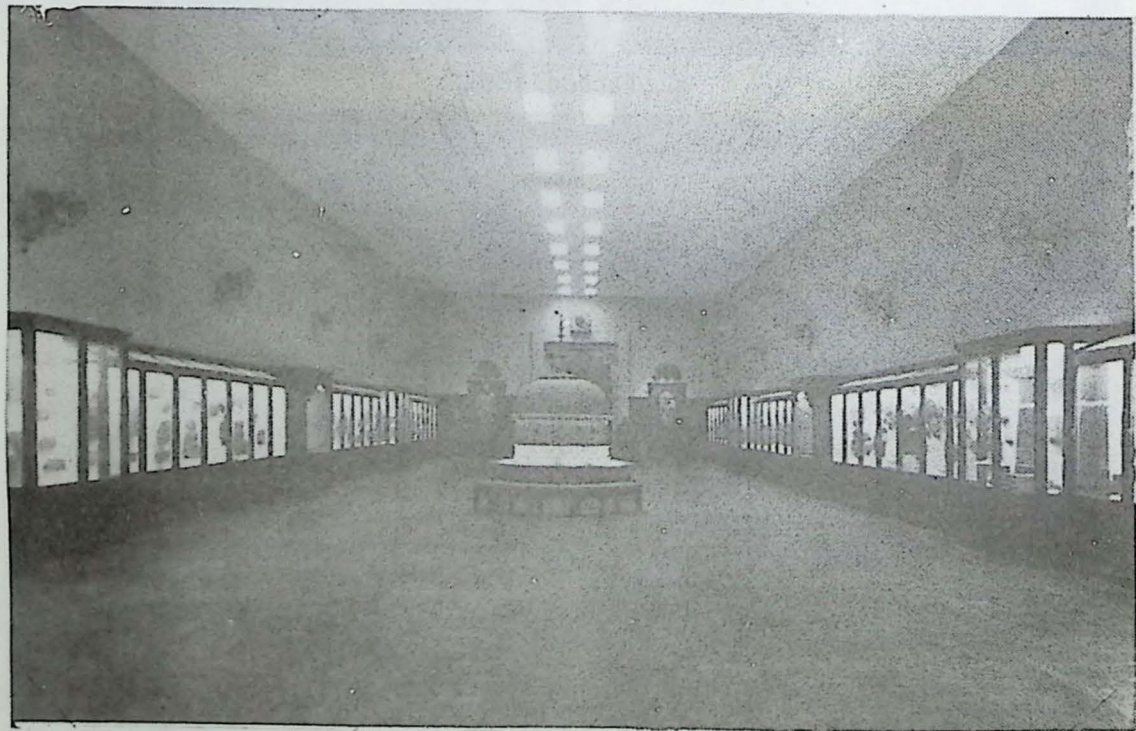
a. Facade, 1894.



b. Lahore Museum Hall of Temporary Exhibitions.



a. Miniature Paintings Gallery.



b. Gandhara Gallery.

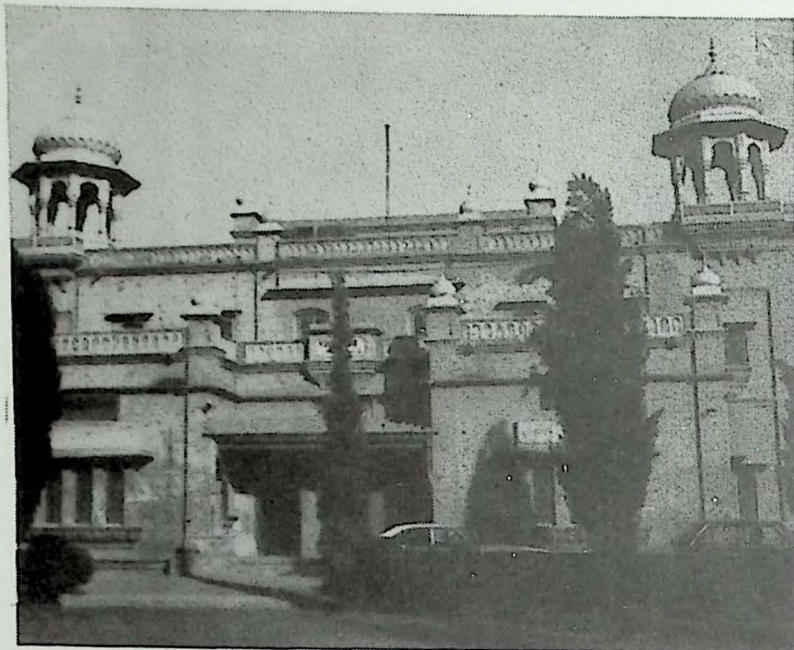


a. Fasting Siddhartha from Sikri.

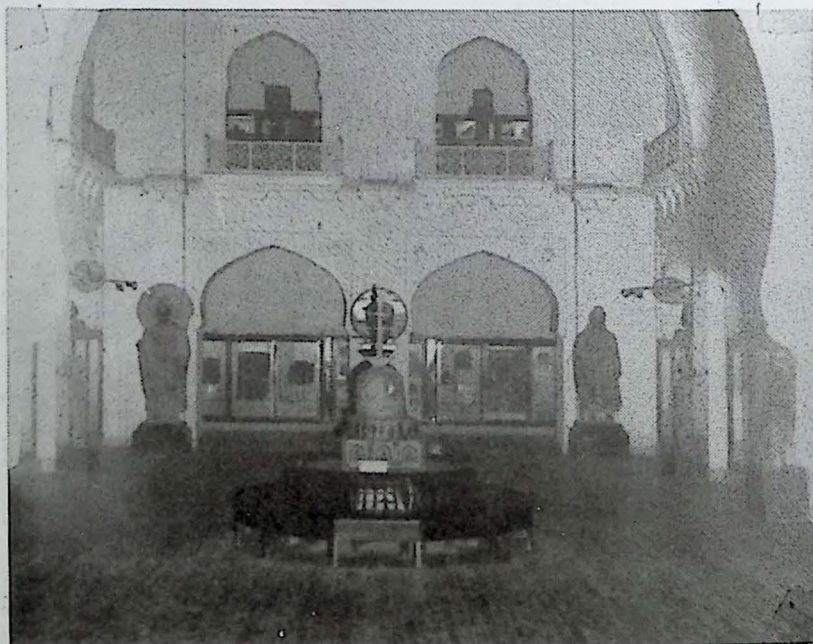


b. Carpets and Metal-wares in the Islamic Gallery.

XVII. Peshawar Museum, Peshawar

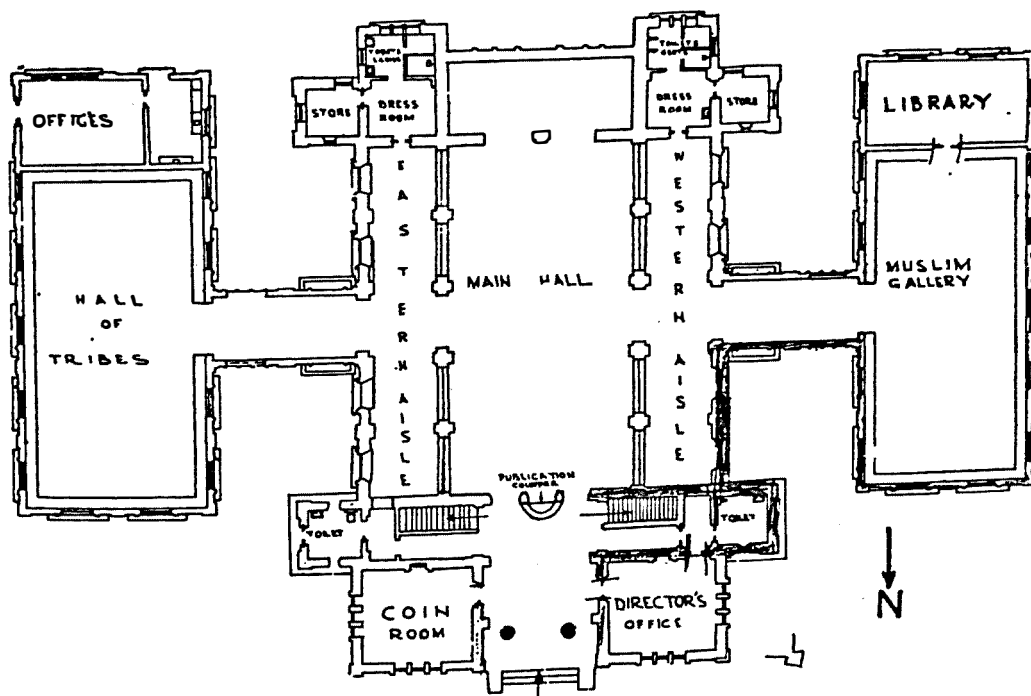


a. Facade, 1907.

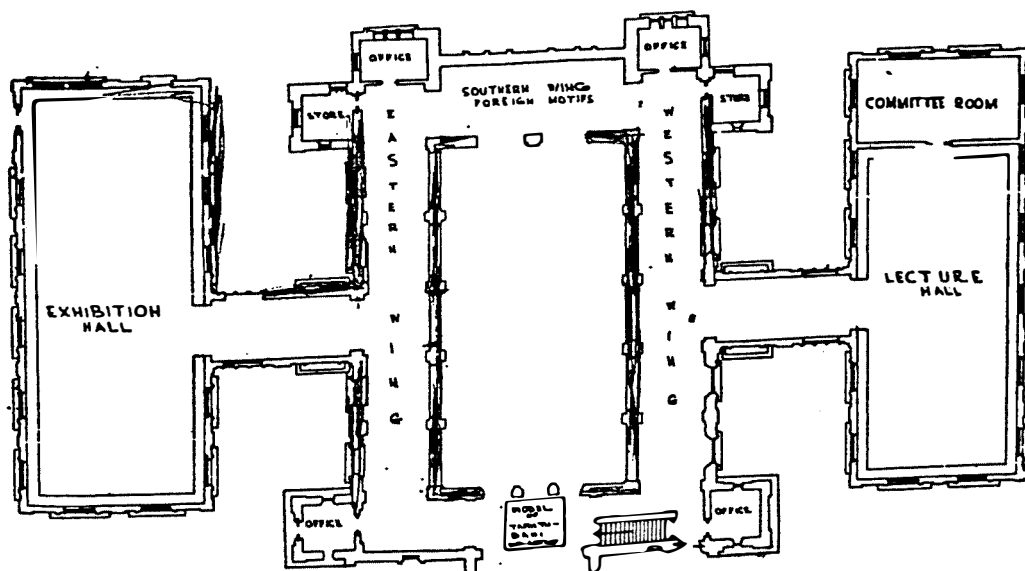


b. View of the Central Gallery.

Fig. 3: Plan of the Peshawar Museum, Peshawar.
GROUND FLOOR



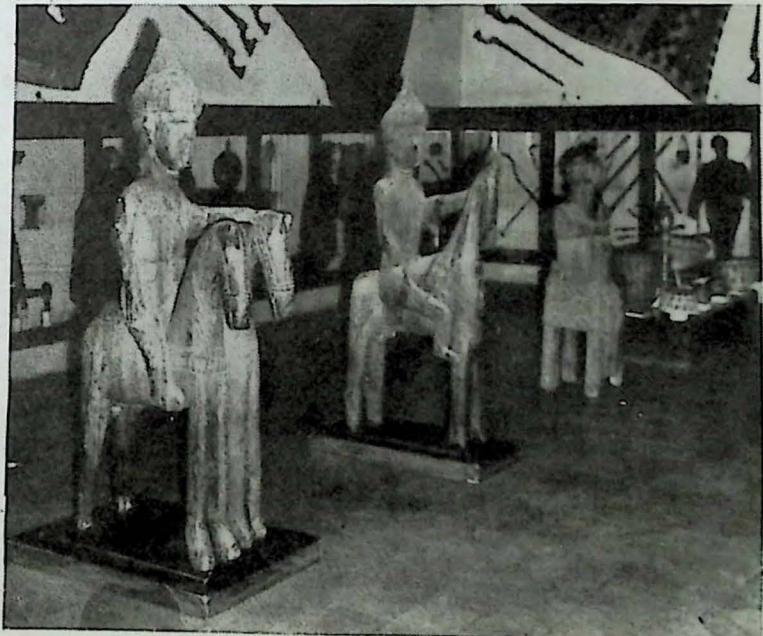
PESHAWAR MUSEUM
UPPER FLOOR



XVIII. Peshawar Museum, Peshawar

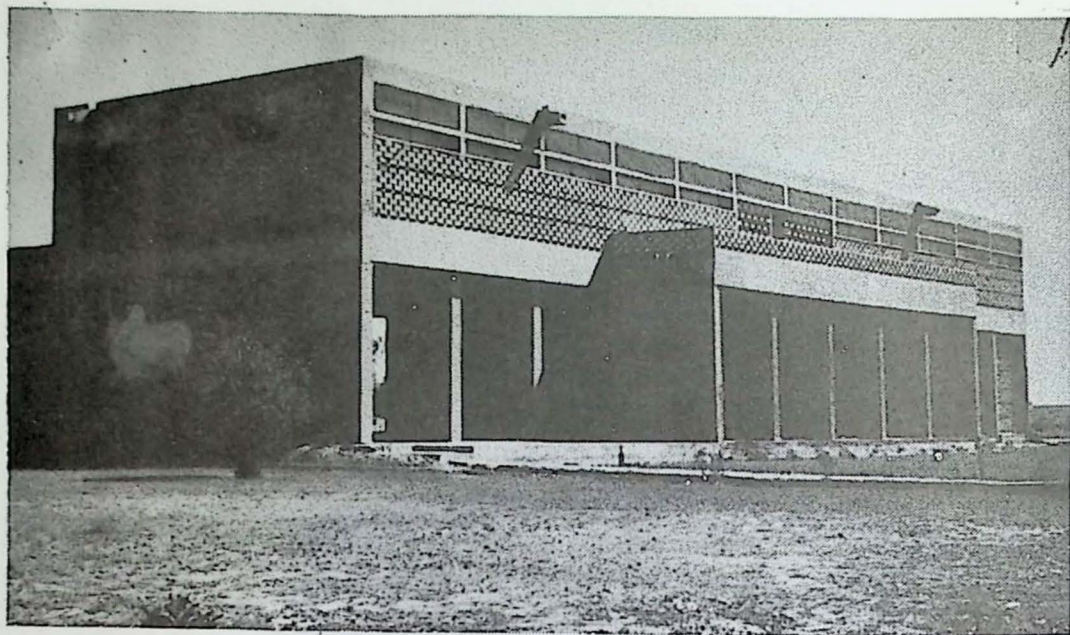


a. View of the Islamic Gallery.

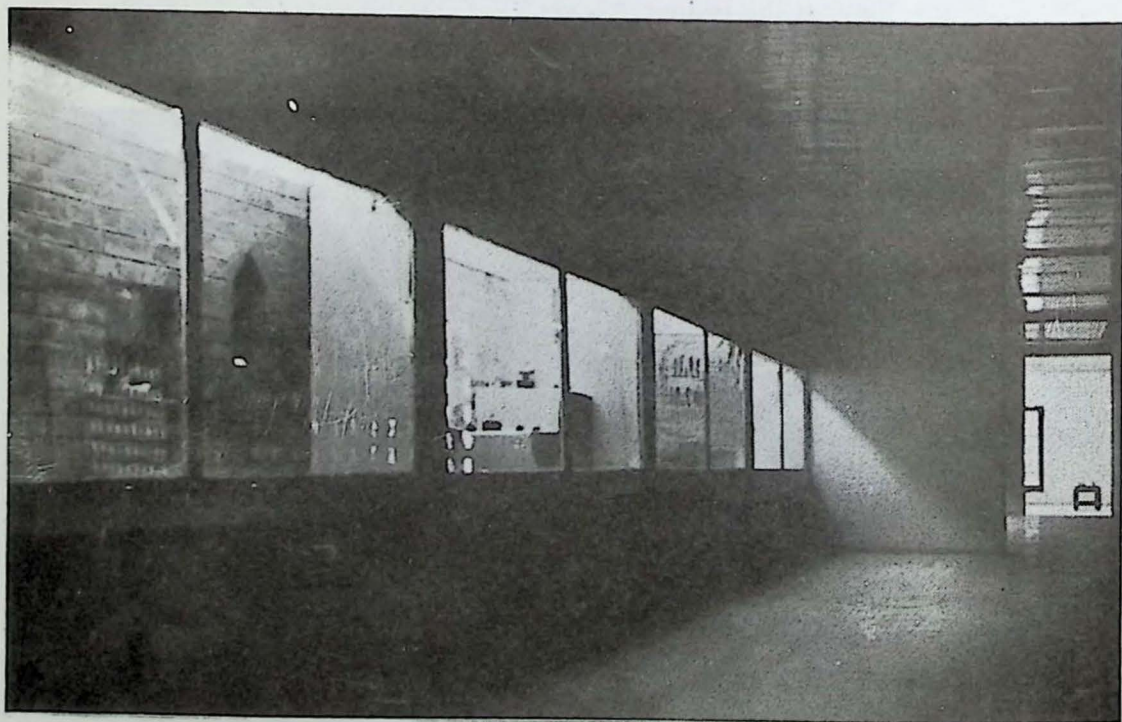


b. View of the Ethnographical Gallery known as Tribal Hall.

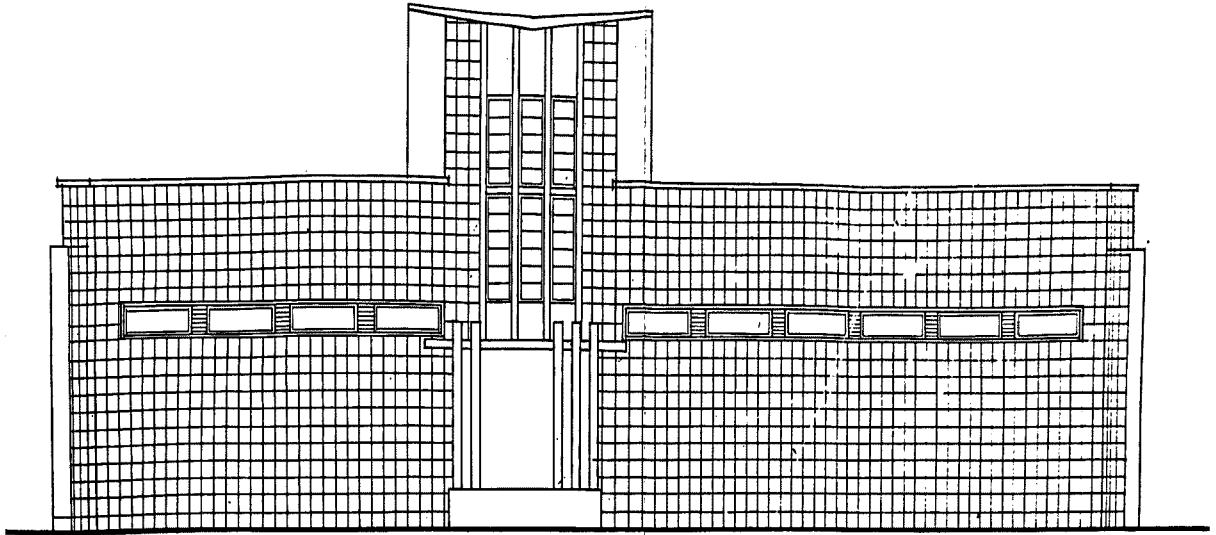
XIX. Archaeological Museum, Mohenjodaro



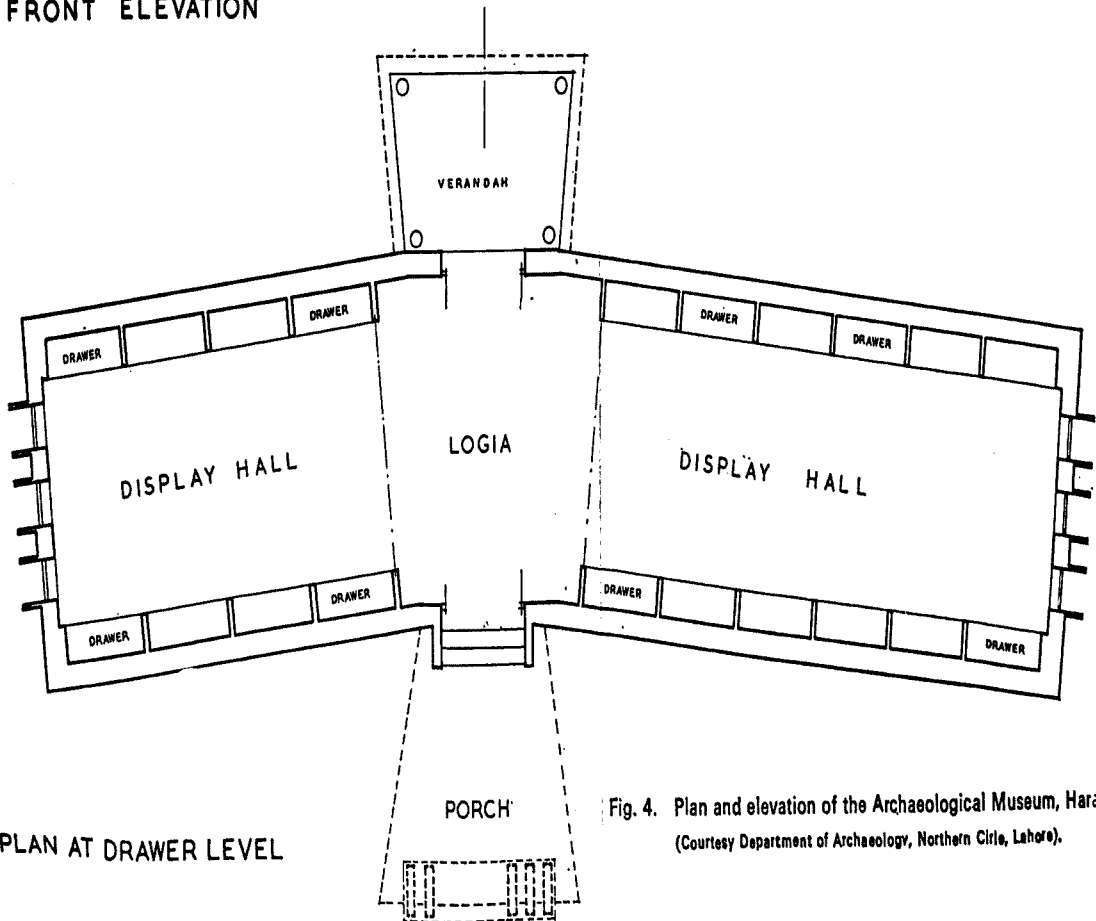
a. Main building from outside.



b. Main Hall from inside.

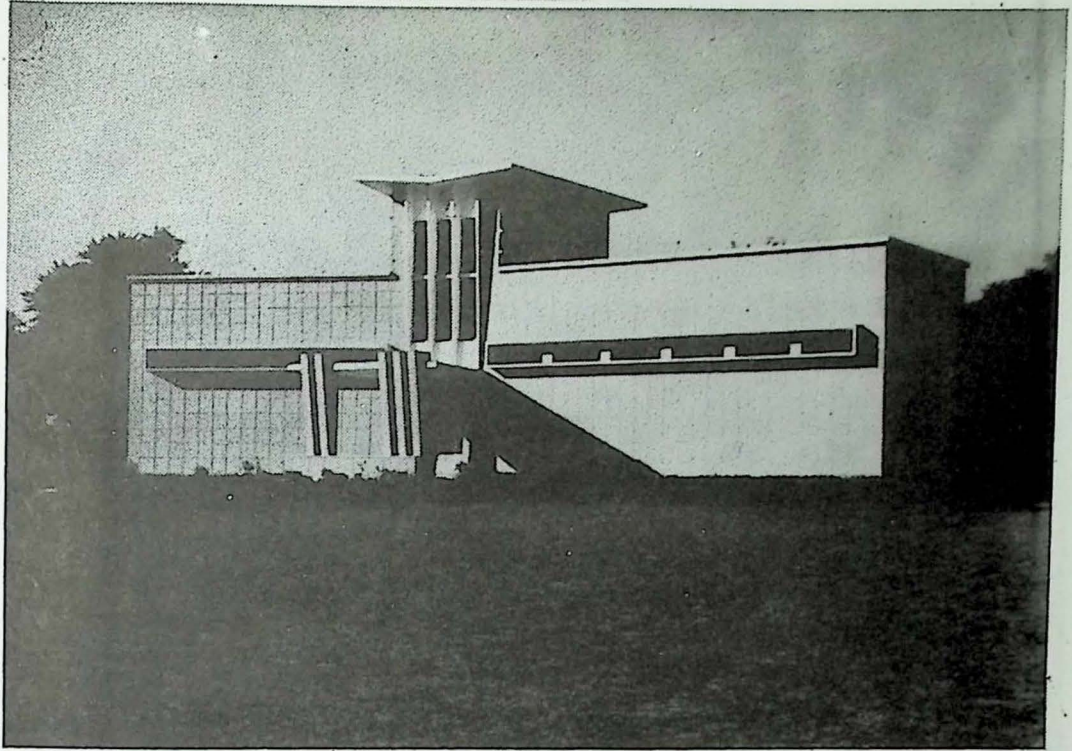


FRONT ELEVATION



PLAN AT DRAWER LEVEL

Fig. 4. Plan and elevation of the Archaeological Museum, Harappa
(Courtesy Department of Archaeology, Northern Circle, Lahore).

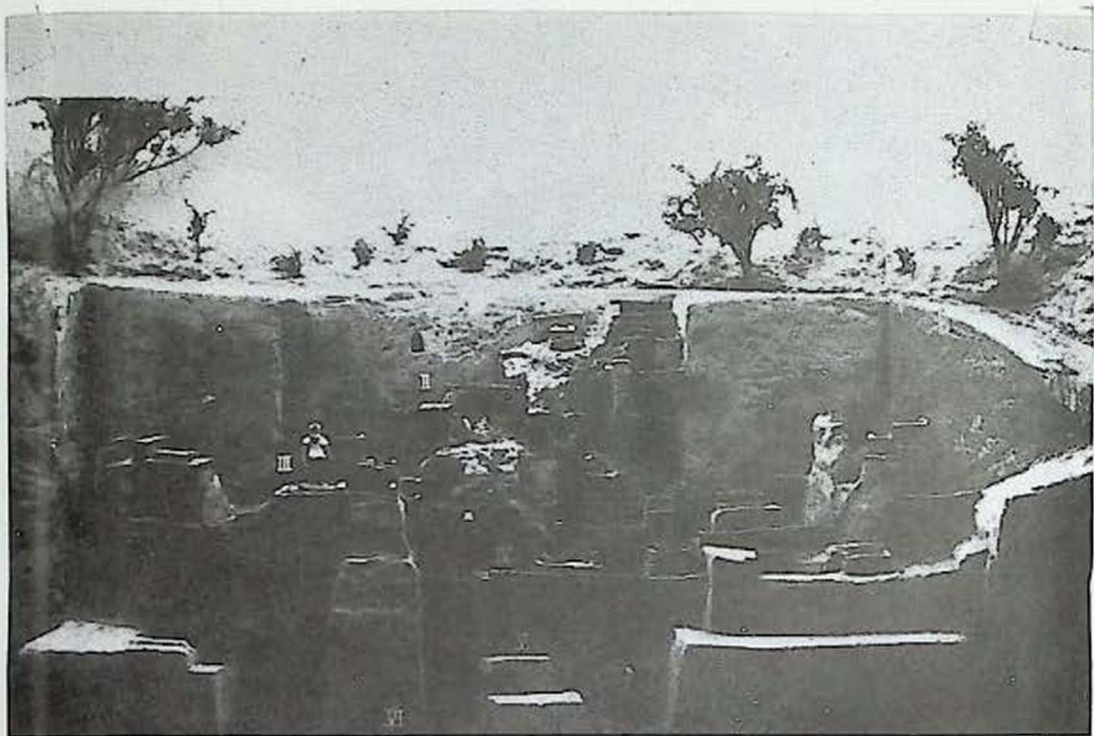
XX. Archaeological Museum, Harappa

a. Main Building from outside.



b. Display of stone tools with dioramic effect.

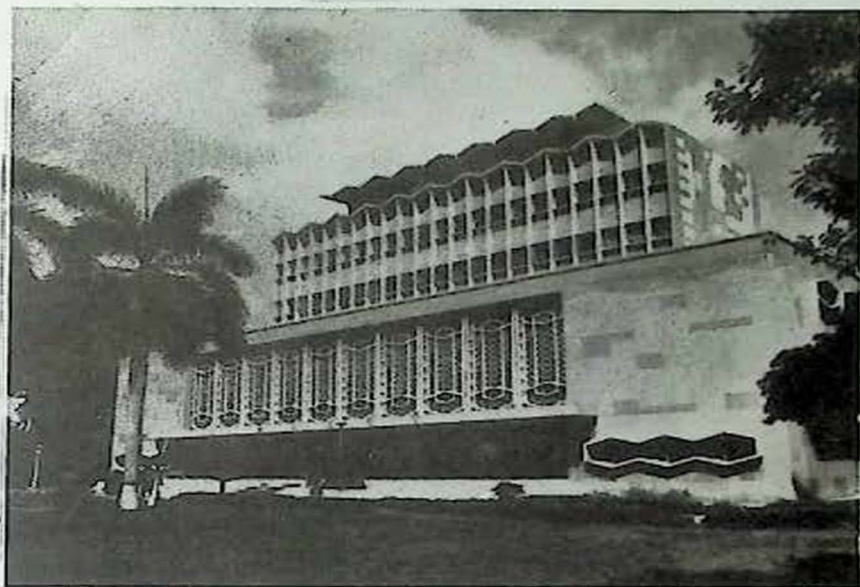
XXI. Archaeological Museum, Harappa



a. A diorama of excavations inside a show case.



b. Display of pottery.

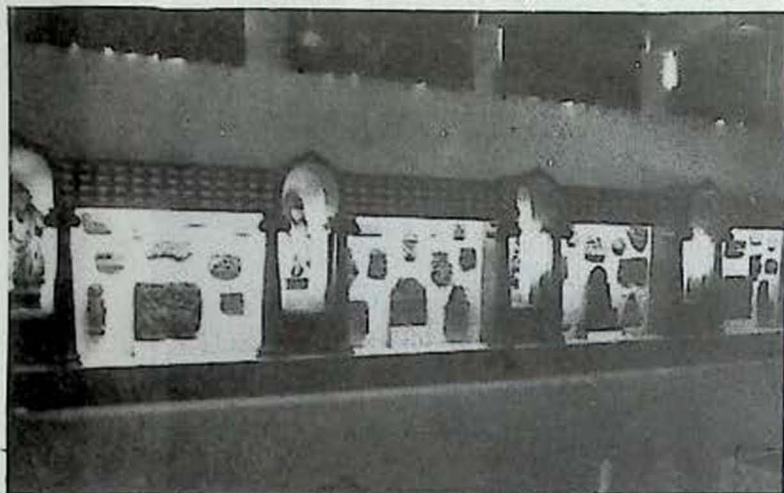
XXII. National Museum of Pakistan, Karachi

a. Main Building from outside, 1970.



b. View of the Indus Gallery.

XXIII. National Museum of Pakistan, Karachi



a. View of the Gandhara Gallery.



b. A Model in the Ethnological Gallery.

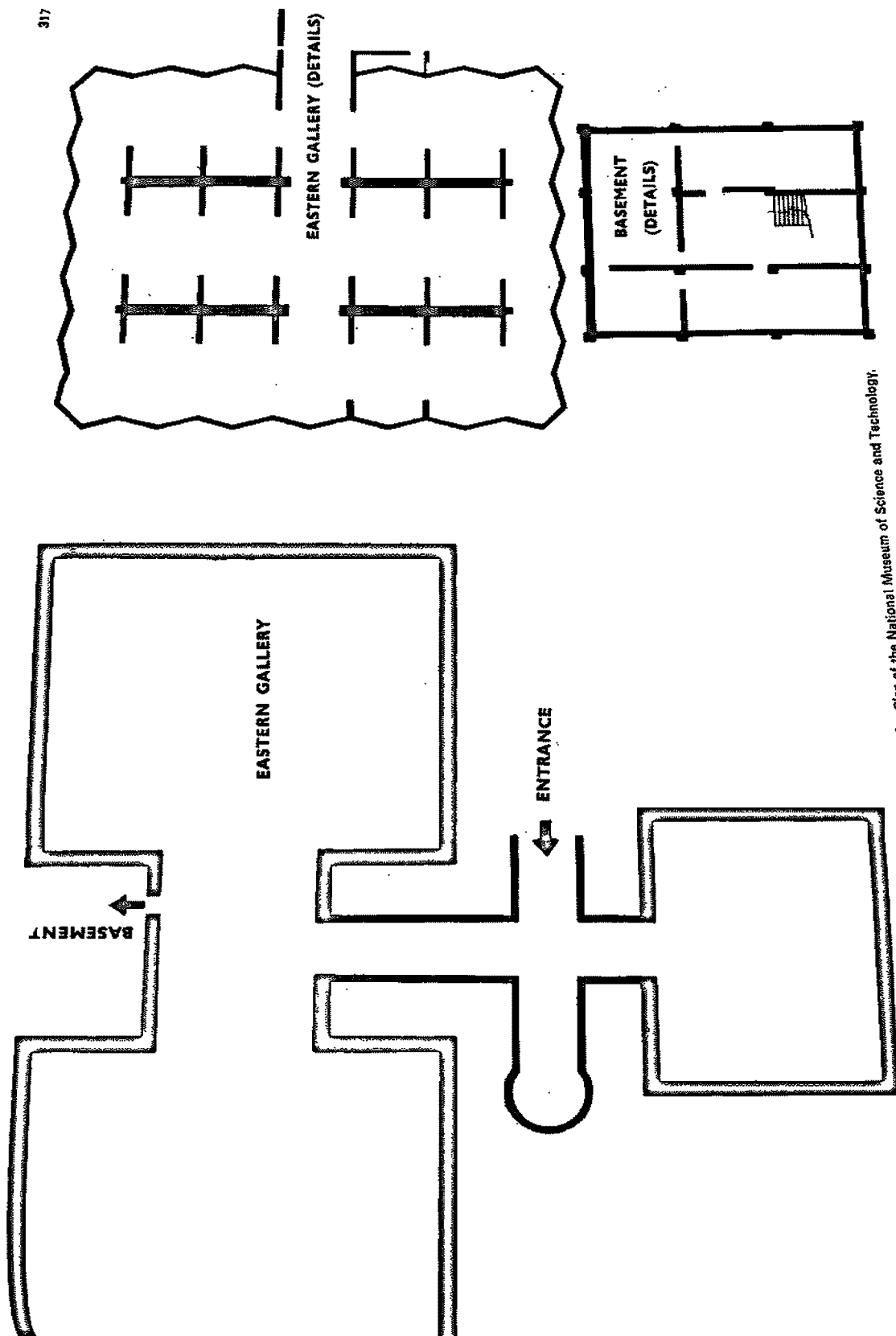
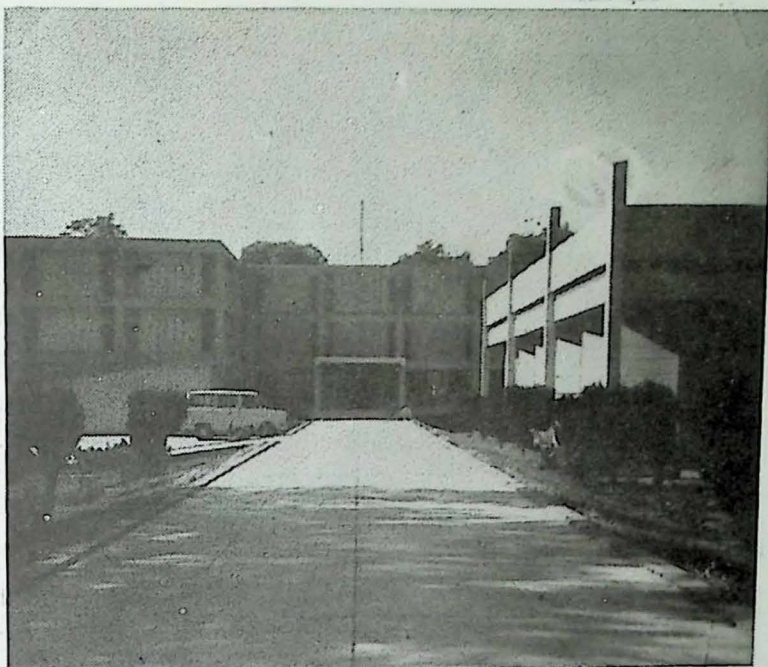


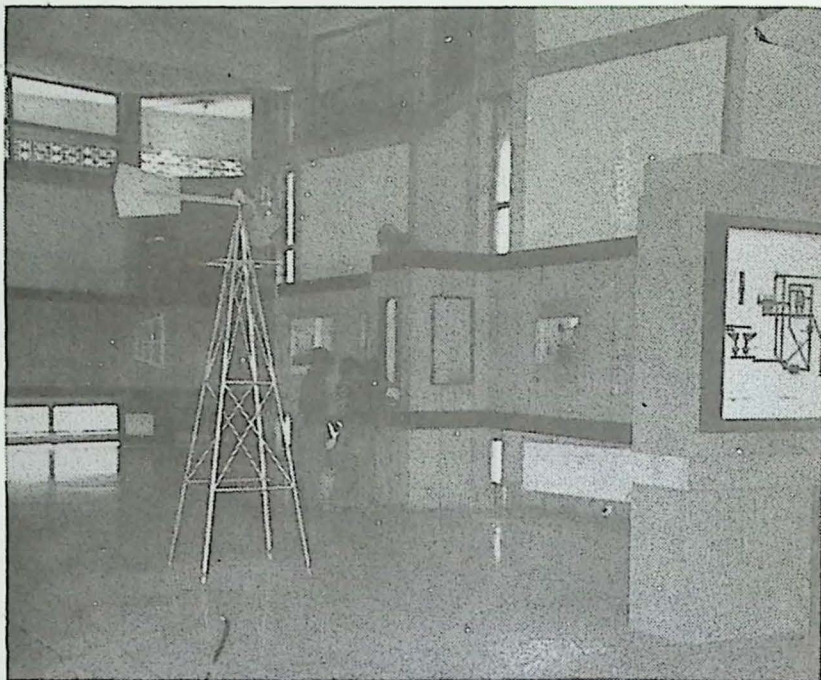
Fig. 6. Plan of the National Museum of Science and Technology,
Lahore

XXIV. National Museum of Science and Technology, Lahore

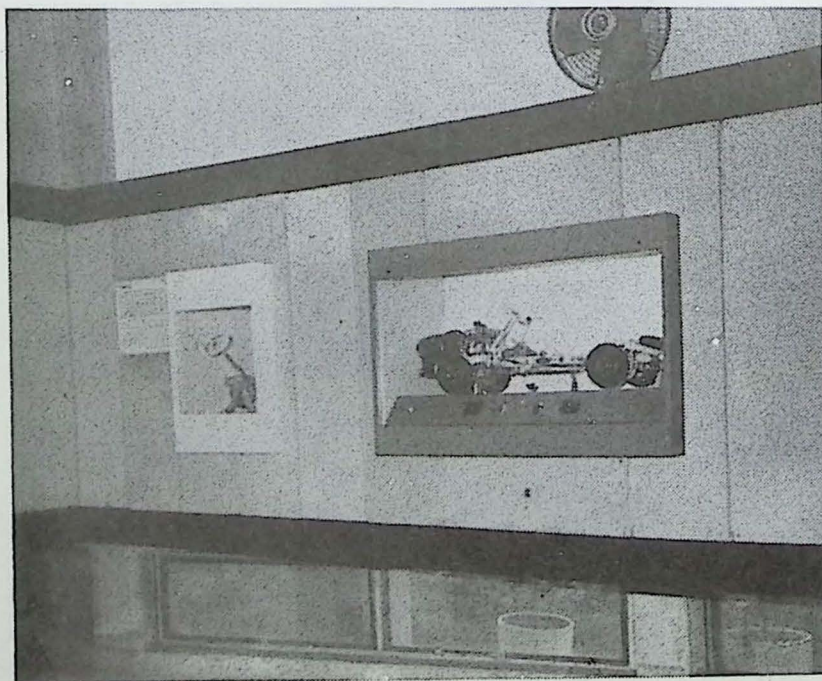
a. Main Building from outside.



b. View of the Hall from inside.

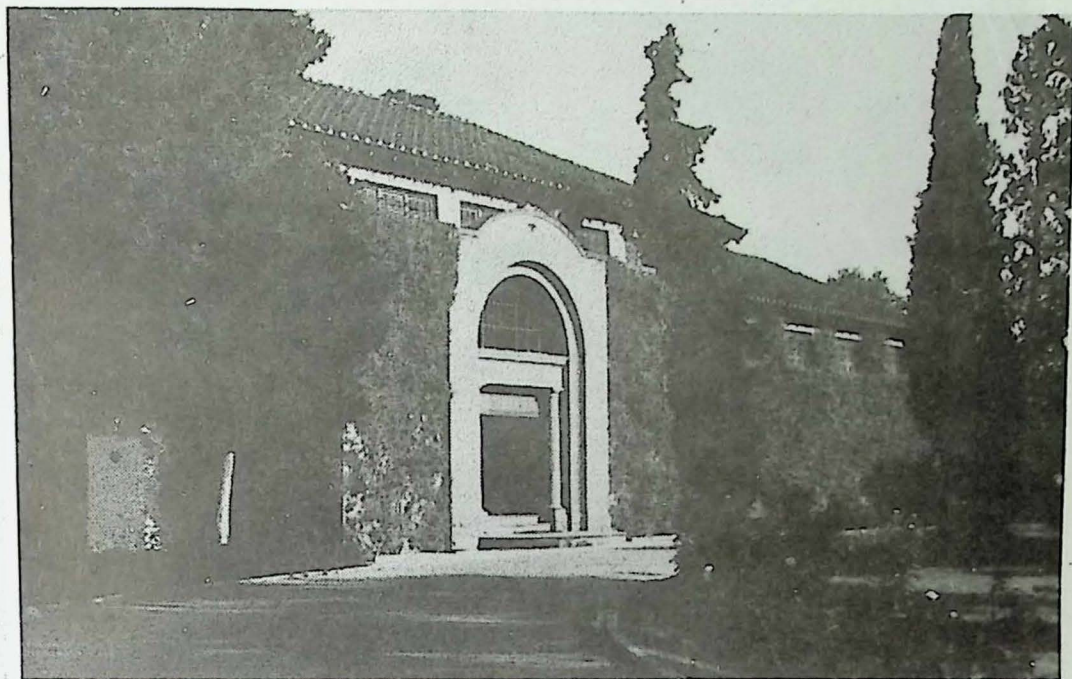
XXV. National Museum of Science and Technology, Lahore

a. Students handling the models of machines.

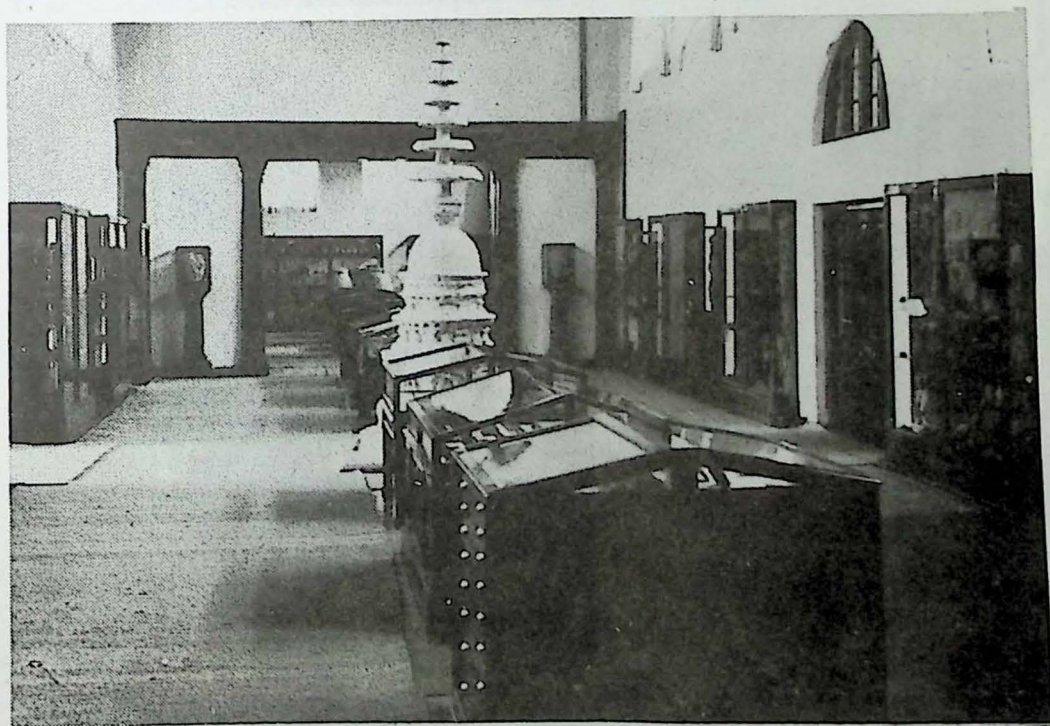


b. Models of machines.

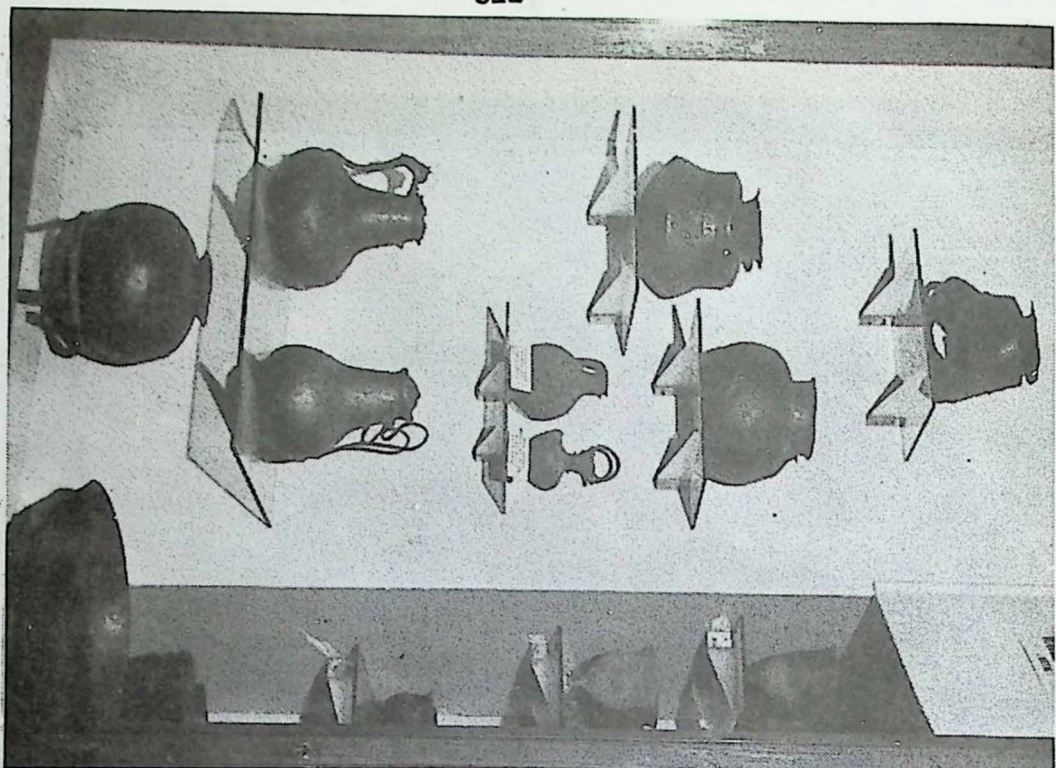
XXVI. Archaeological Museum, Taxila



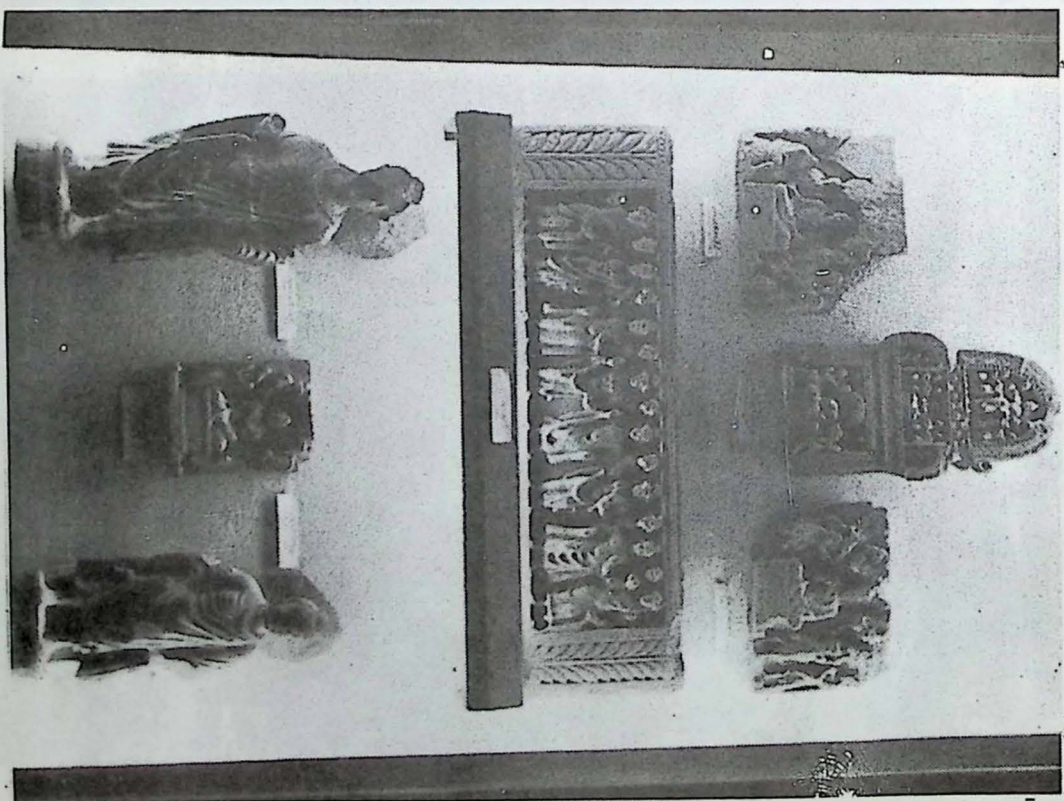
a. Main building from outside, 1928.



b. General view of the main hall.



a. Metal-ware on display.



b. Sculptures on display.

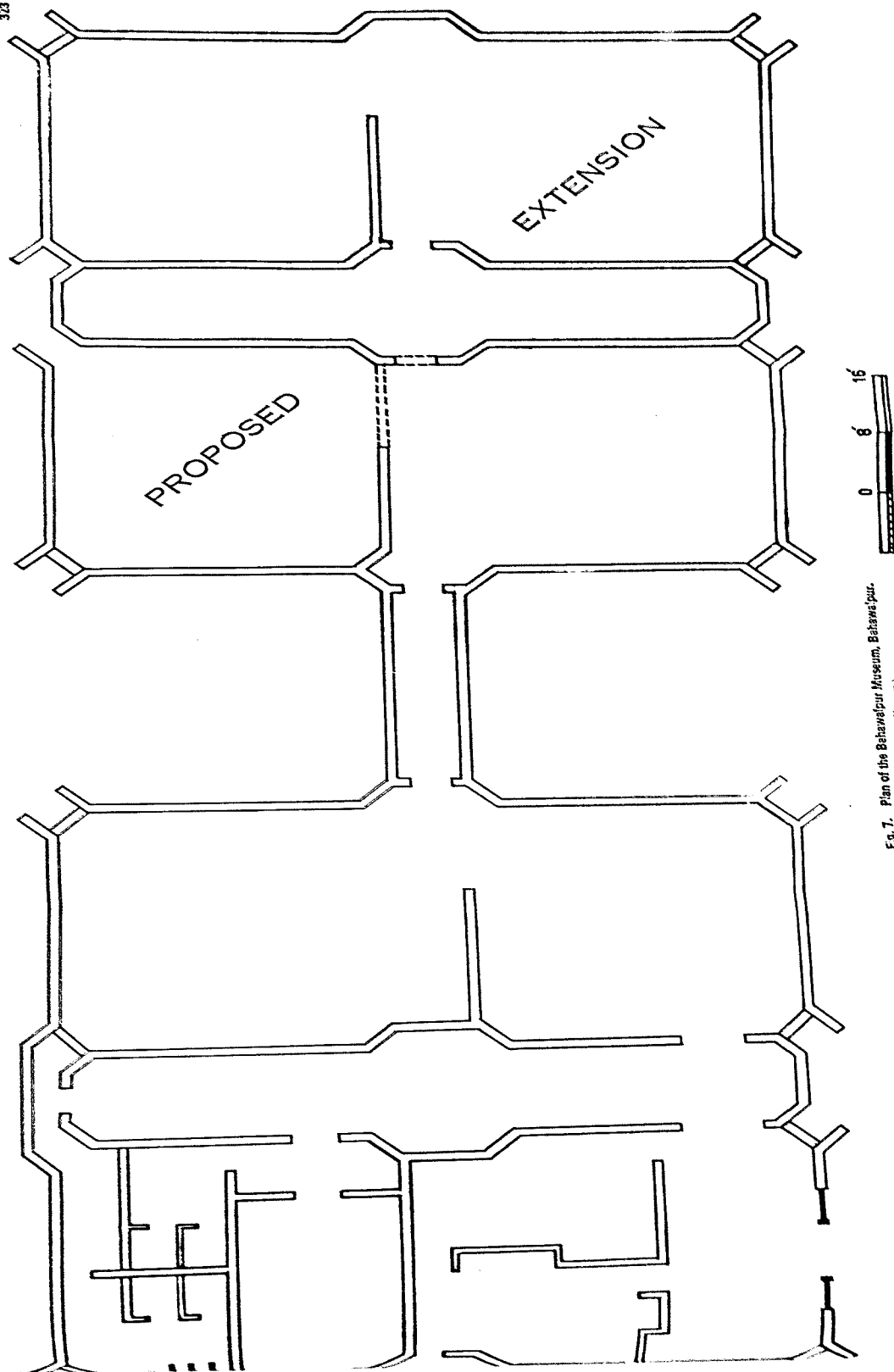
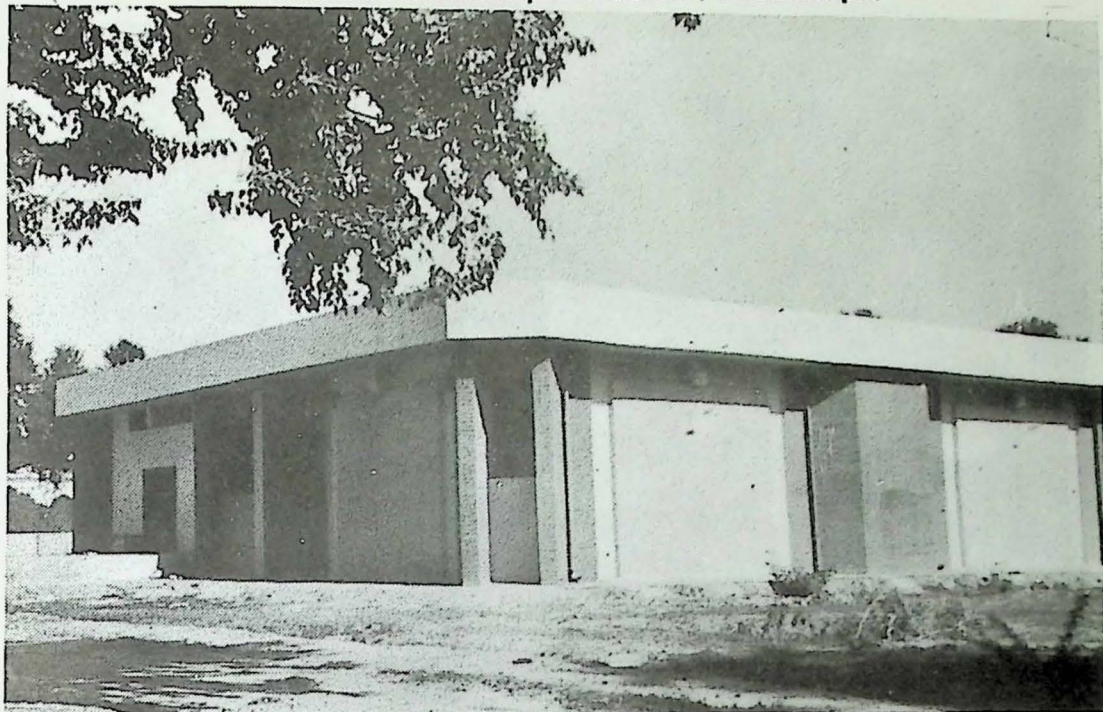
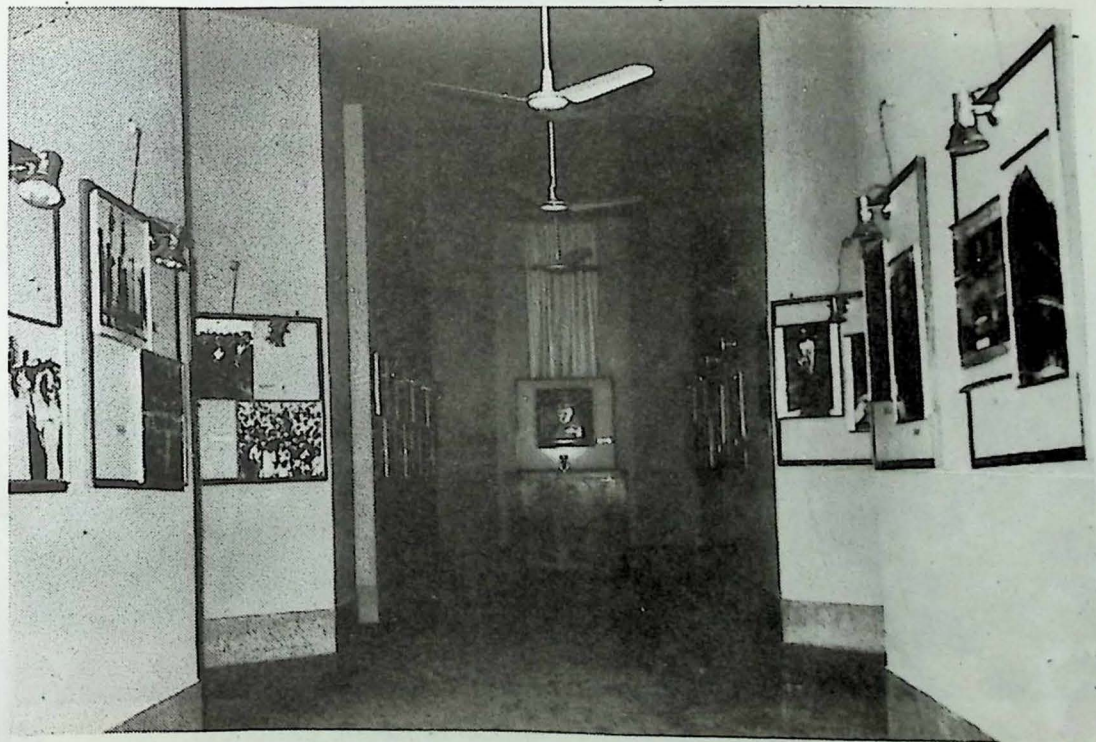


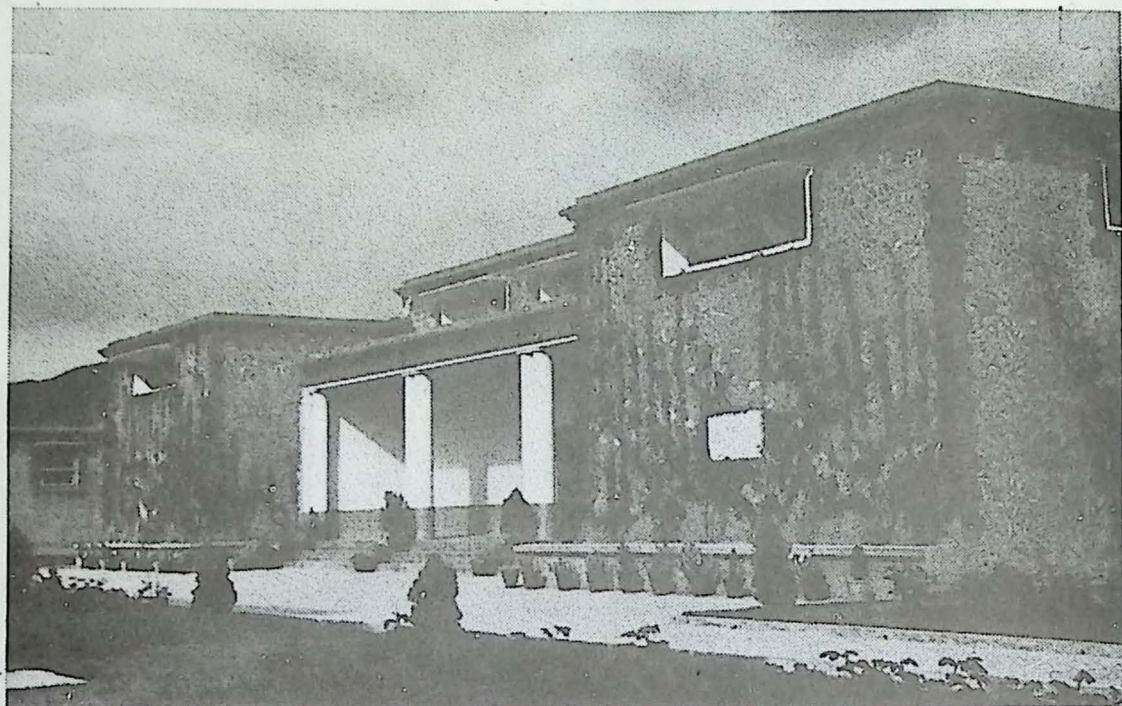
Fig. 7. Plan of the Beharwarpur Museum, Bahawalpur.
(Courtesy Bahawalpur Museum.)

XXVIII. Bahawalpur Museum, Bahawalpur

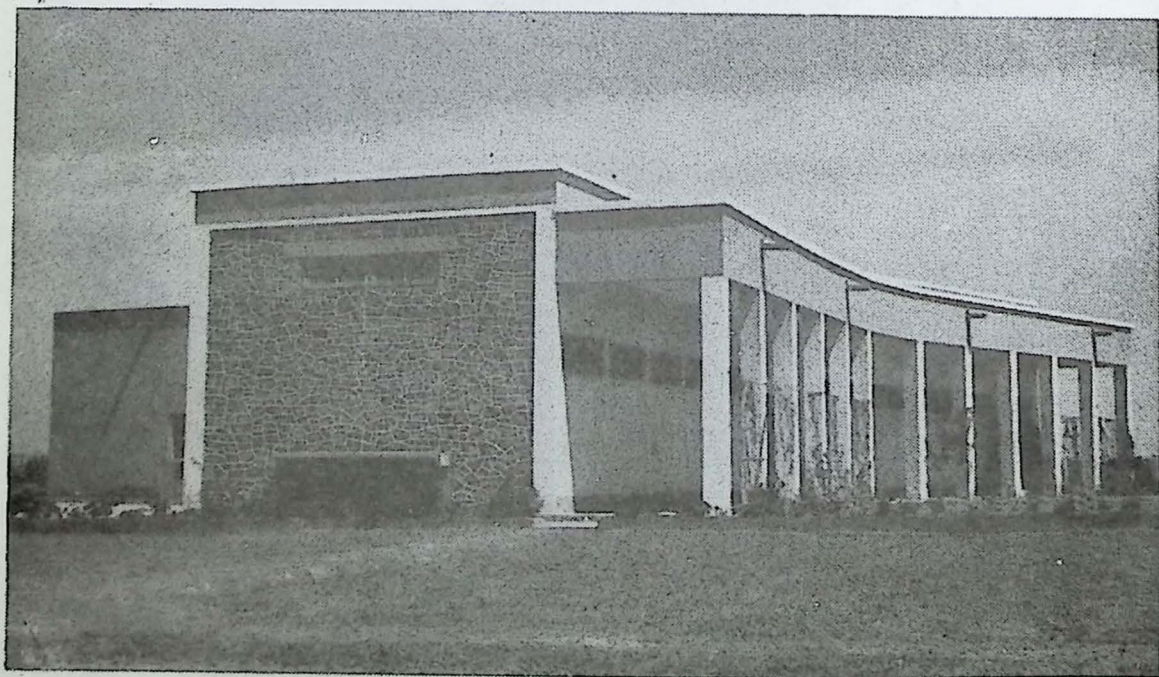
a. General view of the building, 1980.



b. View of the Pakistan Gallery.



XXIX. a. Facade of the Swat Museum, Saidu Sharif.



b. General view of the Archaeological Museum, Banbhore.

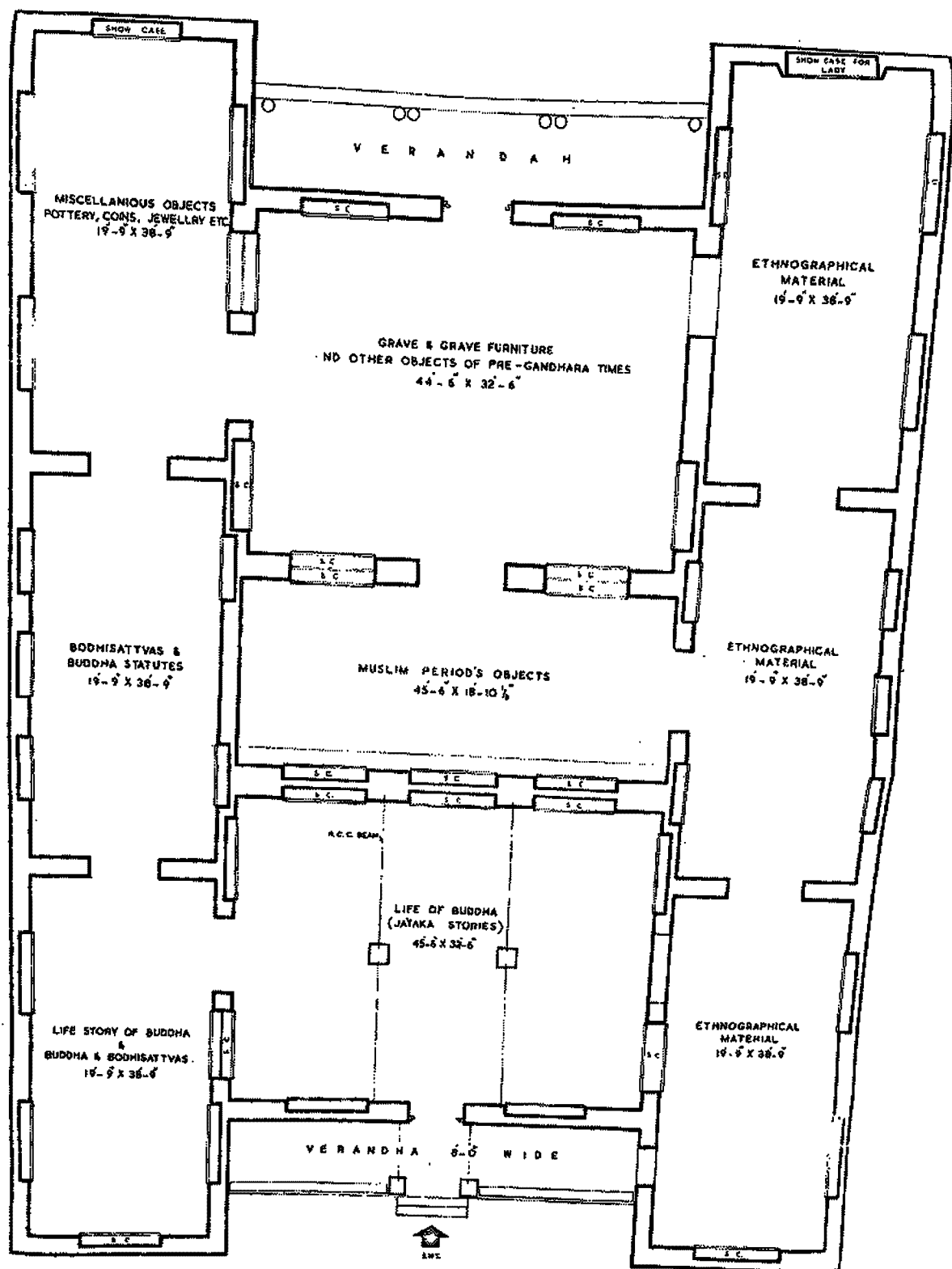
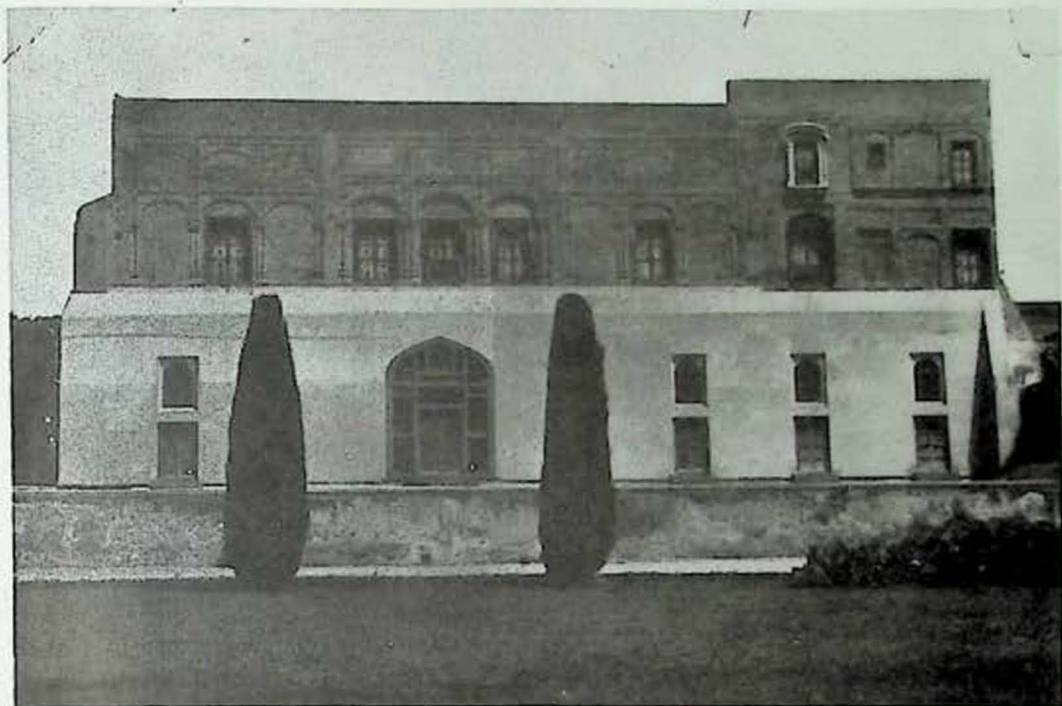


Fig. 8. Plan of the Swat Museum, Saidu Sharif.
(Courtesy Department Archaeology, Northern Circle, Lahore).

XXX. Sikh Period Museum, Old Fort, Lahore



a. View of the Museum after renovation.



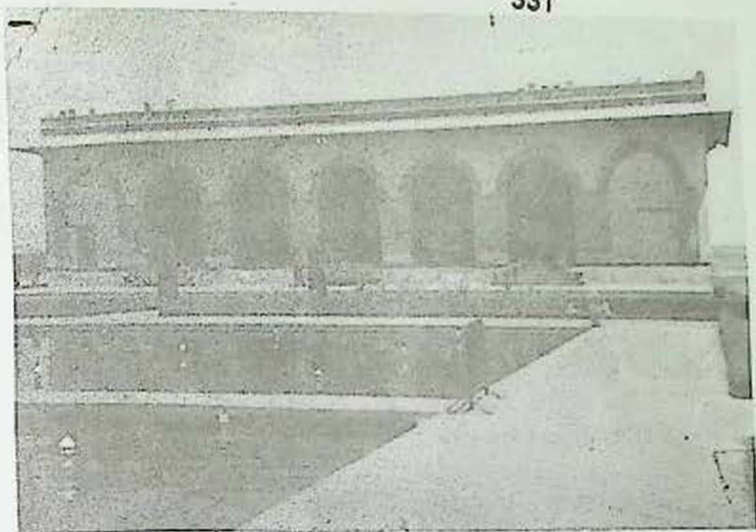
b. A gallery on the upper floor.



xxxj a. General view of the Dir Museum, Chakdarā.



b. General view of the Natural History or Zop Museum, Bahawalpur.



XXXII.

- a. Mughal Period Museum
in the Jahangir's
Quadrangle, Lahore.



- b. A Period Room in the
Allama Iqbal Museum,
Lahore.