CURRENT STATUS OF CONSERVATION IN INDIA

By
Dr. V. Jeyaraj

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Paper Prepared for the Presentation in the IIC Congress, Melbourne, Australia from 10th to 14th October 2000

By
Dr. V. Jeyaraj,
Curator,
Chemical Conservation and Research Laboratory,
Government Museum, Chennai-600 008.
September, 2000

Introduction

Culture and cultural heritage have a special significance today. India has a rich cultural heritage. As we are marching forward in the 21st century, it is going to judge us by not what we have preserved but what we have destroyed either negligently or deliberately. On the global scenario, the UNESCO has set the mood over a decade ago by identifying World Heritage Monuments. Countries with lesser heritage than our own are involved with preserving and propagating their antiquity. And we, with the longest living tradition are still not firm on our legs. Every culture represents a unique and irreplaceable body of values as each people's traditions and forms of expression are its most effective means of demonstrating its presence into the world. The identity of a community is reflected in the legacy it leaves back in the entire evolutionary process and this evidence is in three distinct forms such as the tangible form, intangible form and the expressive form.

All such tangible and intangible relics, which we call heritage, serve as tools and sources for an emphatic understanding of the past. Preservation of this heritage in all its connotations is, today, a significant aspect of a well thought out "Culture Management Policy".

The cultural and artistic relics are well-preserved in temples and related institutions in the traditional way. After the coming of the British, the British tried to import the museum techniques from Great Britain and the techniques got indianised. Many conservation laboratories came into existence during the British rule. A survey of conservation laboratories, the conservation work done, their publication, the recent trends in conservation etc. are detailed here.

Evolution of Scientific Approach to Archaeology

In recent times, the museological and archaeological studies have become multi-disciplinary in their approach. They count on a number of natural, physical and chemical sciences to solve their intricate problems through systematic examination of the mute materials of the dim, distant past. Ancient materials and antiquities recovered from excavations intrigued Chemists long before Archaeologists took an organized and systematic approach that it enjoys to day. The primary motive of the early pioneers in

Archaeological Chemistry seems, in fact, to be mainly personal curiosity. Of the various disciplines, that has made an indelible dent in the identification and analysis of these antiquities is Chemistry, and Analytical Chemistry in particular. The archaeological study in which chemical procedures play a dominant role is termed "Archaeological Chemistry". M.H. Klaproth, a pioneer in the dual fields of archaeological investigations, published the first significant results of chemical analysis of ancient antiquities in 1796 and chemical analyses of ancient materials and his original findings are of immense service to archaeology. It was in 1653, that Wocel first demonstrated the possibility of a co-operative collaboration between Archaeologists and Chemists. This has given birth to a novel class of hybrid chemistry - the Archaeological Chemist - a truly multidisciplinary scientist. They are called in various names, Conservation Chemists, Conservation Scientists, Conservators, Restorers, Curators etc. But all these specialists are helping to preserve the ancient cultural heritage for posterity.

Traditional Conservation

Traditional Preventive Measures

Colours have effect on insects. In the ancient times, in order to avoid the insects, the documents were kept covered in red cloth. Turmeric powder (*Curcuma longa*) was also used to keep them from insects and fungi. Dry neem leaves, neem seed powder, tobacco, cus-cus, camphor, citronella oil etc., were used to preserve the archival materials. Neem (*Melia azadirachta*) consists mainly nimbin and nimbiol. These two chemicals present in the neem leaves are good repellants of various kinds of insects. Adathoda (*Adathoda zelyamica*), tobacco (*Nicotina tobaccum*) and thulasi (*Ocimum basillus*) were also used to preserve paper materials from the insects and fungi. Even today Tanjore Maharaja Saraswati Mahal Library continues to adopt an ancient preventive method, using herbal materials. The recipe is as follows:

Sweet fig (*Acorus calamus*)	1 part
Black Cumin (*Nigella sativa*)	1 part
Bark of Cinnamom (*Cinnamom zeyancium*)	1 part
Pepper (*Piper nigrum*)	¼ part
Cloves (*Eugenia caryophyllus*)	¼ part
Camphor (*cinnamom camphor*)	A little

The powdered materials from the above dry materials are kept in cloth sachets and kept along with bundles of archival materials such as palm-leaf manuscripts and books. The archival materials are saved in this condition at least for a period of three to six months. If the records are kept over neem leaf (*Azdirachta indicia*) beds, which are dried under shade, they are safe for few months. The bookworms are controlled by *sombu* powder. The powder made out of chincona bark (*Cinchona officinalis*) is used to protect cloth from insects.

It was a common practice to smoke rooms to eradicate insects and fungi. Even today in India in most of the places, the Muslim moulis used to fumigate with fumes such as camphor in houses, shops etc.

Keeping them in the loft just above the kitchen preserved palm-leaf manuscripts, in the remote villages in Tamil Nadu. Stored palm-leaf manuscript bundles were taken from the lofts, and they were kept under sunlight in order to eradicate fungi and insects. Turmeric powder (*Curcuma longa*) was smeared to prevent insects and bundled them with red silk cloth. Red silk is a repellent for most of the insects.

Temple cars made out of wood were applied with *mahua oil* and preserved. Due to the application of the *mahua oil*, the wooden carvings in the temple car were preserved. Due to the accumulation of dust and other accretions, the oil caked up and the details got masked. During the festive occasions, people used to apply curd and flesh the temple cars with water and once the wooden portions were dried they applied again *mahua oil* and preserved the sculptures in the temple cars.

In India, temples themselves were considered as galleries of art objects. They are made up of stone sculptures, metal objects such as bronze icons, brass utensils, palm-leaf manuscripts, textiles, paintings such as mural paintings, panel paintings etc. In order to preserve the sculptures from the daily pooja materials occasionally they are preserved by traditionally known preservation methods such as sandal preservation, flour preservation, oil preservation. They are nothing but poulticing adapted today in conservation.

Conservation Chemistry

It is well established that scientific preservation of cultural and art objects dates only from the later half of the 19th century. There are always methods of preserving valuable objects or restoring them using traditional methods and techniques, which have come down the ages. These traditional methods and techniques used are not always based on a sound scientific evaluation of the condition of the objects or on the principle that the originality of the objects should be preserved to the maximum extent possible. However, the modern scientific discipline, which encompasses the processes of preservation and restoration is termed 'Conservation Science' - since chemical principles and chemicals are invariably involved in these processes. It is aptly called 'Conservation Chemistry'.

Conservation Chemistry deals not only with the treatment of objects for the removal of deleterious extraneous materials covering them, but also includes the post study of the real composition of the material of the object, the nature of deterioration it has undergone with the aeons of time, of the environment of the findings and the composition of the product(s) of deterioration. Against these background data, the scientist can choose the safest and mild method(s) by which this deterioration(s) can be contained. Incidentally, it also extends its investigations into the technique and the probable real composition of the objects themselves, which can give an Insight Into the technological developments down the ages. An art object is one that has been produced with the materials and techniques available at all the ages, by the craftsmen of yore. Moreover, when the object is to be restored, the materials or techniques that are to be adopted to restore the objects back to their pristine shape and appearance, are also to be carefully weighed and meticulously studied by the Conservation Scientists. At the close of 19th century it was felt that conservation of antiquities was necessary to preserve them for the posterity.

Common Conservation Forums

In India, there are many common organisations to carry out the activities related to the museums. Among them the most important activity is conservation of movable objects. The apex authority is the Department of Culture and many departments or agencies are under this department. Similarly, there are Culture Departments in the State level also and the State

departments control the museums and related institutions in the respective States.

Department of Culture

The Department of Culture is functioning under the Ministry of Human Resource Development of the Government of India. The department was set up in 1985 and is mainly responsible for undertaking programmes and projects of preservation, encouragement and dissemination of various manifestations of creative activity-both the past and the present. The department is, thus, engaged in conservation of ancient monuments throughout the country, administration of libraries, archives, museums and institutions in the field of Anthropology, Buddhist / Tibetan Studies; observing centenaries and anniversaries of eminent personalities; entering into cultural agreements with foreign countries etc.

This department has two attached offices viz. Archaeological Survey of India, New Delhi and the National Archives of India, New Delhi; six subordinate offices and is also administering 26 autonomous institutions.

National Archives of India

The National Archives of India, set up in 1891 as the Imperial Record Department, is the central repository of non-current records of enduring value of the Government of India. It is an attached office of the Department of Culture. Apart from providing information to various Ministers / Departments, it also provides facilities for historical research and promotes training in archival science in the country. The National Archives of India also has in its custody private papers of eminent Indians microfilm records of Indian interests, acquired from abroad to supplement its archival holdings.

Museums

There are few national museums all over the country. The National Museum, New Delhi; National Museum of Natural History, New Delhi; National Gallery of Modern Art, New Delhi; Indian Museum, Calcutta; Victoria Memorial Hall, Calcutta; National Gallery of Modern Art, New Delhi; Allahabad Museum, Allahabad; Museum of Mankind, Bhopal; Salar

Jung Museum, Hyderabad are some of the national museums in India, which are under the control of the Department of Culture.

National Co-ordination Committee for Museums

The Department of Culture, Government of India conducted a meeting for the State Culture Secretaries, Directors of Museums and museum experts from 26th to 28th August 1998, at the National Museum Institute, New Delhi and as a result of this, a National Co-ordination Committee for Museums was formed. The main aim of this committee is to advice the government in the administration of the museums in the country.

In order to assist the National Co-ordination Committee for Museums four Core-groups were formed. They are

1. Documentation
2. Training
3. Educational Activities and
4. Conservation.

Each group discusses on the various subjects pertaining to them and advises the National Co-ordination Committee on Museums. In August 2000, again these committees sat and discussed various problems and sorted out various solutions for the problems. The Commissioner of Museums, Government of Tamil Nadu is one of the members in two committees. The results are awaited.

Archaeological Survey of India, New Delhi

The Archaeological Survey of India, an attached office of the Department of Culture, came into being in 1861. It is engaged in preservation, conservation and environmental development of centrally protected monuments and sites, exploration and excavation of ancient sites, conducting specialised studies on inscriptions and various phases of Indian Architecture and also maintenance of archaeological museums. It also decides the objects, which can be exported as non-antiquities.

The Archaeological Survey of India is under the overall charge of a Director General of Archaeology with head quarters at New Delhi. It discharges its responsibilities through seventeen circles at Aurangabad, Bangalore, Baroda, Bhopal, Bubaneshwar, Calcutta, Chandigarh, Chennai,

Guwahati, Hyderabad, Delhi, Hyderabad, Jaipur, Lucknow, Patna, Srinagar, Trichur, Trivandrum, two mini circles, five excavation branches, a prehistory branch, a service branch, a horticulture branch, an epigraphy branch, a chemical branch, an antiquities branch and a museum branch.

National Council for Science Museums, Calcutta

The National council of Science Museums, an autonomous organisation under the Department of Culture, was set up in 1978 and is primarily engaged in the task of popularising science and technology among the students in particular and the masses in general through wide range of interactive programmes and activities. It administers over 21 science museums / centres / parks through out the country.

National Research Laboratory for the Conservation of Cultural Property (NRLC), Lucknow

The National Research Laboratory for the Conservation of Cultural Property, Lucknow, is a subordinate office under the Department of Culture carrying out fundamental research in conservation techniques through short term and long term research projects. It was established in New Delhi in National Museum in 1976 and was shifted from New Delhi to Lucknow in 1978 and finally to its present address, Sector E, Aliganj Scheme, Nirala Nagar, Lucknow in 1987. It also provides technical assistance to museums, archaeological departments and takes up conservation jobs on turnkey basis.

National Research Laboratory for Conservation of Cultural Property has acquired a wide variety of advanced sophisticated instruments required for various areas of research in conservation of cultural property. It has undertaken a number of long-term and short-term research and conservation projects. National Research Laboratory for Conservation of Cultural Property conducts various training courses, workshops and conferences in this field in collaboration with many national and international organisations regularly. From time to time, technical notes, special monographs, articles, books and booklets related to various problems of conservation are also brought out for the benefit of other related institutions in the country.

Regional Conservation Laboratory, Mysore

The Regional Conservation Laboratory, Mysore was established in 1987 to cater to the conservation needs of the southern region. This laboratory has facilities for the examination and conservation of organic as well as inorganic materials and has a good liaison with different institutions in this area. There is a proposal to set up a regional laboratory at Calcutta to help those organisations in the States like West Bengal, Orissa, Bihar, Meghalaya, Manipur, Sikkim.

Indian Council of Historical Research, New Delhi

The Indian Council of Historical Research, New Delhi is an autonomous body established by the Government of India with a view to providing funds for historical research and to foster objective and scientific writing of history. The broad aims of the Council are to bring historians together and provide a forum for exchange of views among them; to sponsor research programmes / projects and assist institutions and organisations engaged in historical research by students, teachers and other research workers; to organise and support seminars, workshops and conferences for the promotion and utilisation of historical research; and to develop and support centres for documentation and library services oriented towards historical research. The Council has taken a broad view of history so as to include in its fold archaeology, socio-economic formations and allied subjects.

Museum Association of India (MAI)

The Museum Association of India was founded in 1944. Now it has completed over 56 years in the services of Indian museums and museum personnel. It has got honorary members, life members, supporting members, active members, institutional members, etc. There are many regional organisations. The Museum Association of India serves as the link between such associations and helps them in co-ordination activities.

The aim of the Museum Association of India is to further the cause of museums in India by making them popular with the public by providing new ideas through seminars and publications and by promoting mutual appreciation of problems of each others by holding museum conferences. The Association has also taken up the responsibility of representing cause of

museums and their personnel before Pay Commissions and other such organisations. The Museums Association of India has launched the Museum Week Celebrations through out India to popularise the museums.

The Museum Association of India is regularly publishing the Journal of Indian Museums and Museum's Newsletter. The Journal of Indian Museums discusses the practical problems faced by the Curators in their day-to-day work. The journal also publishes a column called 'Recent Acquisitions', which provides an opportunity for the smaller museums to publicise their objects. It also encourages conservators to publish their research outcomes through the Museums' Journal.

Thus the Museum Association of India has become a strong organisation of persons in museum profession serving in the cause of museum community. Its membership is open to all persons working in museums or otherwise connected with museum work.

Indian Association for the Study of Conservation of Cultural Property in India (IASC)

The Indian Association for the Study of Conservation of Cultural Property was started in 1966 in New Delhi to create a common platform for the conservation scientists, conservation chemists, conservators, architectural conservation engineers etc. Today it has got over 300 members. H. J. Plenderleith was present on that day when it was started and he was a member of the association.

Aims and Objectives:

The following are the aims and objectives of this organisation:

1. To provide a professional centre devoted to the cause of conservation and study of cultural property including historic, archaeological, ethnological, artistic, archival and other material in libraries, manuscript repositories and museums.
2. To arouse awareness among the masses of the need to save the cultural heritage in the country from destruction.
3. To co-ordinate the efforts of various centres and improve the knowledge of the methods of conservation of material of various types.

4. To ensure dissemination of technical knowledge and information related to conservation. To achieve this end, the Association would organise regular seminars and conferences, bring out appropriate publications and circulate information by other means.
5. To make efforts to maintain high standards in the practice of conservation.
6. To advise on all technical matters.
7. To maintain contact with other bodies abroad and in India, with similar aims and objectives, such as IIC, ICOM Committee for Museum Laboratories, the ICOMOS, Rome Centre, ICCROM, Indian National Commission and the Museum Association of India.
8. It brings out a journal called Conservation of Cultural Property India annually. This is the only journal in India, which caters the needs of the rapidly growing conservation field. The Association also publishes Conservation Newsletter in August every year. Besides these, it also publishes some books on special topics.
9. It has got regional chapters in various places like Chennai, Mumbai, Calcutta etc. Some of these regional chapters are also bringing out newsletters regularly.

Indian National Trust for Art and Cultural Heritage (INTACH)

The Indian National Trust for Art and Cultural Heritage (INTACH) is a non-governmental organisation serving for the preservation of Indian national heritage. It has a conservation wing called the Indian Conservation Institute (ICI). The main aims and objectives of the Indian Conservation Institute in India are:

1. To take up conservation and restoration of different types of objects including paintings on canvas, paper and other supports, bronzes and other metal artifacts, objects of wood and ivory, paper and palm-leaf manuscripts etc. The services rendered are charged on a reasonable, non-commercial basis with a view to making the centre self-sustaining.
2. Where objects are not available as in the case of mural paintings and stone sculptures, in temples and monuments, to undertake conservation projects at the site.
3. To render technical advice on conservation problems and to prepare conservation project reports.

4. To import training in different branches of conservation. To conduct research on different artistic techniques in order to gain further knowledge about the pigments, media and other materials used.
5. To create awareness among the public about the need for conservation and the problems involved through periodical exhibitions, seminars and workshops.

The Indian Conservation Institute has its branches at Bangalore, New Delhi, Rampur, Jaipur etc.

Even though there are various government agencies to preserve the cultural and artistic objects, there is lack of co-ordination. There is duplication of work among the laboratories, which are doing research in the field of conservation.

Evolution of Conservation Chemical Laboratories:

The first museum laboratory was established in Berlin in 1880 by the State Museum. In the beginning of 20th century the British Museum Laboratory was established. The first conservation laboratory for the preservation of antiquities and historical and cultural relics came into being in India in the second decade of 20th century at Calcutta. The conservation branch of the Archaeological Survey of India was established in 1917 in Dehradun for the conservation / preservation of archaeological antiquities. The beginnings of Conservation Chemistry in India may be stated to date from the time of its inception in 1917. Until 1920, due to the non-availability of trained personnel and suitable conservation techniques, conservation of art and cultural objects were not properly carried out in India. In Tamil Nadu, art and cultural objects are growing in number and diversity in the collections of the Government Museum, Chennai and the district museums under the control of the department of museums. These include a number of bronze icons acquired through Treasure-trove Act of 1878, which are normally disfigured and deformed by corrosion and sheer neglect. Around 1923, the problem of these corroded bronze icons attracted the attention of the then Superintendent of the then Madras Government Museum, Dr.F.H.Gravely, who moved the Madras Government for the appointment of an Archaeological Chemist to undertake the art of conservation of these antiquities. His effort bare fruits and in 1930, the first Archaeological Chemist was appointed, whose prime task is to find a mild

and suitable method for the treatment of the disfigured bronze icons. S. Paramasivan was the first archaeological chemist to be appointed in the Madras Government Museum. He specialised in treating bronze icons by electrolytic method and in the subsequent years, he extended this technique to treat other metallic objects in the museum collections. This may be stated to be the beginning of chemical conservation in Tamil Nadu. National Museum, New Delhi, established its conservation laboratory in 1959. Indian Museum, Calcutta and Salar Jung Museum, Hyderabad, concurrently started their respective laboratories in 1960. It is needless to state that in recent years there has been a rapid growth in conservation awareness in India. Under the guidance of International Organizations such as UNESCO and ICOM (International Council of Museums), several museum laboratories and national institutes have been established. To day, there are over 50 museum conservation laboratories instituted all over India. National Research Laboratory for the Conservation of Cultural Property (NRLC) was established in 1979 at Lucknow to cater the national conservation requirements and to carry out research programmes in the conservation of cultural properties. Its branch, the Regional Conservation Laboratory has been established at Mysore in 1987.

Some of the Central Government museums have conservation laboratories attached to them. They are National Museum, New Delhi; National Gallery of Modern Art, New Delhi; Indian Museum, Calcutta; Victoria Memorial, Calcutta; Salar Jung Museum, Hyderabad; Allahabad Museum, Allahabad;

The State Department of Archaeology, Trivandrum (Kerala); State Department of Archaeology and Museums, Andhra Pradesh (Hyderabad); State Department of Archaeology, Bhopal (Madhya Pradesh); State Department of Archeology and Museums, Jaipur (Rajasthan); State Department of Archaeology, Punjab; State Museum of Himachal Pradesh, Simla are some of the State Departments of Archaeology / Museums, which possess a conservation laboratory attached to the department.

There are some universities, which have conservation laboratories attached to the museums. Some of such laboratories are Bharat Kala Bhavan, Varanasi; Baroda University Museum etc.

A very few State Museums, which have the conservation laboratories attached to them are Government Museum, Chennai; State Museum, Guwahati; State Museum, Bhubaneshwar; Government Museum, Almora; State Museum, Patna; Government Museum and Picture Gallery, Baroda, Government Museum and Art Gallery, Chandigarh etc.

The National Library, Calcutta has a very good conservation unit to cater the needs of the Library. The Asiatic Society of Calcutta has a conservation unit. The Saraswati Mahal Library, Thanjavur also has a conservation unit to cater to the needs of the Library such as treatment of palm-leaf manuscripts, paper manuscripts, books etc. Khuda Baksh Library, Patna and Asiatic Society, Mumbai have conservation laboratories. There is Rampur Raza Library Conservation Centre at Rampur to cater to the needs of the Library. This is one of the units of the Indian Conservation Institute. The Theosophical Society Library has a small conservation unit to conserve the books of the library.

The National Archives of India has a large conservation unit to take care of the conservation of the archival materials. Most of the State Archives have conservation units. The Tamil Nadu Archives, Chennai; State Archives, Bhopal are some of the State Archives, which have conservation units.

Birla Institute of Scientific Research, Hyderabad is doing research in the field of mural paintings and the results are published. The Indian National Trust for Art and Cultural Heritage (INTACH) started in 1985 under the name of INTACH Conservation Centre and later it was named as Indian Conservation Institute in 1990. It has regional centres at New Delhi, Bangalore, Bhubaneshwar, Rampur and Jodhpur. Several State Departments of Archaeology like Rajasthan, Kerala, Madhya Pradesh, Punjab, Gujarat, Andhra Pradesh have established conservation laboratories for the treatment of movable art and cultural objects as well as immovable objects and monuments.

Conservation Status in Tamil Nadu:

Tamil Nadu is one of the pioneer States, which started conservation practices very early. The Chemical Conservation and Research Laboratory of

the Government Museum, Chennai was established in 1930. The other organisation to carry out conservation work in Tamil Nadu is the conservation branch of the Archaeological Survey of India in Chennai, set up in 1962. This organisation undertakes works on the preservation of monuments in and around Tamil Nadu. A further development in conservation, in Tamil Nadu is the establishment of a laboratory in the Department of Archaeology, Tamil Nadu, in 1960. A recent survey made on the conservation laboratories by the author in Tamil Nadu has revealed very interesting information on the conservation status of the State. There are over 160 museums, galleries, memorials etc., in the State. Among them only Government Museum, Chennai has a laboratory for conservation. There are 19 district museums under the control of the department of museums. The Chemical Conservation and Research Laboratory of the Government Museum, Chennai takes care of the objects in these museums. The Tamil Nadu Archives, Chennai has a very big conservation unit to preserve the paper manuscripts. The Theosophical Library, Chennai has a small unit of Chemical Conservation to take care of the paper manuscripts in the Library. The Dakshinachitra, Muttukkadu has a small unit to take care of the organic objects in the institution. A volunteer in the Government Museum, Chennai is also conservation volunteer in Dakshinachitra. The State Archaeology Department has two units of conservation both in Chennai and Madurai. The Saraswati Mahal Library in Tanjore has a conservation unit, which takes care of the paper and palm-leaf manuscripts in it.

The author has surveyed many museums in Tamil Nadu on requests from the organisations and given conservation status reports for the development of the museums. They are the Saraswati Mahal Library Museum, Tanjore; Museum of the College of Arts and Crafts, Chennai; Museum of the Government Ophthalmic Hospital, Chennai; Leather Museum, Central Leather Research Institute, Chennai, The Manuscripts Section of the Kanchi University and The Gallery of the Regional Centre of the Lalit Kala Akademi, Chennai. He was also asked to give a report for the need of a Chemical Conservation Laboratory exclusively for the Tamil Nadu Archives and the same was sent to the Tamil Nadu Archives. On the basis of the report the Government of Tamil Nadu has given a grant for conducting four courses, by the Chemical Conservation and Research Laboratory of the Government Museum, for the officials of the Tamil Nadu Archives. He also

surveyed the Ramanashram in Thiruvannamalai and suggested the traditional methods of conservation for the objects preserved in the museum there. The conservation laboratories are under Central government, State governments, Universities, Trusts and private individuals.

There are over fifty conservation laboratories in India, among them most of them are non-functional due to the following reasons:

1. Lack of staff
2. Lack of proper training
3. Lack of proper equipment.

Conservation Training:

When the Archaeological Survey of India came into existence in 1861, the old methodology of conservation was modified to ensure the archaeological authenticity of historic buildings and archaeological remains by limiting structural repairs to the extent warranted by their stability and safety, and by keeping reconstruction and restoration to the barest minimum. Towards the end of the 19th century, and the beginning of 20th century, the aims and methods of conservation were broadly defined, and the Government of India formulated a conservation policy with the object of placing conservation on a systematic and sound footing. Apart from the structural conservation of monuments, little was done in the nineteenth century to protect, preserve and conserve antiquities and works of art such as sculptures, inscriptions, bronzes, coins, paintings, manuscripts, documents and other works of historical and archaeological value.

Mr. Griffiths laid varnish on the paintings of Ajantha Caves during 1872-1885. This resulted in the scaling of the varnish layer from the painting. He was not a conservator. This episode highlighted the need for conservation training and sound conservation techniques. With the arrival of Lord Curzon, the Governor General of India, in 1899, the conservation of cultural property came to be recognised as an important function of the Government of India. Conservation training and conservation practice began receiving due importance in the task of preserving the past for the future.

In India there are two types of training in conservation. They are,

1. In-service training programmes-Short term courses
2. Courses for freshers-Long term courses

In-service Training Programmes:

In India, emphasis is given only to the in-service training, as there was no training institutes available till the 1980s. Persons appointed as conservators were sent abroad for taking up training. But now-a-days the National Museum Institute is available to give conservation course at the Master's and doctorate levels. There are institutes like National Research Laboratory for Conservation, Lucknow; Government Museum, Chennai; National Museum, New Delhi; National Archives of India, New Delhi; INTACH etc., extend in-service training in conservation.

In 1998, the Chemical Conservation and Research Laboratory of the Government Museum, Chennai approached the Department of Science and Technology, New Delhi for financial assistance for conducting a training programme for those working in museums and allied institutions along with the scientific institutions in the region. Even though the Department of Science and Technology did not directly clear the project, similar project was entrusted to Indira Gandhi Centre for Atomic Research, Kalpakkam in collaboration with the Government Museum, Chennai to give a scientific awareness to those who were working in museums and related persons at the same time introducing the problems pertaining to art and cultural heritage to the scientists so that they can delve into the problems and find out some solutions. Now the Government Museum, Chennai has a very good co-ordination between the Indira Gandhi Centre for Atomic Research, Kalpakkam and also with the Centre for Laser Technology, Chennai.

The National Research Laboratory for Conservation of Cultural Property (NRLC) conducts two types of regular training programmes:

1. For conservators and chemists-This is for 6 months and aims at training the participants for practice in conservation of works of art. It is conducted every year. Ten persons are trained.
2. For curators, directors and others in-charge of collections – this is for ten days duration. It aims at making the participants

aware of the deterioration of museum objects, general conservation principles in display, storage, handling, transportation etc.

Seminars are also conducted on various titles of conservation and to frame conservation policy in India. This Laboratory also has arranged international seminars. A six-month course on conservation was conducted quite long time by the NRLC and ICCROM.

The Chemical Conservation and Research Laboratory (CCRL) of the Government Museum, Chennai provides,

1. In-service training to museologists, archaeologists, artists, archivists, temple executive officers, students etc.
2. Internship training for one year
3. Consultancy services
4. Guiding Ph. D. Scholars
5. Conducting Seminars, workshops
6. Doing research on new materials of conservation and new techniques.

Conservation Research:

In the field of mural paintings in India, Dr. S. Paramasivan of the Government Museum, Chennai did a lot of research in the thirties using classical methods, but a very little research work has been undertaken despite the availability of many modern sophisticated techniques including non-destructive methods. Investigation into different types of binding media used in the paintings from early times is a particularly promising field of study. It is very clear that only a multi-disciplinary approach can help in solving many problems of conservation of cultural property in India.

Conservation research is under progress in most of the conservation laboratories. The National Research Laboratory for Conservation is carrying out research on materials of conservation and conservation techniques. The following are some of the various research projects handled by it:

1. Investigation of traditional materials used for preservation
2. Evaluation of polymers for conservation characterisation and identification of natural dyes in Indian Historic textiles.
3. Evaluation of rust removing agents

4. Investigation into the problem of charring in black dyes textiles and manuscripts written in black ink.
5. Scientific examination of mordents and metal wrapping in Indian historic textiles.
6. Study of glass technology of India
7. Technical study of glazed wares

The National Museum Institute is conducting research in conservation through the help of students. The out come of the research is degree for students.

The Science Branch of the Archaeological Survey of India is conducting research in the conservation of paintings, building materials, structural monuments and movable objects. There are many regional laboratories and most of them are conducting research in various branches of conservation.

The Chemical Conservation and Research Laboratory of the Government Museum, Chennai is conducting research leading to Ph. D. The problems taken are related to conservation of movable objects mostly. The main projects under progress are

1. Finger-printing of bronze icons
2. Holographying bronzes
3. Characterisation of coins

The INTACH laboratory in Lucknow has taken up research related to both immovable and movable objects of the past.

The Birla Archaeological and Cultural Research Institute, Hyderabad is carrying out research in conservation of both movable and immovable objects.

Publications in Conservation:

Publication in conservation brings conservators together. In India there is a dearth of good publications in conservation.

1. **Journals in Conservation:**

Conservation of Cultural Property in India, Published by the Indian Association for the Study of Conservation of Cultural Property in India, New Delhi is the only journal fully devoted to conservation in India. The Journal of Archaeological Chemistry, Published by the Birla Institute of Scientific Research, Hyderabad is a private publication, which is also devoted to conservation in India. For some time back Ancient India was published by the Archaeological Survey of India, which occasionally published some articles in conservation. Similarly, Puratatva, the journal of the Archaeological Society of India publishes articles in conservation also. Similarly, the Journal of Indian Museums carries some articles in conservation. Indian Archives in the publication of the National Archives, which carries many articles on archival conservation.

2. **Books in Conservation:**

Books by Indian Conservators are very few. But in the last ten years, many books have come out in English and regional languages. The National Research Laboratory for Conservation, INTACH, Lucknow; Chemical Conservation and Research Laboratory of the Government Museum, Chennai; National Museum, New Delhi and other organisations and individuals have published books on conservation.

Conservation Status in India

The index of the status of conservation in any country is the condition of the objects in the collection of museums, archives, libraries, galleries, churches, temples, palaces, memorials etc. A survey of archival materials in archives of both government and non governmental organisations, books and paper and palm-leaf manuscripts in libraries, textiles, musical instruments, other organic materials, bronze icons, weapons etc., in museums are mostly in a very bad state of affairs in most of the museums. The persons who are in-charge of the collections are not aware of the procedures for their conservation, do not have the zeal to take care of them, even if they have the zeal there are no infrastructure to cater to the needs of conservation.

In India, all the mural paintings are either in tempera secco technique and the paint layer cannot stand treatment with water. Hence only organic solvents have to be used for cleaning. Mural paintings are often found in living temples and deposition of soot on the paint surface from oil lamps, camphor burning etc., is a common problem. For the removal of soot, triethanolamine is first applied on the affected surface and allowed 15 to 20 minutes to react, at the end of which the area is cleaned with cotton swabs soaked in toluene. The swabs remove the dissolved soot as well as the triethanolamine. At the end of the cleaning, all the traces of the triethanolamine are removed with toluene. Some times, the mural paintings had been applied with varnish and it had undergone discolouration or aging. For the removal of varnish, solvents like acetone, amyl acetate, cellosolve (ethylene glycol monoethyl ether), diacetone alcohol, N-butyl alcohol, ethylene dichloride etc., have been found to be useful. Mixtures of these solvents in suitable proportions often prove much more effective than single solvents.

The conservation of wall paintings in India is mostly carried out by the Archaeological Survey of India. The National Research Laboratory for Conservation, Lucknow in collaboration with State Governments undertakes conservation of wall paintings. INTACH has similarly done conservation of wall paintings in collaboration with the State governments. Most of the temples under the pretext of preservation have removed the original paintings and new paintings have been executed.

Conservation Services:

The art and cultural heritage of the moveable objects in India is very large. But the institutions, which are catering the conservation needs, are small in number. Most of the conservation laboratories are non-functional and there fore they are not able to cater to the needs of their own institutions. In such cases the laboratories, which are functional find it difficult to cater to the needs of those institutions, which need conservation services. Similarly the National Research Laboratory for Conservation is extending its helping hands in the conservation of art and cultural objects of the institutions. The National Museum, New Delhi is also similarly extending its services to other institutions. The National Museum Institute,

New Delhi is sending its students to other institutions to learn and do conservation activities.

The Chemical Conservation and Research Laboratory of the Government Museum, Chennai was extending free conservation services for a long time and as there are a lot of demands for such services, now it is extending its conservation consultancy services to many needy organisations and individuals on charge basis. This Laboratory is training the staff of various museums in conservation and they are allowed to handle the objects to take care of them through the personal attention of the conservation staff of the Laboratory. With in a period of three years it has served to more than seventy institutions.

The INTACH is yet another institution, which extends its services in the conservation on charge basis in order to sustain its offices in India. It does the work for another institution on contract basis. It has collaborated with State Governments and helps the state museums and archives having their offices or laboratories with in the State Museum / Archives. Recently the INTACH, Bangalore helped the State Archaeology Department of Tamil Nadu in restoring the mural paintings in Ramalinga Vilasam, Ramanathapuram.

The Indian Association for the Study of Conservation of Cultural Property (IASC), New Delhi has floated many services in which the retired conservation personnel, who are members of the Association, are utilised to take up conservation services on behalf of the Association and a certain percentage of the profit is taken to the Association.

Besides these, the retired personnel from the Archaeological Survey of India, leading conservation laboratories are providing conservation services in India of their own. The Archaeological Survey of India at times takes up deposit work for State Government departments in conservation of buildings. At present the Chennai Circle of the Archaeological Survey of India has taken up the conservation of structures of the Connemara Library Building (Chennai), its wooden structures, stained glass decorations etc., as a deposit work from the Department of Libraries, Government of Tamil Nadu.

Recent Trends in Conservation

Conservation in India has taken a new dimension recently. There is a great awareness of the subject even among the common men. People have realised the importance of conservation. People, in possession of antiquities, were scared about a decade back and now a days they are interested to preserve them by coming forward to register them with the State Registering Offices. Many craftsmen try to give antique finish to their objects and send them abroad. Conservators are now a days approached for many things related to antiquities. The profession has got a new dimension and many books have come out. Many have come forward to collaborate with museums in many activities related to preservation, security, authenticity etc.

- **Conservation Principles**

  Even though there is awareness in the conservation subject, people go for the preventive conservation instead of interventive conservation. It is in general better to practice preventive conservation than interventive conservation even in museums. But unfortunately, people are reluctant to practice the preventive conservation. The author is advocating the preventive conservation as most of the persons who are working in museums are non-conservation members and they have to be taught how to take care of the objects in their possession.

- **Preventive Conservation**

  Preventive conservation is getting importance in museums. Use of chemicals also got reduced. Non-evasive methods are used in conservation. Only non-evasive methods of analysis are done on objects from museums. Museum personnel are giving much importance to the objects' environment in terms of microclimate. Individual showcases are kept in an ambient environment. Every body seeks proper house keeping in the museum galleries. Light levels are kept in the optimum level. Heat produced by lights is tremendously reduced after the use of fibber optics. Light is given much importance in conservation. Too much of light is now avoided in the case of organic materials such as paper, textiles, paintings on paper etc. there fore it is felt necessary light, which will not emit heat and UV light. For the first time in India, the Government Museum, Chennai is getting ready to use fibre optics in a portion of a

Painting Gallery in the National Art Gallery of the Government Museum, Chennai as a pilot project.

❖ **Bio-deterioration**

Bio-deterioration is getting importance in conservation. Many scientists are seriously working in the field. The National Research Laboratory for Conservation is having a separate unit to deal with this subject.

❖ **Fumigation Methods**

Mostly the fumigation of the affected objects was done with chemicals, which are toxic to the insects. But now a days toxic chemicals are not used. Ethoxide is still in use in the Archaeological Survey of India. The Tamil Nadu Archives has left out this method of fumigation for the archival materials. People prefer to keep them in an atmosphere of pure air. People are aware of nitrogen fumigation to get rid off the insects in the objects. Mass Deacidification is heard off in India but it is not brought under use practically. Fumigants under normal temperature and pressure are used.

❖ Organic Materials

Organic materials include paper, textiles, palm-leaf, bark, wooden objects, bone and ivory, feather, fur, hair, leather etc. They are tender in character due to their easy degradation. Biological activity is very high, as the climate in India is tropical in nature.

❖ **Conservation Equipment**

The conservation in India is the very fast growing field, which has a cherished support by the Government of India. Most of the laboratories are not having any infrastructure for the treatment of the objects received for conservation. Many sophisticated instruments are very essential for the conservation of movable museum objects.

Research is very essential to find out new methodology. Many new materials have been imported for restoration of museum objects. Most of them are very costly and are imported. Some of the materials used in temperate climate are not suitable for the objects in the tropical climate.

❖ Textile Conservation

In India, textile conservation is done mainly in the Conservation Laboratory of the National Museum, New Delhi and the Salar Jung Museum, Hyderabad are regularly carrying out the conservation of textiles. At present one volunteer is seriously working in the conservation of textiles in the Government Museum, Chennai.

❖ Paper Conservation

India is very famous for the preservation of paper manuscripts from the British period. From the time of the Rule of the British in India, the National Archives of India and the Tamil Nadu Archives are

❖ **Wooden Objects**

There is a trend in in-situ reassembling of wooden structures. Many agencies are very active in this area. For example the Museum of Mankind, Bhopal; Crafts Museum, New Delhi; Sanskriti, New Delhi; Dakshinachitra, Muttukkadu in Tamil Nadu are recreating the structures in-situ made out of wood. Old wooden temple cars also are dismantled and set up in museums. This has been done in National Museum, New Delhi and in Government Museum, Kanyakumari. Most of the museums under the control of department of museums in Tamil Nadu have woodcarvings on display. Polymers, wax, gum etc., are used as filling media for consolidation.

❖ Paintings

In India the various paintings preserved in museums are, oil paintings on canvas, panel paintings, paintings on paper, paintings on leather, paintings on palm-leaves, paintings on ivory, Kalamkari paintings etc.

Oil paintings on canvas are in vogue in India from the time of the British. We have thousands of oil paintings on canvas. The damaged paintings are relined with imported Beeva form. But the Government Museum, Chennai is still using the wax-resin mixture and it has conserved over 100 paintings with in a period of 5 years. Only the Victoria Memorial Hall only has the hot table for relining.

❖ Bronze Objects

In India, especially in Tamil Nadu, there are thousands of bronze icons. Many of them have been stolen from the temples and gone abroad. For example the Nataraja bronze image from Pathur went abroad and is now brought down to India. Since there is no authentication except the iconography, it is difficult to say whether the bronze image is the same Pathur Nataraja. There is a strong reason to believe that the Pathur Nataraja is the same that was taken from India. In order to avoid such authentication problem, the Government Museum, Chennai took up a pilot project some time in 1980s and now it is executing the project in a large scale in collaboration with the Indira Gandhi Centre for Atomic Research, Kalpakkam with funds from the

Department of Science and Technology. The bronzes acquired for the Government Museum, Chennai were mostly treasure-trove finds and were mostly covered with muddy accretions. The bronzes were treated electrolytically about 20 years back. But the recent trend is to treat the bronze icons physically. The Chemical Conservation and Research Laboratory of the Government Museum, Chennai is conducting research on laser technique of surface cleaning of the bronze objects in collaboration with the Centre for Laser Technology, Anna University, Chennai. The National Research Laboratory for Conservation, Lucknow has found out the use of Sodium Poly Phosphate to soften the calcareous materials found on the bronze icons.

❖ **Stone Conservation**

India is in possession of thousands of stone monuments and lakhs of stone sculptures, which need to be conserved, as there are many conservation problems. The earlier methods of conservation are slowly changing. No sand blasting is done. All conservators try to use non-aggressive methods of treatment. Use of harmful chemicals is stopped. Normally a water repelling preservative used to be applied over the stone monuments. But the recent trend is to use silicon-based water repellent is used, which is more effective than the poly methyl methacrylate.

Conservation Galleries in India

For the first time in India, the Chemical Conservation Laboratory of the National Museum, New Delhi and the National Research Laboratory for Conservation had set up small exhibitions showing the deterioration and the appearance of the object before and after treatment. But, for the first time in the history of India, the Chemical Conservation and Research Laboratory of the Government Museum, Chennai has set up a separate Gallery for Chemical Conservation just to bring into the sight of the visiting public about the degrading factors of the objects, the preventive conservation, the interventive conservation, the Acts which protect our cultural properties etc. There is a pamphlet available on the Conservation Gallery.

Future Conservation Plans

❖ Removal of bronze decease from copper and its alloys without sacrificing the patina is still a problem. Treatment with Benzo-tri-azole is a

technique, which is valuable but even this solution does not work in all the circumstances. Development of anti-tarnish coating for bronze is also necessary. Shining brass objects get easily tarnished and become black. Laser cleaning should be done.

- Quite often iron objects are fully corroded almost hiding the size and the shape of the original object. If all the corrosion products are removed what would remain will be only a lump of iron. Sometimes not even that. How to retain the shape of the object, even though the corrosion products is removed? This is also a problem. In the case of iron objects, soon after the cleaning a black deposit forms and there is no chemical to stop it.
- In the case of art paper, when they are stuck together due to moisture, it is very difficult to remove them with out any damage to the surface. Some technique should be adapted to separate them with out any damage.
- In the case of miniature paintings on paper not much work is done. There is no national policy of conservation of Indian miniatures. The National Museum, New Delhi has a vast collection of miniatures and they are not conserved even though there is a well-established laboratory and an institute, which does teach conservation in the master's level and in the Ph. D. level. There is no collective effort between curators and conservators of the expected level.
- Stone preservatives should be found out. Methods of consolidation should be innovated.

Suggested Collaborations

The Chemical Conservation and Research Laboratory of the Museum has many project proposals to carry out in a collaborative manner.

- Restoration of old buildings in the museum campus
- Improvement to the Laboratory-Advanced Institute in Conservation
- Training programmes
- Reseasrach programmes-Wall Paintings, Bronze Icons, Stone Objects etc
- Environmental monitoring in galleries
- Exchange Training programmes in between institutions
- Publication grants to publish books on conservation
- Facilities for dating of antiquities
- Authentication of antiquities

Conclusion

Conservation is a fast developing field. There should be a uniform policy of conservation. The ethical code for conservation should be formulated. A common body to control the activities of conservation should be thought off. There should be a coordinating agency exclusively for conservation in India. If it works out, then there will be a remarkable change in the conservation activities in India. I hope that there will be a remarkable change with in a shot time.

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