Preface

The editor of a modest volume of essays presented some five years ago has a responsibility to the reader to justify their publication beyond a role as a fond reminder of a pleasant occasion of the dim distant past.

At the time of the symposium, it was noted that the field of conservation was much in flux. Indeed, since then all of our speakers have modified their professional responsibilities and a majority have changed institutional affiliation. The Conservation Center has been fortunate to recruit a dynamic young chairman, the SUNY program has moved to its splendid new facilities in Buffalo, and other training programs have changed leadership. The Getty Conservation Institute has assumed a major role in conservation training and planning while the National Institute for Conservation has gained in stability and influence. Yet, in this vast sea of change, conservation training in many ways remains a constant. The same institutions are training the same numbers of students in the same disciplines.

As one reads the essays that follow, one quickly realizes that the speakers could well have offered their comments on the past anniversary of the dedication or could offer them on the next. Our field is by nature conservative and so change tends to incremental shifts in emphasis and method. The reader is encouraged to consider thoughtfully the questions posed for they are at the core of our professional responsibility to the preservation of the world’s cultural heritage.
Director's Welcome

James R. McCredie

I would like to welcome you to the Institute of Fine Arts. As I hope most of you saw yesterday, our Conservation Center has, now with its transfer to the Chan House, acquired vastly improved facilities for training in conservation. Excellent facilities do not, however, guarantee in themselves excellent training. For that, we and the field as a whole must determine the present and future needs of conservation and the best way to meet them. This Symposium is an attempt to investigate these questions. On behalf of the Institute, I should like to thank our speakers for their willingness to offer their views, all of you for coming to hear and discuss them, Norbert Baer for organizing the program, and especially the Hagop Kevorkian Fund for its support, another example of its concern with this field.
Introduction

Norbert S. Baer

It is self-evident that the occasion for this Symposium is the dedication of the Stephen Chan House. One might, however, reflect very briefly on some of the changes that have occurred in our field since the inauguration of the Conservation Center in 1960. At that time, four students were admitted to the program. Since then some 350 students have graduated from the Conservation Center and the several training programs which followed it in the United States and Canada. The rate now is about 45 graduates per year including those of the Columbia University library and archives training program. There are other indicators of growth in the field of conservation: the enormous increase in the membership of the American Institute for Conservation, the large number of museum departments which have developed new conservation facilities, the elaborate plans for the future proposed by the National Institute for Conservation and the J. Paul Getty Trust. All this suggests boundless optimism and a period of congratulatory self-adulation.

We can say our course is true, our sails are full and our cup runneth over*. And yet, this is a time of change, rather

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* On 26 September 1983 the U.S., for the first time in its history, lost the America's Cup as Australia II defeated Liberty (4-3). On 4 February 1987 the Cup was regained when Stars and Stripes defeated Kookaburra III (4-0). The venue has since shifted to the courts.
substantial change in the field. A number of the programs will, in the near future have to find new Directors. There are new conservation programs that are being spoken of—one at the Smithsonian and new programs at the Getty Trust. There is even a change in location to occur at the Cooperstown training program as it moves to Buffalo.

As we reflect on our past and consider our future we might ask ourselves as to whether or not we have, in fact, fulfilled the promise that was suggested by John Gettens who writing in Science about the establishment of the Conservation Center stated:

“There is little doubt that the standards set by this university-level training program in art conservation will raise training standards all over the country. We may look forward to the establishment on the basis of such foundations of minimum professional requirements and even to State licensing for our conservators. Men trained in the Conservation Center of New York University will have an influence with museum administrators that artisans could never have achieved.”

I would suggest that, indeed, the field, not simply “we” at this moment, really needs a period of self-examination. Some of the questions we might ask are:

- Have we, in fact, become a profession and are we truly professional?
- Are we recognized appropriately within the museum community?
- Have we produced the uniquely trained conservators that we claim to train, that is, professionals with a combination of scientific training, art historical background and craft skills?
- Are we neglecting major classes of cultural property in our training programs?
- Is the academic setting that is now taken as a matter of course as the appropriate setting for conservation programs truly the appropriate context?
- What progress have we made towards dealing with the universal conservation problems we see in Europe, the United States and in the developing world?

These are questions which will be addressed by our speakers. We hope the audience will not only be those gathered here. The groups that I hope will hear the message are, first of all, the Institute of Fine Arts community because the Institute does face the choice of a new Chairman for the Conservation Center; those who will be responsible for making policy in conservation both in museums and in funding agencies; and ultimately, the conservation profession itself. I am assured that at least part of the higher paid community is here because our session chairmen are drawn from those who have served in directorial responsibility at the Institute.

I wish to reiterate my thanks to the Hagop Kevorkian Fund for its many contributions to the Center and to the Institute, and specifically for making today's Symposium possible and, in fact, necessary. I also wish to thank the speakers, many of whom have come under some duress and have certainly come under the stress associated with difficult circumstances of travel. I also want to thank you as an audience for coming because I recognize this is an unusual time for this kind of activity.
The Conservation Center: Origins and Early Years

Craig Hugh Smyth

It is a moving experience for me to visit the reconstructed building at 14 East 78th Street. The building has been superbly remade to meet the needs of the Conservation Center, thanks especially to the understanding support of Stephen Chan. I congratulate all who have helped to bring these facilities into being—not least those who have been responsible for New York University's Institute of Fine Arts since my time: Jonathan Brown, Donald Posner and Norbert Baer, Richard Turner, and now James McCredie. The Conservation Center's splendid new quarters are expressive of the place it has taken in its field since it was first conceived twenty-five years ago.

Twenty-five years ago research and instruction in conservation were nowhere associated with a university curriculum, with the partial exception of the Courtauld Institute of the University of London. To be sure, the Fogg Museum at Harvard, owing to the vision of Edward Forbes, had started a laboratory for technical research in 1927 or 8 with George Stout, Alan Burroughs, and Rutherford John Gettens. The concerns of that laboratory soon extended to conservation, and conservation began to be taught there to people who came to work with Stout and Gettens. But the instruction was never part of the university's academic curriculum. The Fogg Museum’s laboratory is a mighty landmark in the history of modern conservation, enormously influential through its research and publications and through the conservators who had their start there. By 1949, however, after slightly more than twenty years, the Fogg became hesitant to continue accepting people for training, and the original program of the laboratory ceased in 1951, if memory serves.

It was Sheldon Keck, one of those who had the experience of working at Harvard with Stout and Gettens, who first suggested that the Institute of Fine Arts undertake such a teaching program in conservation. It is due to him that the Institute considered making a move into the field a quarter of a century ago. We have much to thank him for.

Sheldon was then Conservator at the Brooklyn Museum, and the Institute was still on 80th Street in the Paul Warburg House—17 East 80th Street, to be exact. Sheldon came to see me there and made his suggestion quietly and informally, but I can remember the sense of urgency he conveyed. He was convinced that the teaching of conservation should be under the wing of a university. I found myself listening with more than a little interest. The Institute's mission was graduate teaching and research in the history of art and archaeology; but it had long had courses in museum work, and we had recently organized the Joint Program in Museum Training with the Metropolitan Museum. Perhaps this and the experience of having been previously in museum work myself made me sympathetic. I think I can clearly recollect wondering, as Sheldon talked, where, if we were to undertake such a thing, the Institute could possibly accommodate it, unless we were to be successful in acquiring the large James B. Duke House at 78th Street and Fifth Avenue. If this recollection is correct, it indicates that Sheldon made his suggestion after the time in 1956 when we of the Institute had decided we needed the Duke House and would try to acquire it, but before Doris Duke had finished considering our proposal and made her
momentous decision some time in late 1957/early 1958, to donate the James B. Duke House to the Institute. I hope there are letters or minutes in the Institute's archive to help establish the chronology. But in any case it was from Sheldon Keck's visit around that time that the idea that the Institute consider undertaking conservation came.

Also, Sheldon and Caroline Keck organized an exploratory conference on conservation at the Brooklyn Museum in 1958 under the sponsorship of the Rockefeller Foundation, and this conference produced a statement urging the establishment of a formal program of training in art conservation. The conference's statement was helpful in the Institute's consideration of Sheldon Keck's suggestion and was also a supporting argument for foundation support when we set out to seek funds.

The James B. Duke House seemed at the time to have an inexhaustible amount of space. Once we knew it was ours, I asked the faculty to consider with me whether we would undertake conservation, broaching this difficult question first in individual conversations with each member. Only a few faculty members were in favor. They included Harry Bober, Colin Eisler and myself, but also two senior members, Karl Lehmann and Richard Offner. In time we finally reached general agreement on going ahead, but not before we had thought deeply during much of 1958 about what a conservation program at the Institute should consist of and what its standards should be, coming to an understanding on these matters among ourselves and with the University.

We would have a program in conservation only if it could match the high standards of the Institute in other areas of study, only if it included sound and serious research as well as teaching, and only if it could be officially part of the graduate curriculum of the University. Harry Bober likened bringing the study of conservation into the university curriculum to the introduction of the study of medicine to universities in the Middle Ages. He helped us to see it as potentially a most significant step.

Besides Sheldon and Caroline Keck, we were able almost from the outset to consult George Stout, whom I knew from working in collaboration with him in Germany, taking care of art at the end of the war. He was now Director of the Isabella Gardner Museum, but he was ready to travel from Boston to New York as often as necessary to help in our thinking. The program must be supported, he would insist, on what he called "a three-legged stool": science, history, practice. When it finally came to writing a proposal for foundation support to establish the center, George Stout penned the introductory paragraph, sitting beside me in the Oak Room of the Warburg House. He wrote it straightway, never correcting a word. The first paragraph of the proposal is entirely his as it stands. It reads:

The need for a program in the United States to teach, conduct research, and set standards in the conservation of works of art, not only paintings but objects of all kinds, is recognized to be urgent by those seriously concerned with the preservation of works of art and with their educational value. The development of American collections of art has seen a large and increasingly rapid growth for nearly a century. There has been little awareness that the objects themselves are fragile and subject to decay. Means of exhibiting and cataloging objects have kept up with the growth, but means to take care of them have fallen far behind the resources of qualified, available personnel. Progress in methods has lagged. Museums and collectors in the United States spend well over twenty million dollars annually on works of art, and the value of American collections is in billions of dollars. Such a heritage must be preserved for future generations on something better than a hit-or-miss basis. In the absence of a central, recognized authority, conservation is at present conducted very generally according to the personal
predilections of curators, dealers, and private collectors, most of whom are ill-qualified to take this responsibility.

In addition to this first paragraph, George Stout also wrote most of the short summary of the history of art conservation up to 1958, contained in the body of the proposal. It is a succinct, packed overview.

We turned to the Rockefeller Foundation for the funds needed to found the Center, because that foundation indicated interest in conservation in its sponsorship of the Keck's conference. We were asking for a grant which would extend over a period of nine years, decreasing annually from the sixth year through the ninth, by which time other funds would have to be found. We wanted the Center never to try to support itself by taking fees for treating works of art, and it never has.

The Rockefeller Foundation did not welcome the proposal. We had no success until Carroll Newsom, New York University's President and a mathematician, became interested from conversations we had on the subject and brought the matter up with Warren Weaver, who was high in the scientific division of the Foundation. The application had been made through the Humanities Division. Warren Weaver asked that division about the proposal, saw its importance, and decided to shepherd it through the Foundation's procedures himself. (This was long before there was a Warren Weaver Hall at N.Y.U. I hope it is one of the reasons for that building's name.)

In due time the Foundation gave us the benefit of thoughtful advice on revising the proposal slightly, asking us especially to reduce the size of the proposed initial staff. The revised proposal, requesting a total of $500,000, went to the Foundation for action early in 1959, just after the Institute moved to the James B. Duke House during the recess at Christmas, 1958. The proposal was signed by five people: Sheldon Keck; George Stout; Murry Pease (the Conservator then of the Metropolitan Museum); myself; and, not least, Frederick B. Adams, Jr., Director of the Pierpont Morgan Library and a member of the Institute's Advisory Committee. It surely helped that, although not himself in the world of conservation, Adams' respected name was on a proposal from an institution other than his own. All four of the signers who were not of the Institute had helped me in writing various aspects of the proposal. So also had Professor Harry Bober, who had contributed greatly to deliberations and decisions, in which the faculty took part, concerning the structure of the four-year course as contained in the proposal.

The program envisaged in the proposal provided for training in conservation based on "the three-legged stool." It also included offerings available to student art historians who intended to be museum curators, our aim being to acquaint them with the structures of works of art, with the phenomena of deterioration, and with the need for conservation. It included, of course, major provisions for research. And it envisioned a council of consultants and visiting teachers.

The Rockefeller Foundation approved the proposal in the spring of 1959. The academic year 1959-60 was given over, as planned, to preparations for opening the Center the following September. Early in the year of preparation an advisory committee was appointed and met. It included among others John Gettens, Millard Meiss, and Homer Thompson—and also Robert Lehman, as an honorary member; he had long been the head of the Institute's Advisory Committee. George Stout, together with Edward Sayre, then as now at the Brookhaven National Laboratories, agreed to direct the architectural and technical planning of the spaces reserved for the Center in the James B. Duke House. Robert Venturi and his partner Mather Lippscott, who had just finished adapting the Duke House to Institute use—this was Venturi's first commission ever—began the conversion of the basement spaces to laboratories, storerooms, and offices: not exactly the kind of architecture Venturi would be famous for. In the fall of 1959
the curriculum began to be planned in detail, and flyers announcing the Center were distributed to universities and museums in an effort to locate young people with qualifications in art, science, and scholarship that would permit them to embark on a career in conservation. From an encouraging number of applications five candidates were chosen, two of these for fellowships, all to begin in September 1960. In the spring of 1960 Violet Bourgeois was appointed Secretary of the Center. She was the first member of the staff, and she has been the linchpin of the operation ever since, a most fortunate appointment. In the interests of continuity with the tradition of the Fogg Museum laboratory, we asked George Stout to be Chairman of the Center's Board of Consulting Fellows and to take on virtual direction of the Center and a substantial amount of teaching during its first year, commuting from Boston. The Rockefeller Foundation had insisted on limiting the staff we could start with. I had an appointment with Lawrence Majewski in Rome, and we were fortunate in getting agreement from him to begin in September 1960 as both Research Associate and Administrative Officer. He was then Deputy Field Director of the Byzantine Institute. A laboratory technician was needed, and we found one who, by coincidence, also had the name Bourgeois: Rano Bourgeois, an excellent man, who remained with the Center many years.

But the position of scientist proved difficult to fill. Scientists of the caliber we required were loath to leave their own scientific interests and positions to work in conservation, even though we could offer a professorship with tenure to the properly qualified person. Edward Sayre was in the field already, but it was impossible to win him from Brookhaven. However, he agreed to be Visiting Scientist during the whole fall semester of 1960 and to continue thereafter, as a Consulting Fellow, to take an active part in the Center's research projects. Robert Feller of the Mellon Institute was also unavailable, but agreed to be Visiting Scientist at the Center all of the second semester. And John Gettens, who was beginning to become greatly attached to the Center, under-

took to give a seminar on microscopy during the year.

That first year of operation, 1960-61, was not an unqualified success. A strike delayed completion of the laboratories until December. The fact that we did not yet have a Director proved much more of a handicap than anticipated. My report to the Rockefeller Foundation, dated 15 December 1961, lamented these difficulties and also the faults of the teaching program. The case method we had adopted needed to be supplemented with lectures; there was too much study of materials for first-year students and too much art history, not enough on the structure of works of art and not enough stress on treatment, manual skill, and practice. Two of the first five students dropped out of conservation for good. But three continued: Mary Glaser, Benjamin Johnson, and Phoebe Dent Weil. These are gratifying names!

By the end of the year 1960-61 Sheldon Keck had accepted the invitation to become Director, beginning in September 1961; and the plan of instruction had been overhauled—with the help of the Consulting Fellows and also of members of the Institute's art history faculty, especially Harry Bober and Colin Eisler. I wrote in the report to the Foundation: "He (Sheldon Keck) brings experience in conservation and teaching . . . , the capacity for leadership and a deep conviction concerning the Center's mission. He knows the field, its problems, and the people in it. He is known and respected widely. He will make a very good Director indeed." The truth of these words was soon proved.

Not one, but two scientists had also been found, to begin in September 1961: Seymour Lewin, Professor of Chemistry at New York University and specialist in instrumentation, on a half-time basis; and Dr. Jane Sheridan, soils specialist heretofore, full-time. George Stout would continue to come from Boston to take part at intervals in teaching, while continuing to head the Board of Consulting Fellows. The Board was enlarged. It now included a foreign member Leonetto Tintori. In one of the Center's first research proj-
ects Lawrence Majewski, Edward Sayre and Leonetto Tintori joined forces to study the deterioration of Giotto’s frescoes in Padua. They soon arrived at important results and published them. At the same time Lawrence Majewski was beginning to prove an excellent teacher and mentor of students.

For four years the Center was directed by Sheldon Keck. He became also Professor of Fine Arts of the Institute of Fine Arts, the first conservator in this country to have such a title. During his tenure the Center showed its worth. The pattern of the four-year conservation course was established. Ben Johnson, taking his Master’s degree in 1963 and interning for a year with Tintori in Florence and Paul Coremans in Brussels, was awarded the Center’s Diploma in Conservation in 1964. Also in 1964 Mary Glaser received her diploma after interning in paper conservation at the Morgan Library. More qualified candidates were applying than could be accepted. By 1963-64, the Center was receiving substantial financial support from sources other than the Rockefeller Foundation. Various museums were entrusting the Center with art objects for teaching and research. Cooperation in training students began with the Metropolitan’s Conservation Department, thanks to James Rorimer and Hubert von Sonnenberg, Director and Conservator respectively at that time. The Center was organizing symposia, for example the one on fresco conservation, to celebrate the Center’s publication of the book by Meiss and Tintori on the St. Francis frescoes at Assisi. Ugo Procacci, then Superintendent of Monuments in Florence as well as Superintendent of Galleries, and an honorary member of the Center’s Advisory Committee, passionately urged research on stone preservation, a subject Seymour Lewin was much inclined to. Hence it became Professor Lewin’s important concern. A graduate student in chemistry came in 1965 to work in Lewin’s campaign of stone research and wrote his dissertation on the subject: Norbert Baer. Sheldon Keck’s reports of the research under way in his regime are impressive. By now it was plain that the Center was begin-ning to fill a huge vacuum.

My words have concentrated on the beginnings of the Center. But in closing, it is fitting to say something about the building at 14 East 78th Street, in which the Center is now established. Surprisingly soon after moving into the James B. Duke House we realized we needed more space because of much growth in the number of fields of study, in faculty, and in students. I inspected houses for sale up and down the length of 78th Street as far as Lexington Avenue, and then found, in 1962 I think, that 14 East 78th Street was for sale. It was nearer to the Duke House than any other available building and in good condition. On inquiry it turned out to be owned half by a famous skin doctor and half by Doris Duke. Once more Miss Duke came to the Institute’s aid—as she was also to do again in a very major way some years later. She gave us her half, and promptly three donors gave the money for the other half: Robert Lehman, Andre Meyer, and Charles Wrightsman, sharing equally in the gift of the needed amount. Doris Duke and these three are the ones who made it possible for the Conservation Center to realize now the potentialities of 14 East 78th Street.

You of the Center and of its parent the Institute saw potentialities of the building we never imagined. I am staggered by what you have done there—with admirable support from Stephen Chan and the Hagop Kevorkian Fund and the inventive design of Michael Forstl the architect. It is the Conservation Center’s dream come true.
Concerning the Place of Science in the Scheme of Things

Robert L. Feller

One thousand years ago, following a crossing of tens of hundreds of miles of treacherous seas, an ocean-going canoe under the command of Hoturoa landed on the shores of what we now know as New Zealand. Just one week ago I sat in a hotel room on the north island listening to the evening news broadcast in the language that those people brought with them, Maori. This fresh and particularly vivid experience of having heard the language and seen the art and artifacts of an ancient culture raised in my mind, as I was preparing these remarks, the question of whether the fundamental aims of education and training are essentially very much different today from what they were when those ancient societies prevailed. Are the basic requirements for leadership, development of skills, attention to detail, perseverance, and pride of workmanship essentially different today than they were then? Was the need for leadership and courage—the determination to obtain a better life for one's tribe—any greater then than now? Are there no more uncharted oceans or remarkable mountains to cross?

We are meeting today to discuss aspects of education and training in a rather extraordinary area of study, the conservation of the material artifacts of history and art. A time-honored cultural institution, the university, has elected to place this unprecedented subject within its purview. When the Institute of Fine Arts at New York University first contemplated undertaking such a program, it was questioned whether the university was the proper place in which to teach such a discipline, one that, among other things, necessitates the acquiring of certain craftsman-like skills of hand and eye. Today, two decades later, there should be no question that this is the place. Indeed the university is the place in which to train for a profession that demands so much knowledge and understanding of such a broad range of subjects: art, history, technology, and science. Alfred North Whitehead has said "a university imparts information...but it imparts it imaginatively...a university which fails in this respect has no reason for existence". We can be most thankful indeed for those who have had the imagination to develop the several graduate programs in conservation that have come into existence since the Center at New York University opened its doors in 1961.

I have been asked to make some remarks regarding the place of science. In fulfilling this obligation, I shall feel more comfortable being descriptive rather than prescriptive. Rather than suggest the way things ought to be, I shall attempt instead to describe the way things are and to point out certain deficiencies that remain.

Let us recognize at the very beginning that "science is here to stay". The pursuit of science and technology represents a strong subculture in our society to say the least. Both the artist and the art historian have been, and will continue for some time to be, markedly influenced by the practice and philosophy of the scientist and engineer. Given this circumstance, the humanist—as well as the technologist—must make the best of it. We must try to utilize the tools of science and technology to advantage, to assist ourselves
Figure 1. The conservator and those interacted with.

toward the goals that society considers worthwhile. The operative word is assist.

The diagram in Figure 1 was devised to emphasize the fact that this individual whom we wish to educate, the conservator, must be capable of understanding, communicating, and interacting with persons having a remarkably broad range of interests, concerns, and abilities. We are asking a lot of this young professional. It is not necessary to belabor the lessons that might be drawn from this doodle, but apropos of my obligations today, let me point out that the scientist is not at the center of the scheme. Instead, he finds himself slightly off to one side in a supporting role. In addition, there are several types of such persons indicated, some more directly connected to the conservator's needs than others. That is one of the points I should like to make: science is not monolithic; there are many ways of practicing the profession. Moreover, some practitioners are in a better position to be of direct assistance to the conservator than others. The scientist is but one member of a team; science, but one of an array of disciplines and skills that must be called upon.

How did science get into the field of conservation? It was not one thousand years ago that we set forth upon this voyage but practically within the memory of our own lifetime. The idea was born in the minds of a number of colleagues that the care of artistic and historic works need not continue slavishly to employ methods and materials that come into the conservator's hands primarily through tradition. Better adhesives, coatings, packaging materials, fungicides, and insecticides exist today than were available to our forefathers. There are better analytical tools at hand with which to determine the composition of craftsman's mediums and the causes of their disintegration. Should not these tools be used? If society is ever to change its way of doing things, one must try. Those who set forth upon uncharted waters, must try. The vision held by such men as F.L.G. Rawlins, Edward Forbes, George L. Stout, and others of their generation was simply that, where a technical understanding of the materials of construction could help to preserve the physical evidences of the past, it was their, as it is our, duty to bring these skills and this knowledge to the task.

That's why science and technology were introduced: in the hope that useful benefits might come about. Note the use of the earlier word, assist; now, hope. There is no
guarantee that doing things the scientific way—whatever that may mean to you—will necessarily make things better. In considering the role of science, then, let us retain some of the sense of humility that our forebears had in these matters, emphasizing once again that this discipline has been introduced into conservation in the same spirit that it had been introduced into agriculture, forestry, animal husbandry, and medicine: in the hope—perhaps faith, today—that an objective analysis of the way the physical world seems to work will help us do a better job and reach our objectives most efficiently.

Some months ago there appeared a story in the Wall Street Journal which implied that there existed two schools of restoration, one of which might be called the "scientific school". I know of no such simplistically labeled school of thought or practice. The Wall Street Journal is a rather careful publication and when these words were first used they were placed in quotation marks, an editorial device which I take to mean that the writer considered that there was no such entity that could be properly defined and identified. The use of quotation marks implied the modifier, "socalled". Unfortunately, if the lack of a precise and accepted definition of all such fuzzy terms is not immediately pointed out, the words are likely to be used in the future without the quotation marks. Indeed, that is exactly what occurred later in the same article.

This expression may have been introduced into the newspaper columns to suggest the idea that such a school of thought, if it really did exist, would be dreadfully wrong for conservation. However, I would like to raise with you the question whether the introduction of science and technology is likely per se to be fundamentally bad. Our concept of science can be traced to Robert Boyle in the seventeenth century who introduced a process of problem-solving that has come to be known as the scientific method (Table I). The keys to this process are (a) direct observation and (b) controlled experimentation. One assembles a collection of facts based on meticulous observation. After preliminary organi-

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*Robert Boyle (1627-1691) proposed steps 2, 4, 5 and 6.

zation of the facts, one then attempts to explain the findings and apparent interrelationships. A hypothesis is formed and tested. If the ideas prove to be wrong, one must have sufficient self-discipline to say—so be it—we will try something else. The essential difference between this and the earlier Aristotelian way of approaching problems is the emphasis on the direct observation of nature and on the planned experimental verification of one's hypothesis, one's proposed explanation.

The success of this way of attempting to exert some degree of control over the physical world has been astounding. Surely there is nothing fundamentally wrong with having brought this discipline to bear on some of the problems that conservators face. In "The Aims of Education", Alfred North Whitehead observes that "the particular merit of a scientific education should be that it bases thought upon first-hand observation... In the teaching of science, the art of thought should be taught: namely, the art of forming clear conceptions applying to first-hand experience..." Whitehead was not without bias; nonetheless, I trust that the application of principles that have been with us for two hundred years is not, in itself, taken to be potentially harmful or inappropriate to the field of conservation.

Let us keep in mind then that science is essentially a way of analyzing and attempting to solve problems posed by the
physical world. We introduce this discipline in the same spirit that it has been introduced in so many other activities of our daily life: in the hope that in a rigorous effort to cultivate objectivity and to use our powers of observation we may achieve practical and efficient solutions to some of the problems nature places before us, whether in our role as conservator or as citizens of planet Earth.

What are some of the specific things that we hope science will do for the field of conservation? First of all, it can render a technical service; the tools of the chemist-analyst can be used to analyze or identify the paints, metals, and other materials of the artist and artisan. It is in the role of an analyst that the chemist's and physicist's contributions to the field of art and archeology are perhaps most familiar. Considering that the field is represented by three functions—examination, preservation, and restoration—it is fair to say that science has principally benefited the first of these through the introduction of such apparatus and techniques as the polarizing and the scanning electron microscopes, radiography, infrared sensing devices, and x-ray fluorescence analysis.

Summed up in Table II are a number of roles in which the scientist may serve. Individuals may be called upon for specific technical expertise in corrosion, mineralogy, entomology, the chemistry of paper and leather, the metallurgy of copper alloys. One may also find the chemist and physicist in the role of a translator-interpreter of technical matters; the conservator and curator frequently have need for assistance in interpreting literature that describes the results of chemical analyses or the possible uses and potential hazards of new materials. There is, of course, the role as teacher, imparting something of his methods, special understanding, and way of looking at phenomena. The scientist is also employed to test, compare, and evaluate products and processes. Last, but not least, there is the role as an investigator in research and development. For the reasons of insufficient time, money, and manpower, the field of conservation has yet to take full advantage of the scientist in this latter capacity as we shall surely see in the coming generation.

If we agree that science was brought into this field not only to help in the examination of historic and artistic works but also to assist in doing a better job of preservation and restoration, we must learn to be patient. The latter objectives are challenging and the assignment formidable. Industrially- or academically-trained colleagues, whom we invite from time to time to assist in this effort, are not always cognizant of just how challenging the parameters of the task really are. The conservation scientist is not interested in introducing new methods of bleaching, new methods of lining, new methods of varnishing. Not at all. Rather, he is interested in introducing new and improved methods of bleaching, lining, and varnishing (a) that will not lead to disastrously harmful results during the next generation and (b) that will not result in more difficulties in analysis, preservation, and restoration than are presently encountered in the use of traditional materials. These are the constraints that make the attainment of acceptable solutions elusive.

The conservator has had high hopes that the scientist would carry out research that will lead to improved ways of preservation and restoration. Let us consider these expectations. The word "research" unfortunately has become much corrupted in the everyday language of television and advertising. When someone wants to buy a new automobile, television set, or refrigerator, many will say that they have

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done a lot of "research on the subject" before deciding on the final choice. Looking up something in books and catalogs is not research, certainly not as it relates to the world of science and technology. Let me define what I mean by the word: it is the search, in the laboratory-workshop, for new facts and practical applications or for the revision of accepted theories that are unknown to the contemporary scientific community. Emphasis on the unknown. We are not referring to one's personal ignorance of a fact or of the knowledge that resides in some published book or journal in whatever language and of whatever date that may be. To find those facts that are, or were, already known by others simply involves a diligent search of the literature, or search for the expert who has direct knowledge and experience. The process should not be confused with the far more challenging effort of inquiring into the unknown. Because what we seek is not known and because the mind of man tends to be fallible and unruly, advancement is bound to be slow.

Reading about the scientific needs of the nation, one soon encounters reports of expenditures for R & D: research and development. Studying these figures, one quickly finds that development regularly takes the largest slice of the pie (Figure 2). We may talk readily about the needs of research in the field of conservation; more rarely is the other word encountered.

What is "development?" It is all those problems that are associated with reduction to practice. If the laboratory comes up with a new product, or a new way of carrying out an old task, development refers to the myriad problems associated with making these untried ideas a practical success: engineering, fabrication, testing, packaging and foolproof instructions. If one has not thought very much about the subject, it may come as a surprise at first to learn that the major cost in the introduction of new and improved ways of doing things—in terms of time and manpower—occurs in the matter of development.

In the areas of preservation and restoration, we find ourselves still weak in R & D (Figure 3) but thus far have suffered most with respect to resources that we have been able to devote to development. One of the reasons for this is that long-standing policies and practices of funding have made it more difficult to obtain grants for development. Perhaps because an inquiry into the unknown is indeed the more fundamental task, governmental and private sources have generally tended to favor grants for "research". Moreover, in a sense, efforts to perfect and refine processes and materials can go on forever; hence, support for such activi-
ties requires restraint. A further basic reason for the benign neglect of developmental proposals by many funding agencies is that, once the point is reached where manufacturing and application techniques need to be developed, financial assistance is usually forthcoming because the opportunity to turn a profit appears imminent. Yet conservation is primarily a non-profit undertaking; new processes and procedures are not likely to lead to ready profit. In the future we will need more concerted effort towards the development of materials and processes.

Figure 3. Less than twenty percent of the papers abstracted in *Art and Archeology Technical Abstracts* in 1982 were reports of scientific research and development. Less than ten percent concerned materials and processes of preservation and restoration.

Keeping in mind this relatively neglected matter, let us return to the question of conducting scientific research and how this might benefit the field of conservation. There are perhaps four principal areas in which research can make a contribution. The first is in the technical study of the materials of the past; the second, the application of advanced methods of analysis to the conservator's needs. In these two areas technical investigation has thus far contributed much to conservation. It is important to observe, however, that many of the advanced analytical techniques have not been derived from within this field but rather through the efforts of industrial and academic scientists. Thermoluminescence dating represents a notable exception, but, in general, we are the fortunate beneficiaries of numerous techniques discovered, developed, and perfected by sources of brainpower outside the field of conservation: scanning electron microscopy, x-ray fluorescence analysis, radiocarbon dating, and chromatography. A third area of research is the inquiry into the causes of deterioration and means for minimizing the effects; a fourth, the investigation of new and improved methods and materials both for preservation and restoration. In these two areas, there has been precious little effort thus far and only modest success. There hasn't yet been sufficient time, money, and manpower in this young field to achieve quite as much as the generation of Paul Coremans, George Stout, and John Gettens may have hoped for.

This is not surprising. Many fail to realize the length of time that it takes to introduce new ways of doing things. I have kept a file regarding the introduction of a number of successful industrial products. In the development of cavity-fighting toothpaste, for example, we find that the idea that fluorides would stop decay occurred to investigators over forty years ago. It required 12 years of effort and nearly 4 million dollars before the results of clinical tests could be published and another year or two before the product could be put on the market. The Tennessee Eastman Company needed seven years to put cyanoacrylate adhesives on the
market. Dycril was one of the first plastic materials used to make printing plates which could be developed by exposure to ultraviolet radiation. With all of their technical know-how, it took the Dupont Company 10 years and $6 million to bring Dycril to practical realization. Translated into terms of manpower, that represents at least 100 man-years. Conservation as we know it has not been around for 100 years; perhaps rarely will we be able to apply 100 man-years of effort directed towards one of our problems. It's not surprising that the development of new materials and new ways of doing things in conservation has been extremely slow.

Table III outlines two aspects in the history of introducing solubility parameters and acrylic resins into the business of picture varnishes. The story covers several decades. The Fogg Art Museum's experiments on acrylic resins began in 1939; the idea of solubility parameters was first enunciated in 1949. Even today the conservator is only just beginning to use some of these materials and principles with confidence. These examples have not been brought up to discourage. Simply, we must be cognizant of the magnitude of the undertaking and the need for coordination and long-term support.

We have been talking dollars and manpower but there is another ingredient required to reach our destination: the establishment of feasible goals and the coordination of effort to reach them, that is, the successful administration of technical services and of research. In the last decade or two a number of major institutions in the world have successfully mastered the ability to provide efficient analytical services to assist the conservation and curatorial departments. In contrast, although there have been some notable successes such as the development of new treatments for waterlogged wood and the mass deacidification of books, the field has still much to learn in the provision of effective research and development concerning processes and materials. There is a new and growing consciousness of the need, however, which bodes well for the future.

In talking to recent graduates about the applications of

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<tr>
<td>1949</td>
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<td>1950</td>
<td>National Gallery of Art Research Project Established, Mellon Institute</td>
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<td>1951</td>
<td>27H Varnish tested (isoamyl methacrylate)</td>
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<td>1952</td>
<td>Crosslinking note by Bovey</td>
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<td>1953</td>
<td>37H varnish applied to picture varnish problem</td>
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<td>1955</td>
<td>Crosslinking under near u.v. applied to picture varnish problem</td>
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<td>1956</td>
<td>Crosslinking and Solvent Action of Acrylaid B-72 reported, IIC Rome Conference</td>
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<td>1957</td>
<td>Properties of Acrylaid B-72 reported, IIC Rome Conference</td>
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<td>1958</td>
<td>Simple explanation, Burrell</td>
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<td>1959</td>
<td>Oberlin Conference, Stolow Thesis</td>
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<td>1960</td>
<td>Publication of Oberlin Conference (Feller, Stolow, and Jones)</td>
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<td>1961</td>
<td>Properties of Acrylaid B-72 reported, IIC Rome Conference</td>
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<td>1962</td>
<td>3D parameters, Crowley, Teague and Lowe</td>
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<td>1964</td>
<td>3D parameters, Hansen; Teas diagram</td>
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<td>1965</td>
<td>3D included in new edition of Feller, Stolow, and Jones</td>
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<td>1966</td>
<td>Simple scale of solvent power IIC, Lisbon Conference</td>
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<td>1967</td>
<td>Standard method of reporting crosslinking recommended (log-log plot)</td>
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<td>1968</td>
<td>Applied to varnish removal, Feller and Curran, Torraca</td>
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<td>1969</td>
<td>Standards of photochemical stability proposed</td>
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<td>1970</td>
<td>Applied to varnish removal, LaFontaine</td>
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<td>1973</td>
<td>Standards of durability and testing proposed, ICOM</td>
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<td>1974</td>
<td>Applied to varnish removal, Raft</td>
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science, I have occasionally detected something that has made me a bit ill at ease and yet which for a long time I have not been able to define. I now believe that it is the fact that many do not understand the complexities and limitations described. They do not understand that science does not always render the ready answer, that its application does not regularly result in quick success.

Whitehead points out that the process of education proceeds in stages. Initially there is a stage of romance, in which the new ideas are found to be especially exciting; it is a process nearly all go through. Following this, there must come a stage of precision in which one begins to sharpen one's perceptions and definitions, to realize that there are distinctions and that some conclusions and generalizations are solidly based, others not. Perhaps many students in conservation are at the first stage of romance concerning the application of science. They have great enthusiasm for what science has been to tell them thus far and for what it might do for them in the future. We should not discourage enthusiasm. Yet the conservation scientist, in his desire to be of assistance, is confronted with a formidable task. In spite of a conscious effort to foster student research projects, we may still have failed to convey very much concerning the way the research investigator must go about his work and concerning the uses and limitations of his advisory role. Many may not have reached that second stage, where they perceive that scientists come in many shapes and forms, that they can flounder about with new ideas as well as anyone else, that analyses can be in error, and that the employment of highly advanced analytical techniques can at times be premature. In the few short years spent in formal programs we may not have been able to carry them to the next stage of sophistication. To learn of the exciting promise of science is part of the conservator's brief period of formal training. To learn how difficult it is to change man's ways, yet all the while to take heart and persevere—above all, to wear some modicum of modesty and humility with learning—is part of a lifetime of education.

This occasion has been proclaimed a dedication program. Indeed, a most significant and marvelous turn of events has taken place upon this meeting ground: This institution, now happily joined by a few others, has begun to introduce some sense and sensibility into the conservator's task. We come to pay our respects to those who have provided the leadership and perseverance to make this achievement possible.

One builds buildings with hope. I did not find yesterday's affair quite as expected. If all this had taken place on some village green in the hinterlands, the form and content might have been very different; there would have been speeches certainly, perhaps a band, a bit of flag waving, and some prayers. Such folkways become much transformed by time and place. We may no longer feel the need to call upon the shaman to help sanctify such occasions, to help express our hopes for a successful journey as confides embark. Yet the meaning of a dedication ceremony, in this age as in the past, remains the same: casting forth on seas of uncertainty, one hopes that one's venture will be successful. The past twenty-two years have been notably so. Congratulations. As the Conservation Center moves into handsome new facilities, one can only hope and pray that this institution may continue to find outstanding teachers and gifted students—even more successfully in the future than it has in the past. Take with you the fire of imagination.
Who Needs a Conservator?

John Brealey

Although I am indebted to Norbert Baer for supplying the title for this brief talk, it has a sardonic ring to it that reflects the distrust many people feel about this profession. The treatment of major works of art has always excited controversy and will obviously continue to do so regardless of the quality of the individual conservator's training, experience and judgment. As Max J. Friedlander so aptly put it, "restoration is a necessary evil," because no one wants the alien presence of another mind coming between him and the work of art. Decisions made in the treatment of a work of art are an exercise in connoisseurship. Since one is dealing with visual values anything that affects the look of the work of art must affect the meaning. In fact, the look is the meaning.

Whenever this simple but obvious truth is ignored and technical defects are treated in isolation, the means become the end and the painting as an entity is fragmented. It is naive to attempt to make a distinction between "conservation" and what is referred to as "cosmetic" treatment. This lack of understanding might be excusable if it were confined to the student but, unfortunately, there are relatively few who appreciate that even the most minor technical intervention, no matter how localized, can upset the original values by changing the surface texture or tonality. Even something that is done routinely such as setting down loose paint can permanently deface the surface if allowance is not made for the artist's technique and intention. The appalling aesthetic consequences of varnishing paintings that were never intended to be varnished has been brilliantly demonstrated in a recent article by John Richardson in the New York Review of Books. Anyone who doubted the truth of the points he was making only had to visit the 1983 exhibition of Cubist paintings at the Tate Gallery; the few paintings there that had somehow survived without "benefit" of relining or varnishing from conservators belonged to a different world of finesse.

How can one provide an enlightened background for the student when the aesthetic criteria are so little evident? Recently I visited Florence and Siena and saw paintings exhibited on scaffolding, a gimmicky presentation we owe presumably to the influence of industrial design. Also, for some years now in certain museums in Italy, they have dismembered altarpieces and displayed them without frames in this way destroying both the original iconic and artistic intent at one go. We are all accustomed to going to exhibitions of paintings painted by daylight and seeing them presented by artificial light so that all the values are either subtly or flagrantly changed. Few persons, on the other hand, seem to mind seeing paintings unequally lit by spotlights; daylight has seemingly become more than a threat to the life of the work of art. Paranoia takes the place of caution. Instead of taking light levels into account in the public presentation of works of art, the source of inspiration for the artist, the museum throws aside the very life of the picture by excluding daylight. It has become customary to illuminate everything by artificial light and this, more often than not, is not only hopelessly uneven in intensity but distorts the color and tonal values by being of the wrong color-temperature.

When there is such tastelessness and seeming indifference to intelligent and sympathetic presentation, where is the student to receive guidance? It is not enough to satisfy
the academic requirements of the universities because, of
necessity, they tend to teach what can be examined and,
particularly where the arts are concerned, it is the quality of
the individual's judgment that matters. Every teacher knows
that although he or she can present an argument no one can
supply understanding. The heart of the matter lies in the
quality of the understanding which springs from a natural
intuitive response, the right exposure and informed guid-
ance. The very least that one can expect of someone enter-
ing this profession is that they are so much in love with the
work of art that they have a chance to do the right thing by
the artist. The former painter, engineer, scientist, "good-
with-their-hands" type, may make some valuable technolog-
ical contribution to the field, but still lack the essential
qualities needed to safeguard the aesthetic intent of the
artist. It is a great tragedy that the training institutes tend to
bring up the trainee to approach a work of art in a forensic
way so that his entire attention is directed to the technical
problems posed by the physical state of the painting. The
consequences of this are truly frightening. The work of art,
to all intent and purposes, is reduced to an artifact awaiting
the ministrations of practitioners who apply the limited
vocabulary they have been taught to the highest aspirations
of the human mind. This sad state of affairs is not helped
by the convenient teaching aids upon which we have all
become dependent; I refer to the half-tone or color repro-
ductions in monographs on artists and the reliance on the
color slide for institutes teaching art history. We are all fully
aware that they are a far cry from the values of the original
paintings. One of the courses I give for students of this
Institute is conducted entirely in front of the paintings
themselves and I always find that for the first three or four
sessions the students have great difficulty in adjusting them-
selves to this new world of values. Sadly, it is much easier to
watch colored jewels projected on a screen by courtesy of
Messrs. Kodak than savor the real thing.

It is lamentable that our period and our conservation
record will be judged by future generations. If there were
any justice, we should really be put on trial by the past. The
yardstick on which we base our judgments is the well-
preserved example of an individual artist's work, but every
decade the numbers shrink. Although time obviously plays
a part in the transition from art to archaeology, the real
culprit for turning paintings into artifacts is the conservator.
There are so many examples in our time of insolence,
arrogance and contempt for the artist, that it is difficult to
know how to start enumerating them. It is customary now
throughout the world for conservators to record photo-
graphically their sharp-ruled windows for no other reason
than it makes a neat "before-and-after" print for the curator
or owner and for the archives. The record in the archives, in
fact, is for some professionals more important than the work
of art. This is so utterly absurd because I have yet to see
anyone recording a mistake they made when they were
treating a picture. The attitude is cynical as it is always the
previous restorer who is blamed.

Although everyone knows that varnish yellows with time,
the layman fails to appreciate that other significant changes
occur to the look of the painting as the resin oxidizes. It is
not simply that blues become greenish, whites yellow and
reds become more orange, the original tonal values are
completely falsified. The illusion of the third dimension is
largely lost and the picture looks flat. Along with the inevi-
table discoloration of the aging varnish there is a loss of
translucence, a growing opacity, so that the lights become
darker and the darks become lighter—esthetically the
equivalent of listening to a symphony through closed doors
so that the high notes and bass are muffled and the essential
life of the composition is destroyed.

However, to return to the subject of cleaning, the tests can
always be carried out at the extreme edges of the painting
which are covered by the frame so that the conservator still
has the option of not proceeding with the cleaning if it turns
out to be undesirable. The cleaning phase of the treatment
spells the life or death of the painting as a work of art. The
truth of this observation is borne out by the "cleaning
controversies" which endlessly erupt when important paintings by major artists are treated. At the highest professional level, it is never a case of the removal of glazes or other obvious physical injury. The issues involved are very subtle and affect the balance of the picture and the relationship of all the values. It is not a question of "on or off" as the layman assumes — there are myriad levels of cleaning. This is something very difficult to grasp unless you have had many opportunities to observe the changes that occur in the appearance of the original as the cleaning progresses. Solvent action and the degree of persistence used in the removal of oxidized layers have a profound effect on the visual values. The aesthetic consequences of solvent action and abrasion are immediately recognizable to the sensitive eye. The colors, in particular vermillion red, start to halate and the forms instead of remaining in keeping with the artist's intention, appear to float so that the cadence of tones establishing the formal progression in the paintings become disoriented. White, for instance, is not simply a tone but a color and to illustrate the subtlety of the matters we are discussing, one only has to ask a small group of individuals to produce something white from their person. It does not matter whether they point to a white shirt or a blouse, produce a handkerchief or a piece of paper, you are unlikely to find that any of the so-called "whites" match up. The differences in tone and hue may be slight or obvious, but they are immediately recognized by all. The remarkable sensitivity of the human eye is more often than not at loggerheads with the conceptual response. For instance, when we look at a painting by Titian, Rubens or other great master, we cannot fail to respond with delight to the alchemy of their handling of white, but if we look more searchingly and can make a comparison, we will see that the white is not pure white; it may even be a pale grey and a far from neutral one, at that. This helps a little to demonstrate the complexity of the cleaning problem and peoples' limited understanding of what it is all about. One is dealing with hairbreadth of tone and nuance — an almost Byzantine cocktail of values where "white" or any other color continue to be recognized as such despite a keyboard of changes. The optical changes in appearance between one extreme of cleaning and the other begin to approach night and day. When the work of art is reduced to the level of a laboratory specimen and the criteria become pseudo-scientific, then the approach is confused with hygiene, and the faintest vestige of old varnish has to be removed and with it any regard for the painting as a work of art because of the changes described above. The poor picture ceases to be a painting, and lies sightlessly on a table under a stereomicroscope, operated on by someone in a white coat. The reason I use the term pseudo-scientific is if you are being truly scientific in your approach, you take into account that you are working on a work of art.

So many paintings have been disastrously flattened by relining in the past that the recent growing sensitivity in this area is cause for rejoicing. I will not dwell on the almost religious fervor which surrounds the use of wax, or all the latest techniques used and defended by the profession as we are in the same position as the rest of society in that the development of technology outstrips our ability to harness it with circumspection. I well remember how chastened all the delegates, including myself, were after attending the I.I.C. lining conference in London in 1974. Momentarily we lost confidence in applying any of the lining techniques as they all had considerable drawbacks, and the aesthetic and technological consequences were frighteningly apparent.

If the trainee is brought up to approach a work of art in a clinical way so that his entire attention is given to the technical problems posed by the state of preservation of the painting, then the consequences are truly horrendous. The practice of mounting pictures painted on linen onto aluminum supports, for example, is a particularly popular assassination of our time. If the painter had wished to achieve the mechanically flat look given by a metal support, he would have done it himself! It does not seem to occur to the conservator that this practice amounts to a flagrant
intrusion into the realm of the artist's creativity. It is so easy to forget that the conservator's primary loyalty is to the artist.

I am convinced that the only hope for the long-suffering work of art in the future lies in a return to the humanistic approach so that the painting as an aesthetic entity is always in the forefront of the conservator's mind. The technology will then take its rightful place and become the means rather than the end. If this happens, the conservator's responsibility of attempting to perpetuate the life of the work of art and, at the same time, pay heed to the artist's intention, will then be realized.

Although the buck will always stop with the conservator because he has the life or death of the painting in his hands, something more must be done to promote closer interdisciplinary collaboration in the future. The moment that the art historian, conservator and scientist see the work of art as a mutual focal point, then the sensitivity and sophistication of the approach will be commensurate with the significance or the artist's work for our society.

Archaeological and Ethnographic Conservation: Forgotten Disciplines

Henry M.W. Hodges

I am told that it is a sign of advancing old age that one frequently wakes in the small hours of the morning wracked with doubts. On one such occasion, I woke convinced that I had got things wrong; that although I had worked for museums for the better part of my life, I had failed to understand what was their function. I decided that it was about time I checked with the lexicographers to see how they defined the word museum. I consulted a large number of dictionaries and encyclopedias only to discover either that those who compiled them were guilty of considerable plagiarism or that they showed an amazing concordance. In short, I discovered that a museum is an institute, the function of which is to collect, preserve, study and display objects and materials of artistic, historic and scientific interest. That is how the museum was defined almost universally.

Without indulging unduly in semantics, although a little, I would ask you to note that the four functions, collection, preservation, study and display, are equally emphasized
and that none is qualified. Nowhere did I find the functions defined as "to collect, study and display and, if resources permit, to preserve." Nor, for that matter, did I find any reference in the primary definition to a didactic function of a museum. This is a subject to which I must return later. In the meanwhile, let us note that the word "preserve" can be a tricky one. It embodies, or may embody, two concepts. The one is immediate, meaning, "to keep safe." We had a good example this morning of keeping safe, putting a sheet of bullet-proof glass in front of a work of art. The other has a dimension that is temporal, signifying "to prolong" or, in this case, probably better interpreted, "to retain for posterity." The first is a somewhat passive matter calling only for the prevention of damage and loss. The second demands a more active approach implying taking all necessary measures to ensure the longevity of the collection. I need to ask, however, just how good is our track record when it comes to preserving the more delicate objects of historic interest, as for example, many of the artifacts in our ethnographic and archaeological collections. Can we surmise in what condition they will be three hundred years hence, which is, one hopes, only a small part of posterity? Alas, I believe we can.

In the mid 17th century, a Danish doctor, by name Ole Worm, presented to the Danish nation the contents of his museum, an amazing collection of curiosities and objects of history and natural science. He did, in fact, slightly preempt the famous Thomas Ashmole of Oxford in the creation of a museum in the modern sense, but he seldom gets credit for this. However, that is an aside. Fortunately for us Worm also produced a printed catalogue of his collection and hence, we know that it included Inuit garments, tools, weapons and a kayak which, to judge by the up-swept bow of the vessel, must have come from Greenland. We should not, however, embarrass the curator of the National Museum of Denmark by asking to view any of these objects today. Bluntly, they are defunct. I think it would be unwise to suggest that sometime in the past they were either stolen or vandalized, for the Danes are a careful people. More probably with age they quite simply disintegrated until, eventually, they were put out with the garbage. At face value the demise of an ancient kayak may not seem to be so very great a loss; that is until we realize that Ole Worm had no right, apparently, to this possession at all. Denmark, long before his day, had lost all contact with the once thriving Scandinavian colonies in Greenland. In 1585, in 1606, in 1636 and yet again in the 1650s the Danish Government, indeed, did send expeditions in search of them only to find that they had vanished. And so, we come to the question: how did Ole Worm get hold of a Greenland kayak? Was it brought back from one of these expeditions? Or, did he acquire it through a contact about which history has nothing to say? Today, had we that kayak and all the appurtenances that go with it, I am quite sure that we would get some kind of answer using one of our many non-destructive dating techniques, but, alas, we cannot. Now, in this case, we are placed in the position in which our heirs may well find themselves 300 years hence, and I must seriously question whether we shall provide for them any better than our forebears have for us. There is, however, this difference: our ancestors had scant knowledge of the causes of decay or how to inhibit them. We, on the other hand, have no such excuse.

It was in the recognition that here was a problem that required a solution, and that time was running out, that the various North American conservation teaching programs came into being. In the general euphoria that surrounded the initiation of these programs, one could comfortably believe that at least some substantial part of these collections might be saved. We needed only the enthusiasm of youth, tempered with suitable training, to achieve great things. Alas, it has not transpired quite thus. The number of graduates from these programs who aim to work on archaeological and ethnographic collections is surprising only in the smallness of its size; and the impact that these few have been able to make on our collections is, to say the least, inadequate. By contrast, the number of graduates working in the field of the fine and applied arts is relatively large and
one can be happier about the fate of the collections in fine art museums than one can about the future of our archaeological and ethnographic artifacts. It is desperately easy, of course, to blame the various universities for this state of affairs, so, perhaps for those of you who are not university people, it would be wise to dispel a few popular misapprehensions.

Contrary to popular belief, universities are not quite the ivory towers they are supposed to be, but are, in fact, quite susceptible to market demands. It is commonly held that universities, because they are out of touch with reality, produce as a matter of habit either too few or too many students in any field, and that this is due to the old fashioned, if not reactionary, manner in which they are administered. Nothing, of course, is said when, by some miracle, they get their figures right and produce exactly the right number of graduates to fill the posts available; and it takes a miracle to judge, with no help whatsoever from officialdom, what the market will be three or four years hence. Now, the economics of the situation are fairly simple. If a program overproduces there will be a large number of graduates who will be unemployed. The word will quickly get around, fewer students will apply, and finally, the program will shrink to a size which is no longer financially viable and may either have to be curtailed or even closed down. By contradistinction, should the same program underproduce, there will be a large number, or relatively large number, of applicants from which the university can select only the best. There will, of course, be rumblings from potential employers, but what they do get should be of good quality, so enhancing the reputation of the program. Little wonder, then, that there is a built-in tendency for many university programs to err on the cautious side and to underproduce rather than otherwise; and, only when the rumbling becomes something akin to a muted roar, is a university judicious to do otherwise. Hence, rather than place itself in the position that it can satisfy every customer on demand, in order to insure the good name and even the very existence of the program, that

program is more than wise to graduate rather fewer students than the market can absorb. This may seem like a sophism, but I assure you that this is the way it works. What I have just said applies to every professional program and not simply to those concerned with art conservation. You will notice how in other professions, medicine and law are classic examples, great pressure is brought to bear on universities by the controlling organizations to limit the number of graduates to meet or fall just short of demand. Such activity is invariably interpreted in the worst possible light, as an endeavour to maintain high and unjustifiable stipends, without thought of the long term effect that the alternative would have on the quality of the graduates and, ultimately, of the profession. In short, what I am saying is that in this imperfect world, we must expect art conservation programs to underproduce graduates rather than do otherwise.

Now, in the field of graduates specializing in the conservation of fine arts, the picture over the past few decades has become less than clear since a high proportion of them, rather than seek museum positions, have set up in private practice. In the absence of any market research in this area, it is impossible to judge whether the field is becoming saturated or not. In other words, but for the private market, we might well have reached the point at which the programs have already overproduced graduates in the fine art field simply to staff our public galleries. For students who graduate in the field of conservation of archaeological and ethnographic materials, there is no such obvious private outlet. This fact alone could affect the student's decision as to whether to follow this discipline or not. The more limited choice of occupation style may, in fact, deter some students from embarking on this course of study. This, however, can only be a contributory factor. The fact remains that the demand for conservators from museums has, until quite recently, remained at the level of a very, very quiet rumble; and I will not, at this time, preach to the converted and explain how great is the need for conservators in so many of our museums. What must concern us more is why that need
is not perceived, or if seen, why it is not loudly voiced. There are, I believe, many contributory reasons, none of which, taken alone, would account for the phenomenon. If, from now on, I appear to be riding a number of strange hobby horses, kindly remember that it is my intent to understand my colleagues in the museum world, neither condemning them nor deriding their endeavours.

Allow me rapidly to discuss an attitude too cynical to be taken seriously, the point of view that the demand for conservators in the field of fine arts as opposed to other areas relates directly to the inflated monetary value of many works of art. The argument here appears to be that many works of art are seen primarily as a financial investment with the concomitant that conservation is a means of securing or even improving upon that investment. Seductive as this theory may sound, it does not account for the relatively large number of family portraits and other intrinsically worthless paintings that one is asked to restore in any one year. The primary reason why so few conservators are employed in archaeological and ethnographic museums has, I believe, to do with the very nature of the degradation and decay itself. More often than not, decay is insidious. Frequently, it is so slow that within a lifetime, an object may not appear to have changed one iota. Seldom if ever do we have photographs or other records of how those objects were fifty or one hundred years ago and our memories are notoriously bad. Furthermore, those in charge of the collections, the curators, have not usually been trained clinically to examine the artifacts for signs of incipient decay. If it is their belief that in the last ten years the object has not changed in any way, ergo, all is well. This situation is further compounded by the simple fact that for some small part of the collection, their observation may be perfectly correct. To some extent, it would be better were the decay of these objects sudden and violent rather than insidious. Were the objects in a collection prone to a degradation so rapid that between a Friday evening and a Monday morning a seemingly healthy artifact could suddenly disintegrate into a pile of dust, conservators, I vouch, would be in very great demand; but that is not usually the way of things. Occasionally, decay, due as often as not to changing environmental factors, does approach the rapid. Even then, our curators have not always been trained to recognize the problem, or may even be inhibited from doing anything about it should they wish to do so, for many and various reasons. In 1955 I stood on the Acropolis in Athens in the company of a very eminent Professor of Archaeology. From where we stood could be seen the Erechtheum and beyond, an acid blue haze lying over the rapidly developing city. You will recognize that I was there in the summer, had I been there in the winter, it would have been an acid fog. The signs of air pollution, acid rain, were already there and building up fast. "Were those Caryatids mine," I said, "I would move them indoors." The reply was unexpected. I was told the Greek people would never stand for it. But, they have had to stand for it, and too late. The then need for conservation was not perceived to which was added, I suppose, a misplaced national pride. I do not blame, in any way, the local archaeologists, they had not received the training they required to keep an eye on that monument.

As I have already more than hinted, I believe that this lack of perception in the curatorial/managerial staff of museums is due, very largely, to lacunae in their training. Ever since Malinowsky, the study of social anthropology has waxed and grown fat and, by the same token, the study of material culture has waned to a point near vanishing. In my experience, it is not uncommon today to come across undergraduates with first class honors standing in anthropology who have never set eyes on an ethnographical collection, let alone have written an essay on anything relating to material culture. Now, while I am sure it is most important that one should have, let us say, a working knowledge of the family relationships that exist within an Inuit tribe, I remain far from convinced that this knowledge is fundamental to the proper conduct of a museum department holding Eskimo artifacts. To a lesser extent, archaeology seems to have gone
the same way as epitomized by the “new archaeology.” Here, of course, artifacts must be handled, but only so far as to derive the data they can provide to be fed into a computer, what a friend of mine irreverently refers to as “computer fodder”, after which, they seem to lose all interest. Even allowing that these computer activities are important, they do not really fit the student from such courses to become the curators of important archaeological collections.

To some extent, archaeologists have been seduced away from conservation since they have, as they believe, far better ways of spending money, and better ways of employing scientists: dating, surveying and other analytical work add more directly to the lines of investigation they want to follow, and conservation is something aside. On the whole, field archaeologists tend to see conservation as a museological problem, but in one area, they seem to move with considerably more caution. Experience has taught them that materials of organic origin, most particularly wood, if removed from the waterlogged conditions, disintegrate suddenly and violently in a manner that I have suggested might be salutary. Such wooden artifacts will, almost without question, shrink, warp, split, crack and fall to pieces if allowed to dry without remedial treatment. It is, I suggest, the very speed with which this happens that puts the archaeologist on his guard, not to mention its inevitability. Other objects that he recovers may take a lifetime to fall apart, by which stage they will be in somebody else’s keeping, and their demise is no reflection upon his ability; but waterlogged wood is different. Hence, we find archaeologists working in this field, discussing polyethylene glycol and its application, and cursing its high cost.

Now, if the training of anthropologists and archaeologists is, from our point of view, very often severely flawed, and leaves the trainees somewhat myopic, surely the museological programs should be in a position to put the matter right. Alas, it doesn’t seem so. These programs appear to have been struck low by a series of debilitating diseases which for the want of a better name, I will call the “new museology”. In the good, or bad old days, depending upon how you like to see it, museums still had some of the aura, the magic of a heavenly junkyard. The artifacts roughly sorted stood in categories cheek by jowl, often two deep, each with its own label, or no label — and if there were a label it was often illegible. A visit to such a place was, indeed, a voyage of discovery and, if you cared to know what it was all about, why, there was the guidebook written forty years ago and now bearing no relationship whatever at all to what you saw before your eyes. But at least one knew that a major part of the collection was on display, and one did not feel cheated by the certain knowledge that the larger part of the collection lay in some inner sanctum, especially the objects one had traveled far and long to see. The word “junkyard” best describes the British Museum when I first knew it, but all that was to change. Bright young men, brimming with notions of display techniques, “interpretation” as they choose to call it, and now “story lines”, were ultimately to alter all of that, and this contagion was visited upon the majority of museums. A large part of the holdings were to be banished to the reserve collection until they were needed to illustrate some new story line within or beyond the four walls of the museum. From this time on, the artifact would become peripatetic, its function only to illustrate a story line and not vice versa. It would now be surrounded by maps, diagrams, dioramas, photographs blown up beyond all recognition and endless yards of verbiage, its meaning as an object all but lost; and this, supposedly, to educate the public. The late Gordon Childe, my one time mentor, always insisted that artifacts were, in fact, documents and that they should be read by the visitor. And today, the teacher, the interpreter, reads us the text and we, the viewers, fast become illiterate in these matters. We no longer read the artifacts for they have become simply the illustrations that go with the story. We are sitting at nanny’s knee listening to fairy stories. And therein lies the danger. Is there not the possibility that this, too, is how the story teller sees the objects chosen for display? I must give you one out-
rageous example to back up my theory that this may be the case. Not all that long ago, an art gallery in Europe mounted a display to celebrate the tricentenary of a renowned public figure. For this purpose, three objects were borrowed from another museum: a small table, a pair of kid gloves and a pewter dish, in order to provide a 17th century atmosphere. Fearing that the gloves might be stolen by some member of the visiting public, orders were given that they should be nailed to the table. As for the pewter dish, disdaining to employ anything as plebian as plastic imitation fruit, it was laden with fresh fruit without any thought that it should be inspected and changed very, very frequently. Of course, the fruit duly decayed and, in so doing, etched deeply into the pewter charger, now damaged beyond all restoration. Three objects borrowed, three artifacts severely damaged.

More recently, I watched a party of high school children going around a museum, only part of which had been modernized with visual aids, maps, diagrams and all that stuff. These sections the children walked past barely looking at the exhibits. When, however, they came to the old mahogany showcases, they stopped. They scrutinized the objects, they discussed them, they pointed out to one another features they felt important. I do not care that some of their observations were wholly inaccurate; they were unhackneyed, learning to read the artifacts for themselves. Now, if in this polemic you feel I stray from the point, let me assure you I do not. Just now I referred to the peripatetic artifact. There are two phrases that chill, or should chill, the heart of every conscientious conservator: The one comes in the advance notice of an exhibition and it reads, “The Treasures of . . . ,” the other will be contained in a memo and the phrase will usually read, “required for a traveling exhibition.” The first of these implies that like it or not, fit or unfit, some artifacts will go on exhibition and that the story line has already been written. The second could be read more simply, fix it up so that it can look good and travel. But, is this really for the good of the object? Like hell it is! Rather, it is to fit the story line and little matter that the packing case in which the object travels may prove to be its coffin. From this attitude, that the artifact should be used only to illustrate a theme, grows a contempt for the artifact itself.

We need go no further than the foyer of many a museum, to the museum shop, in fact, to recognize this syndrome. When a museum, not a hundred miles from where I now stand, announces to the public that many of the objects for sale in its shop are, and I quote, “exact copies of museum originals,” and later adds for good measure that they are, again, I quote, “often produced by the same techniques used to make the originals,” we should pause, seriously to think. Are the originals not in danger of becoming no more than the pattern for the mold from which copies may be cast and sold at great profit? Nowhere, I contend, is this confusion of original and copy more clearly seen than in the restored village or similar site. Some buildings will be reconstructions based upon heaven-knows-what considerations. But, you can be sure that they will be restored using the original techniques, materials and tools and, of the artifacts therein, who knows? I once asked a busy blacksmith in such a place whether the tongs he was using at the forge were recorded museum objects or simply reproductions? When he, at last, understood the tenor of my question, he put my mind at rest, as he thought, by assuring me that they were at least a hundred years old. I am not really ashamed to say that I left him somewhat puzzled by observing that all the blacksmiths I had met, and I have met quite a few in my life, were quite capable of making a pair of tongs for their own use. He did not, I am afraid, understand at all what I was getting at.

In all this, our measurement of the success or failure of a museum has gone equally awry. Success is by head count, the number of visitors who pass through the doors. Libraries, you will notice, have a different yardstick: the number of books borrowed, that is to say, the number of readers; but there is no such easy measure to find out who profits, and by how much, from their visit to a museum, so we resort to head count, assuming that the more visitors, the better they are doing the job of educating the public; an assumption, I
might add, that we would certainly not make about a fairground. Does it matter that those visitors do not read the artifacts? I believe it does. Nevertheless, some measure of the failure of our museums to educate the public can be gauged in the extraordinary popularity of those strange books that deal with supposedly lost continents such as Atlantis or Mu, and others treating with theoretical visitations by extra-terrestrial beings in some remote but unspecified past. I am always horrified at the number of times I am asked whether I have read one of these particularly atrocious books by members of the teaching faculty of my own university. Copies of such works often run into many reprints, while more serious archaeological studies may be deemed to have done well if they appear as a single reprint. Were our museums really achieving the great things in the educational field they claim, the situation should be reversed and serious archaeological publications should be amongst our very best sellers.

It would be wrong if by some mischance I gave you the impression that in my view there was a general disdain for all artifacts in the curatorial eye, this is very obviously not the case. Yet, there seems to be a perversity based on many different criteria that allows that some artifacts are “more equal than others.” These are the treasures, the golden few, the goodies, and if conservator there be, the chances are that it will be to these that his life’s work will be dedicated. The apogee of this approach is to be seen in those few museums that are sufficiently well endowed to allow them to siphon off from the world’s archaeological and ethnographic markets those objects that are deemed expressions of especial artistic merit. The implication of such an activity, however well intentioned, is a tacit suggestion that these are the objects worthy of collection and that all of the others, the picks and shovels of antiquity or the bows and arrows of tribaldom are, in some way, inferior and certainly of lesser merit. It seems to me that we run the very real danger of creating first and second class museums, the distinction lying not so much in the manner in which the museum is organized, or the nature of its display, but rather upon the quality of the collection assessed upon some purely subjective criteria. I can well imagine the fate of the curator of lepidoptera in a natural history museum were he to collect the larger and the more colorful butterflies while allowing all of the others to fall into decrepitude on the grounds that the small brown insects were unworthy of his serious attention. The notion is, of course, absurd, and yet, I am afraid that this is often how our archaeological and ethnographic collections are served. Perhaps the day will come when both curators and conservators will be obliged to take an oath, something akin to medicine’s Hippocratic Oath, promising equal attention to all artifacts regardless of their supposed importance. That day, one feels, may be far in the future although the moral obligation, I should point out, is implicit when one accepts the post of either curator or conservator.

If I have given offense, in highlighting what I see as the sins of present day museums or museum practices, let me soften the blow somewhat by adding that I see them all as minor sins and that none singly may be viewed as utterly damning. However, minor sins, according to my mentor in matters of ethics are cummulative, the sum is that first, our curators are not created ab initio, conservation conscious and, secondly, that the present directions that museums have taken have tended to belittle the importance of the artifacts for which the museum was first created.

There are, of course, many museums blameless in these matters, places of incredible virtue and, to the staffs thereof let me offer my congratulations and apologize if they have taken offense where none was intended. Indeed, the picture is not quite as black as I have painted it. The move towards systems of open storage, for example, in which the visitor may explore the holdings of the museum himself, I see not so much as an advance which is how we are asked to see it, as much as an intelligent and welcome step back in time. I do not believe, however, that an attitude of laissez faire will necessarily correct our ills and I think some more positive steps will have to be taken if our ethnographic and
archaeological collections are to be saved for posterity. At this moment, we appear to be faced with something of a vicious circle, almost a "Catch 22" situation, in which if nothing is done, matters are certain to get worse. The muted roar from the museums that might ensure the training of more conservators in the archaeological and ethnographic fields is not to be heard. The number of graduates, therefore, from our training programs remains small. Equally, the teaching faculty must remain small, and so too, alas, must research which therefore runs at very low ebb. This is particularly true in the ethnographic field. If one compares the truly vast literature in the field of oil painting, such as the provision of supports, with that which has been written about the treatment, say, of untanned skins or feather work, one will see that the latter is almost nonexistent, and one can gauge how little research is being done aimed at preserving our ethnographic collections. It follows that the graduate from our programs, faced with the many complexities of such a collection may well be overwhelmed when he gets a job in a museum, and the curator, then, may come to the conclusion that conservators are not the magicians as publicized, and that their services are only of very limited value. Our problem, hence, is how best to break this chain.

I believe there are two things that simply have to be done: clearly, as conservators, if we wish to retain our credibility, our own house will have to be put in order; our teaching faculties need to be strengthened, both in numbers and in the volume of research undertaken. It may well be, too, that we need to rethink the ethics of handling such collections. For the fine art conservator, very obviously, esthetic considerations must take pride of place when he intervenes. For the ethnographic conservator, esthetics, very often, hardly enter the picture and, instead, the function to which the object he is treating was put, and the retaining of any evidence of that function, must be his primary consideration. Hence, just as the fine art conservator must listen to his colleagues, the curator and the art historian, so too must the ethnographic and archaeological conservator come to understand his colleagues in these fields. This brings me to my second proposition: we need to proselytize and actively to seek cooperation from our colleagues. I was recently shocked to discover how few of the relatively large conglomerate of conservators in Ottawa are members either of the Federal or of the Provincial Museums associations, and fewer still could be seen as active participants in those organizations. I only hope that this situation is not repeated in the United States, but I have a strong suspicion that it may be. If we fail to discover what motivates our colleagues and remain aloof, it should come as no surprise that they imagine that they can do without us.
A Library is Not a Museum

Paul N. Banks

“...it seems clear that success of the [Alexandrian] library was due to the four techniques... that have since become fundamental for research library administration: catholic acquisition; rationalization of the format, and even the content of books; systematic author and subject cataloging...; and a continuing conservation program, largely in the form of recopying.”

But we are certainly at the beginning of a revolution—and I don’t believe that revolution is too strong a word—in the ways of handling current, useful information that is starting to influence profoundly the ways that all four of the basic functions of research librarianship are carried out. Not only are business and governmental records handled digitally, but laboratory research, work in progress, current scholarship, and the like, will be handled in digital form, with the attendant problems of large masses of information often at best only partially digested. The questions of what of this type of material is worth capturing for posterity, who is to have responsibility for deciding, and in general, how can it all be managed, are formidable, and fortunately beyond the scope of this paper. (Parenthetically, despite my comments on the “information revolution,” I am not among those who believe in the imminent demise of the book; for one thing, publishing statistics belie such predictions. But the amount of information handled digitally will almost certainly continue to grow at an ever-accelerating rate.)

The result of this impending revolution in the way at least current information is handled is that the research library is increasingly becoming on the one hand an automated information center, and on the other a repository of retrospective knowledge. The library as information center tends to deal with current information in the sciences, technology, medicine and law, while the retrospective collections consist...
largely of books, journals, manuscripts, and the like, predominately in the humanistic disciplines, that are deteriorating at a seemingly accelerating rate.

Needless to say, this schema of the bifurcation in research librarianship, with its echoes of C.P. Snow's two cultures, is oversimplified, but it is real and profound as exemplified by the identity crisis that library schools are undergoing as they add “information science” to their names and their curricula.

The advance into automation—including the beginnings of full-text data bases in addition to operational and bibliographical ones—is clearly essential to the continuing viability of research libraries. However, the costs are large, and the initial primary beneficiaries tend to be such areas as the health and “hard” sciences and law, which have what one might call a higher standard of living than the humanistic disciplines. (Automation certainly has important potential benefits for the humanistic disciplines also, and its benefits will continue to grow.)

While it may not be possible to document instances of conscious decisions to favor automation over preservation of retrospective collections, or the sciences over the humanities, the pressures to automate, and consequent competition for resources, seem inexorable.

This issue of competition for resources is in part a reflection of a more basic difference between research libraries and museums: While I believe that it is generally felt that museums must continue to acquire, libraries, which are generally dependencies of other organizations, must ordinarily continue to collect in areas that are of interest to their parent organizations and those interests are often very broad. A university library, for example, has no choice but to collect current materials in the fields in which the university has programs. Thus, because of acquisition commitments, research libraries usually have little flexibility in the way that their funds are spent.

Meanwhile the retrospective collections, that in large measure define the research library, present conservation problems that seem overwhelming because of their size and complexity.

The collections of the members of the Association of Research Libraries, which includes nearly all of the major research libraries in the U.S. and Canada, contain upwards of 300,000,000 volumes and 200,000,000 microforms. Statistics for manuscripts are even more slippery than those for books, but for what it is worth, the Library of Congress alone reports 34,627,783 pieces of manuscripts, as well as nearly 4 million maps, nearly 9 million photographs, and so on. The National Archives is estimated to have some three billion pieces.

By comparison, The New York Times announced recently that the Smithsonian, the world's largest museum complex, has something like 20,000,000 items, not counting “snails and bugs,” to use the Times's phrase, and they add items at the rate of about a million a year.

When these figures on collection size are multiplied by the results of some recent surveys suggesting that 25% or more of the paper in the non-rare books in these collections is so brittle that the books may not withstand more than one or two more uses before pages begin to break out (if they are not already doing so), we begin to get a sense of the dimensions of what has been called, with a resolutely stiff upper lip, “the preservation challenge.” The dimensions of the problems are so enormous that they almost earn the misnomer “enormity” that is so often applied to them. It may be worth underlining, considering the title of my paper, that normally books cannot be isolated from users in the way that most museum objects can; they must have enough physical ruggedness to withstand repeated use that is moreover under little or no surveillance.

These figures deal primarily with non-rare books in general collections. A comparably alarming figure concerning the needs of special collections materials has been given by Peter Waters: 11,500 person-years are needed to treat the deteriorating items in the rare book collections of the Library of Congress.
One of the greatest complicating factors in library preservation is the diversity of the collections, which include materials ranging from those solely of interest for their overt information to those of great artifactual value. While museums certainly have objects of varying value, I think that once an object has found its way into the museum, it is assumed to have some artifactual or esthetic value. Lest you boggle at this assertion from an outsider, I would ask whether museums regularly discard parts of their collections outright, and make copies of others on a large scale, discarding the original objects after making the copies. Both of these operations—weeding and preservation microfilming of "brittle books"—are normal operating procedures in the research library world.

A further complication is that a large percentage of retrospective materials—perhaps a majority—do not fall neatly into either the artifactual category or the category in which the physical embodiment of the information is irrelevant. When does an author or event become important enough that the associated books assume artifactual value? Or old enough? When does the always diminishing number of, say, ordinary eighteenth-century trade bookbindings make them eligible as an endangered species?

Most of what I have said thus far tends to support the thesis implied in my title. But to the extent that research libraries contain materials of artifactual value—and it can be safely assumed that all do contain such materials—they take on aspects of a museum.

This museum aspect of libraries is certainly no new thing. Most research libraries have special collections departments (once called rare book rooms), and there are a few unabashedly rare book libraries, such as the Pierpont Morgan or the Houghton at Harvard. Special collections departments have many traits in common with museums—their key personnel may be called curators rather than librarians; they may have the primary responsibility within the library for exhibitions; use is more closely controlled than in general collections, and so on. Their collections get a higher level of care than general ones, or at least books are not apt to be threatened with heavy buckram library bindings. However, unlike museums they usually do not have conservators as yet.

As more current information is handled electronically, as existing collections, especially in the humanities, become older, and as the value of cultural property in general increases, the retrospective parts of research collections are becoming more museum-like. Many of the now rare books in Harvard's or Columbia's or Yale's libraries were, after all, the current reference books of the 17th or 18th centuries when they were acquired.

Another aspect, then, of the "preservation challenge" is the question of how to deal with those general collections, especially in the humanistic disciplines, that contain books of unrecognized, potential, or partial artifactual value. At present, large research libraries often can only deal with general collections of books as if they were current and expendable.

To summarize, then, some salient characteristics of the library "preservation challenge": The amount of material to be preserved is enormous; the materials have a whole spectrum of artifactual values, ranging from none to almost total; books must have enough strength to be extensively and often carelessly handled by users, and flexibility in allocation of resources is severely limited by the necessity to acquire extensively in an ever-expanding universe of information.

It is increasingly understood that the preservation of artifactual materials requires highly skilled and educated treatment conservators, and that specialized administrators are needed to manage broad conservation programs. What is less understood is that the needed preservation effort is so large that all categories of materials require mass preservation strategies that are outside the scope both of existing conservation education and libraries' organization charts. The urgency of what one might call conservation engineering is in buying time until greater resources—fiscal, human,
and technological—are available for the application of “conventional” solutions or until better solutions are available. Time must be bought both for deteriorating non-artifactual materials, because there is little hope for filming them or otherwise converting their overt information to another format in time with present methods, and for artifactual materials, as Peter Waters’ astronomical figure for treatment of the rare materials just in the Library of Congress tells us.

The type of position that is needed would seem logically to be called the collections conservator, whose charge and training would be in broad systems methods, in technical and engineering approaches to collections care, including housing, storage, environment, and in mass treatment. I might expand a little on what I mean by an engineering approach or by the collections conservator as quasi-engineer.

Part of this idea of an “engineering approach” deals with perfectly conventional aspects of engineering, especially building design, climate control, exhibition cases, and the like. I’m not trying to suggest that the collections conservator should be trained to actually design such systems; that is certainly the province of mechanical engineers. But it is crucial that there are people who first of all take the part of the collections and the institution, and who are able to set convincing and realistic specifications for architects, mechanical engineers, and those who operate buildings and systems once they are built. This entails enough knowledge of engineering to be able to communicate.

The other engineering approach that I have in mind is the need for systems method for a multiplicity of library and archives conservation problems. This relates to the developmental research that Robert Feller was talking about this morning. Sometimes the issues are almost ludicrously prosaic: designing storage containers that can be manufactured inexpensively in large quantities and that really enhance the preservation of different kinds of objects.

One of the most urgent needs in library conservation is the development of systems of methods and materials that can be used for routine mending or binding of books that actually do help to preserve them, as many current ones do not, and that are as respecting as possible of potential artifactual values.

The need for conservators as quasi-engineers seems to me to be quite clear. What is considerably less clear, however, is how to fulfill that need. There are several issues: the aptitudes that attract people to conservation are not always accompanied with aptitude for the broader and more quantitative types of conservation; the need for any kind of full-time conservation specialist is only beginning to be recognized in libraries, and where there is only one conservation person that person is usually trained in librarianship rather than conservation; and the prevailing image of the conservator is of someone who treats individual rare books. The most important question, perhaps, is what means libraries and archives could devise to support such specialists.

The program for library and archives conservators offered jointly by the School of Library Service, Columbia University and the Conservation Center, Institute of Fine Arts, New York University stresses the importance of mass approaches including such fundamental aspects as building planning and climate control, and to give some rudimentary understanding of these subjects within the always frustrating limitations of the time available. However, the program is modeled largely on the pre-existing museum conservation programs, and the students who are attracted to it seem to lean toward treatment conservation rather than collections conservation.

A large task that remains is to sell the library and archives world on the need for collections conservators or conservation engineers, and at the same time to learn how best to train them.

You may be aware that similar ideas have been offered in the museum context. (Parenthetically, while it appears to me that the substance of Nathan Stolow’s plea for the sort of “quasi-engineer” for museums is very much to the point, I
think that his proposed terminology, “exhibition conservator” for the person involved with overall collections care, and “collections conservator” for the person who treats individual objects, is unfortunate.) Despite my catalogue of differences between libraries and museums, many aspects of broad collections care are virtually identical in the two types of institutions, and just as the new library and archives conservation training program is a cooperative undertaking between a library school and a museum conservation program, perhaps there are further opportunities that could be to our mutual advantage.

I might also mention the preservation administrator program at the School of Library Service. This might be said schematically to consist of a one-year master’s degree in library science and a one-year advanced certificate concentrated in preservation courses. It occurs to me that the idea of specialized training for preservation administrators may be of interest in the museum field as well.

I feel greatly honoured to be speaking in the present context of the opening of the Conservation Center’s new premises, which we all very much admire. I remember the early days when Sheldon Keck came to London and spoke to the United Kingdom Group of IIC in 1958 about the new training institute. We were all interested and excited by the potentialities of this new development which over the years, with wise direction, has reached its present position with premises to match its major position in the field.

I am afraid that what I have to say is spontaneous and will have none of the elegance of a written discourse. It will be “kitchen sink” material. Norbert Baer has handed me a title which I think is the only one in this session that poses positive questions. I assume that I am expected to provide some sort of answers. I hope that he will forgive me if my solutions to the questions are controversial and prejudiced. What exactly should be the appropriate context of conservation or conservation training? I think that almost every conservator when asked how conservation training should be organized cites his own training as the ideal, and it could be that I am not departing from that, but I shall try to be a
little more objective. I really belong to the early days of pure apprentice training and the only way I can start talking about it is to give something of my own experience in this field.

Having been a scientist working in a large research laboratory, I decided to start my career all over again as a paintings conservator and became an apprentice in the National Gallery, London. These were the days of the "restorer". The word 'conservation' was first brought to us in 1949 by Richard Buck. It was a term and a concept that was very slow to develop in England. Studio life in the 1950s was a matter of the student, or rather apprentice, sitting in the same room as the master and sharing in the life of the studio. The master usually only had two or three assistants. The master in this particular case was Helmut Ruhemann. He would be working at his important painting and would occasionally call us over to his easel to give a running commentary on the things that he was doing. We worked on paintings of lesser importance and he would come over and make often scathing criticisms of our work. We occasionally worked on minor parts of his picture. At the time when I first arrived in the National Gallery, he had cleaned and was restoring Leonardo's "Virgin of the Rocks" and, as a colleague of mine pointed out later, he restored the Virgin and we restored the rocks.

This kind of studio training might seem crude in the eyes of the modern institute-trained conservator but it had certain advantages. We had constant visits from art historians who would talk about our paintings to us and we would talk about our work with them, sometimes for hours, and would learn about the paintings and their history in some considerable depth and actually share experiences. Ruhemann had a considerable reputation which attracted many distinguished visitors. Even though work was interrupted by these visits, the cumulative effect of many-sided discussions was extremely valuable. The trainees were in fact learning all the time in many different respects. They also had the enormous pleasure of seeing the paintings they had restored going on exhibition. We really felt a strong personal rapport with the paintings, which persisted over the years.

There was no organized training in theory but a great deal of discussion on theory went on more or less continuously in the studio and in the scientific laboratory on every aspect of painting, aesthetics, the materials of painting, the properties needed for the materials of restoration and so on. These discussions, to which we contributed from our own backgrounds, were an effective alternative to systematic theoretical training. It happened that two of us were postgraduates in the modern sense: My colleague was an art school graduate and I was a science graduate, so in fact we were able to edge the subject forward rather considerably beyond the sort of things that Ruhemann was teaching us.

In 1951, Herbert Lank and I produced a programme of conservation problems to consider, with about 350 references from the existing relevant literature of both conservation and paint technology, placing the subject, we believed, in a state very much further in advance than had been accomplished before. It was our attempt to provide a theoretical background which was lacking in training at that period, whilst at the same time presenting the scientists with a clear picture of our actual problems.

So that was really the position in those days. Looking back, it seems to me that in terms of the advantages of developing a rapport with the paintings, we were provided with the kind of teaching which was not only of value but was different in kind from modern training systems, and it was geared personally to each trainee. There was no term of training in this kind of apprenticeship. Training did not go on for, say, four years and then end, as in the modern course. The apprentice gradually merged into seniority. This took place, more or less, after about five years, when the trainee could have been expected to have encountered most of the problems that were likely to occur. It was an unstructured training with a very wide range of actual teaching. It really cannot in any sense be compared with a
modern structured course.

When in 1960 I became head of the Conservation Department at the Victoria and Albert Museum, a much larger unit dealing with every type of object with about 30 restorers, conditions were exactly the same. Most of the Conservation Department had arrived there as “boy learners” at around age 16-18. There were no women apart from the textile section. They were mostly the kind who, at school, were distinctly more “craftsmenly” in the practical work. There are boys and girls who, from the age of 12, show what we now call “manual dexterity” of an unusual kind. Thus they were, initially, budding craftsmen and they became very fine craftsmen later on. Apprenticeship was long-continued and it was, again, not possible to know when training had finished because they simply moved into maturity and increasing responsibility. Apprentice training was roughly regarded as being something like four or five years. The continuity of high standards of practice had the advantage and disadvantage of cautious conservatism. The teacher—the “master”—often had an in-built resistance to innovation, which as far as new materials were concerned was often justified.

The quality of work was very good, and there was a general view, now somewhat in abeyance, that the restorer should himself be capable of making the type of object in which he specialized as a restorer. This principle still very properly lingers in certain areas such as the restoration of furniture and gold and silver objects; textile conservation, when I arrived at the Museum in 1960, was all done by ladies who were trained at Queen Mary’s Royal School of Needlework, and they were often described as “the needlewomen”. There wasn’t really much wrong with craft apprentice training generally except that sometimes materials were used which deteriorated quite visibly after a time, and if they deteriorated after the person concerned had retired, it was very difficult to find out what was used because few records were kept. Even so, the early methods of training were extraordinarily satisfactory in many ways.

An important factor, which was a tremendous catalyst, was that from the first day the apprentice would actually be doing work, however trivial, which was of practical use to the Museum. There was a constant feeling thereafter of being wholly involved in the active life of a great Museum. There were always small and large problems so that every trainee had a kaleidoscope of different experiences.

One of the things that I introduced was that instead of rather casual appointment of apprentices, we changed over to the official Government methods of appointment and instituted a grading system. In doing this, we inevitably began to appoint art school-trained people who were in effect (and later in fact) postgraduates. This was the first stage in the abandonment of the older apprenticeship system. I have often wondered whether it was a good thing to do. We started to have a higher “class” of conservators and a craft became what in England we would describe as ‘gentrified’. Norbert Baer asked whether conservation was a profession or not. I think there is a certain question whether it is perhaps after all not a profession but a gentrified craft and whether one really needs in this field ladies and gentlemen of the professional classes or people from an artisan background who are used to using their hands. Things, of course, could not go on as they were in the days of the old apprenticeship system. With new ideas and new materials, training in theory and a higher actual standard of education became inevitable, though at the Victoria and Albert Museum theory for the trainees was still only a small adjunct to the practical training.

When I retired from the Victoria and Albert Museum I became, quite by chance, Director of the Hamilton Kerr Institute, a training school in painting restoration started by my former colleague Herbert Lank, at the instigation of Professor M. Jaffé. The Institute, a department of the Fitzwilliam Museum of Cambridge University, is essentially different from other training institutes that I know of in being an attempt to reproduce all of the things that I have been talking about: the “old-fashioned” training system with
insistence on constant practice, with discussion of principles and theory in the presence of paintings of high quality.

I am inclined to believe that, as far as painting conservation is concerned, the most important things of all can only be learned by constantly sitting in front of paintings. They cannot be learned from the lecture theatre. Lectures for conservators are useful means of stimulating students to read the literature of the subject. This must come very strangely from someone whose present profession is teaching the background scientific theory to students, but I believe that what I am doing now is secondary to the empathic apprehension of the object and the manual skill and experience to take the right course, aesthetic and technical. A background of technical knowledge is essential but it should be closely related to practice.

I noticed that Professor Craig Smyth said in his introduction that a system of conservation training could only have been introduced here (i.e. at the Institute of Fine Arts) if the standard of the work done was equivalent to that of the rest of the work of the Institute. Probably he was referring to standards of quality. If he meant that it should somehow be turned into something academic then I cannot agree. I do not think that studies as essentially unacademic as conservation should be squeezed into an academic mould. A relationship to a university is irrelevant; a relationship to a museum is important and if there are any independent institutes, I believe that they should attach themselves to museums or to large collections in order to provide the reality that the students will encounter later on. As far as archaeological conservation is concerned, the matter is quite different, and I think that the proper context of archaeological conservation is dictated by the wide range of knowledge that has to be pumped into the student. He will be dealing with every sort of material, with every kind of method of production of an artifact, and the extent of knowledge that he has to acquire is staggering. I am an External Examiner of the Institute of Archaeology of London University and my mind boggles every year when I receive the enormous pile of dissertations and examination papers. Every year, the subject grows more advanced and formidable and the amount the student has to learn grows with it. Happily they do not quite have to learn everything. I am reminded of a lecture I gave once in New Zealand to what I supposed were a group of painting conservators who turned out to be a group of archaeologists. I gave a lecture on the techniques of the Venetian painters and the Chairman, thanking me for my lecture, hoped that this would be useful to them when they dug up a Titian in South Island. I once had rather misguidedly said to Ruhemann (and he actually put it in his book) that the theory of the subject could be taught in a few weeks. One of the things that I had not quite realized was the depth of ignorance a person brought up in the humanities in England has on the subject of science. Even though I was not very much involved in teaching the theory at the Victoria and Albert Museum, I did some of the teaching — physics and climate and so on — and I was telling the students about the Simpson vacuum case enclosing a painting, constructed in 1905 as a consequence of the Russell and Abney experiments. The painting, a Turner, is still in excellent condition. I told the students this, and one of them said surely if you take the air out of the inside of the case, you won't see the picture any longer. This simple remark reoriented my attitude towards the teaching of science.

Clearly, theory instruction is very important after all, but I think that in fact it is very much overdone in the more academic types of school, and that only the theory that is closely relevant to the subject itself should be taught, by scientists with an intimate knowledge of practice. Personal teaching, seminar teaching, is important and probably better than formal university-type lectures. One of the best things is to have theory teaching on the spot at the point of a problem arising; this is the time when theory goes straight in and actually stays.

There are two more questions in terms of the subject that Norbert Baer assigned to me, or I believe there are. One is
the student's earlier background: whether, in fact, it should be art history, practical art from an art school, or science. I think the Conservation Center principle (as I understand it) that a person must have a degree in art history is arguable. A knowledge of art history is useful but it doesn't really form the essence of what is (as I have suggested) advanced artistic craft. I used to think at one time that the students should come from art school and already have, as it were, a great feeling for the objects with which they will deal. I am assuming, if they are going to be specialists, say ceramic restorers, that they should have been students in creative ceramics. I think this still has some merit for the decorative arts. For painting conservation, as long as a person has sensitivity, manual dexterity and an artistic sense with drawing and painting experience, a first degree can be either science or art history. In my experience a dedicated student can and does correct the deficiency.

There is also the question of the degree of specialization in training. I believe that the time has come when one should say that the movement should be toward specialization. I am speaking of the fine and decorative arts and not of archaeology. It seems to me that by organization of conservation work on a regional scale, conservators could specialize and this should be reflected in teaching methods. It is important to know something about aspects of conservation other than one's specialization, and the main features of deterioration and treatment. The old precept that one should know something about everything and everything about something remains relevant for the conservator, but specialization is bound to become increasingly practised and taught.

The Universal Need for Training in Conservation

Paul N. Perrot

It is with emotion that I find myself at this podium today, since everything I am professionally, and, I suppose, most of what I am personally, I owe to the six years I spent at the Institute of Fine Arts. I found here kind understanding, if not charity, for one who was then inexperienced, an administration that was not encumbered with red tape and which gave me a chance to try my wings.

Hence, being here today, is, personally, very rewarding. It is also moving to be in an institution that has so significantly taken conservation out of the "basement." Now in a physical sense, but long ago by recognizing that conservation was a profession worthy of being given a rank equal with art history and the other disciplines connected with it. From what I have said, it is clear that I am bold or innocent enough not to agree entirely with some of the statements that have been made earlier!

When it was suggested by Dr. Baer that I might speak about the universal need for training in conservation I had some hesitation in tackling such a broad subject. For the need is indeed universal, but there is even a greater need:
that is to increase conservation awareness. This, throughout the ranks of society and, strange enough, in the ranks of the museum profession as well.

This is an anachronism, since one generally assumes that those engaged in the museum profession are or should be totally committed to preservation, that they fully understand that to serve the present, and merely to collect from the past, is not enough. That in addition they must devise means in order that this heritage can be passed as unscathed as possible to future generations extending far off through the centuries. If we accept that this is the purpose of museums, and of those who staff them, then it is clear that conservation is not an adjunct but that it is at the very center of our concerns. This was well-demonstrated by one of the first slides shown by Robert Feller.

Indeed, at the risk of being accused of extravagant romanticism, I somehow feel that museums, and the profession that serves them, in a sense, express a vote of confidence in the notion that in spite of atomic clouds, there is a future for the things and ideas we believe in.

The needs for conservation have grown exponentially since we have become more aware of the built-in finiteness of all matter. We heard today about the 11,000 man-years required by the Library of Congress to properly attend to the books in its care. When I came to the Smithsonian Institution 10 years ago, Robert Organ estimated that 13,000 man-years would be required to properly attend to the vast collections dispersed among all of our museums. Whatever the figure locally, it is staggeringly large nationally and internationally. It is also a figure that is going to require constant revisions, as we learn more about what we have, since, of course, many museums, both large and small, do not have a firm grip either on the numbers or the conditions of the objects in their care.

My own institution, for example, is going through its first inventory in 138 years, and only now, are we beginning to come to grips with the scope of the problem. A few moments ago it was stated that the collections of the Smithsonian consisted of 20 million items. Quite true if this is added to our earlier 75 million estimate, now being refined as our staff nears the completion of the first stage of our inventory. If an organization as well-established, staffed and supported as the Smithsonian Institution has had doubts on the full extent of its collections, I suppose that many others around the country are facing the same problem, and, unquestionably, it is being faced exponentially in the developing world.

All this leads to the point that, at some time, once we have come to grips with the full scope of the problem, some hard choices will have to be made: either a conscious benign neglect or, indeed, for some objects gentle euthanasia!

We must recognize the dismal fact that neither nationally or worldwide do we have or are we developing a sufficiently large core of practitioners. In the U.S. the conservation profession is not doing much more now that replacing its ranks as they are thinned by age or other reasons. All U.S. training programs put together probably do not produce 50 persons a year. The situation is no better in Europe, though perhaps the continuation of the craft tradition and the continued availability of younger practitioners, may have alleviated, or, at least, clouded the urgency of the problem.

The majority of training programs in existence today are located in Western Europe, the United States, India, Japan, and Mexico. There is one that sporadically produces short courses in Baghdad. There is none in Continental Africa and only a nascent one in Columbia. For Europe, it is primarily Italy, Belgium, France, The Netherlands and Great Britain, and strangely enough, not one in Germany is concerned with combining scientific methods and practical application.

During the earlier part of the discussions, it was implied that one should always train less than the demand seemed to require. I suppose there is some truth in this if one wishes to guarantee that those who have committed themselves to years of study find positions worthy of their efforts. But it seems to me that we should show greater confidence in the
essential character of the conservation profession, and not continue to show a timorous attitude that can only continue to hold conservation in the intellectual and ethical basement.

There is little doubt that in the past 10 or 15 years there has been a revolutionary change in attitudes concerning the respect that we owe the past both in this country and around the world.

In the U.S. the excesses of urban renewal have been succeeded by the excesses of “Disneylanding,” either by the creation of pseudo historic sites or the trivialization of real ones. These phenomena, distressing as they may be in their reflection of misguided enthusiasm also indicate that there is a profound interest in the past. This is not a phenomenon unique to the Western Hemisphere. As the first society in the history humanity, which has in its own hands and within its own knowledge the capacity for total eradication, the newborn attitude toward conservation and respect of the past and our nascent commitment to transmit it, suggest that we should have greater confidence in the potential of our profession and look a little bit more aggressively toward training its practitioners. I do not know one well-trained conservator or restorer who is looking for a position today, i.e., looking because of need rather than looking for a change of horizons or better financial opportunity.

In my own Institution, we are looking for several, and virtually every large museum that I know of is seeking to fill vacancies. Hence, it seems to me that we must encourage the development of centers of excellence, such as this one, and foster the creation of new ones.

In regard to the training that should be offered, I take strong exception to the notion that conservators should not have basic academic qualifications. In my view, it is essential that they have them for a number of different reasons. The most practical and most evident is that conservation, for a great part of the 20th Century, has been relegated to the status of a craft, a non-gentrified craft, that was neither recognized by social status or financial reward. If we are going to train people who are truly going to be effective in the preservation of works of art, archaeology or ethnography, they must be able to interact on an equal plane, intellectually, in vocabulary and previous experience, with the curators or whoever has the ultimate responsibility for the artifacts they treat or study.

In an ideal situation, I would like to see a museum in which the conservator and the curator are absolutely equal and, indeed, in regard to the safety of objects, the conservator should have veto rights over the curator and open access to the Director. If we are to maintain the integrity of our collections, insure their preservation for the future, and deepen our understanding of their structure the conservator must have a solid academic foundation. This does not mean short-changing manual skills, but rather is an affirmation that the hand is guided by the mind, that the mind must be able to communicate its perceptions clearly to the curator, the archaeologist or the ethnographer, so that the two special knowledges can mingle to create fuller understanding.

The need as we have seen is enormous. Indeed, it is incalculable, if we count among the institutions concerned, the thousands of historical societies, libraries, archival depots, and other repositories dispersed throughout our land. Abroad the situation is dramatic. One of the greatest collections in the world that we welcomed with awe and applause, The Treasures of King Tut is, as we know permanently housed in a facility which lacks virtually all the amenities that would be desirable for its proper safekeeping, not for the next centuries but even for the next decades! Though there is hope that this situation will change, it would be hazardous to predict when.

If we turn to other parts of the world, even North Africa, the situation is just as bleak. Neither Libya, Tunisia, Morocco, of Algeria have trained personnel in sufficient number, even to attend to most urgent needs. And these few, for the most part, have only attended the short-term or refresher courses at ICCROM or participated in a seminar
here and there. Well-meaning and dedicated as these may be, they have not acquired the baggage of personal knowledge, let alone the necessary apparatus to make much of a dent. And, of course, in other parts of Africa, the situation is much worse.

I just returned from Senegal where I visited the Ifan Museum, which has extraordinarily fine collections, well-interpreted, sprinkled here and there by the meaningful sayings of that philosopher/president Senghor. As one peruses exhibition cases, one finds that there are infested and that in all probability, the abundance of worm holes which cover the lower part of the sculptures on exhibition, are probably in many cases inhabited by lively occupants! The situation is repeated the world over and at present only two international mechanisms are available to alleviate it. One is UNESCO: through its appeals to member states, to help develop infrastructures, and through missions of experts who can occasionally assist in the case of major drama, but who generally can only spend a few days to provide advice and place a few band aids on festering cancers. The other is the International Center for Conservation in Rome, ICCROM, established by the international community nearly 25 years ago. I will not dwell on its programs and their effect only to deplore that ICCROM does not have greater resources to provide for more training, more missions, and a greater store of equipment, and supplies to send to those who need it most. (As an aside, it has always been an astonishment to me that the United States only joined ICCROM in 1971, a dozen years or more after its founding. I have a feeling that we would not wait that long now!)

UNESCO and ICCROM have been the two most important factors, but neither can provide to the need. One institution in Rome, with limited resources and little political clout cannot satisfy the world’s needs and cannot establish standards of understanding and performance, as well as provide training that develops necessary theoretical knowledge with courses that last only 4 to 6 months.

I submit, hence, that we have a collective responsibility, not only to train more people for ourselves, but to share our expertise with those less privileged and invite, among our institutions, the participation of colleagues from developing nations who are eager to learn and are frustrated at virtually every return.

There are, of course, other universal needs. Among them, scientific research, more fully focused on the needs of conservation either of objects or the built environment. We have at our disposal an arsenal of technology undreamt of merely 20 years ago. Through it, with re-directed expertise, we can gain insights, not only on how matter ticks, but how it ticks away, and thereby learn more on how to slow this down.

The by-product of this research might provide new perspectives on the meanings of these objects, the societies that produced them, the materials they used, and through this we could acquire a greater understanding of the conditions under which they were produced. I am not willing to accept, as a former art historian (which is all that I can claim to be at the moment) that we can know any object if we do not understand its matter, if we do not autopsy, to the extent that we can without destroying the fabric, the manner in which it was put together. By doing so, I am convinced that we can gain far more data on the circumstances that led to its creation.

The literature on the Black Death, for example, is vast. We read about it as a medical phenomenon, a social tragedy, and of the impact that it had on religious iconography. We examine the texts, and probe the psychology, but the materials by which that period expressed its trauma are ignored. Yet they may tell us something about the manner in which that generation worked and perhaps even help us understand better how they believed. Until we integrate scientific inquiry, within the art historical arsenal, we are losing an opportunity to expand collective knowledge and perhaps through such study we might learn how to better preserve.

I regret that Cyril Smith is not here today, because he was among the visionaries who clearly foresaw how the study of technology is not only relevant, but indispensable for an
understanding of archaeology, anthropology, and the history of art.

I do not want to belabor the nature of the challenges. How are we going to meet them! Certainly not by having conservation and the training of conservators the step-children of our museums and our universities, nor by perpetuating the separation of the disciplines and refraining from making the study of conservation, at least in its most elementary aspect, a required element in any curator’s experience.

I regret that a quarter of a century after the programs of the Conservation Center were developed that such a course is not an absolute requirement. The Institute of Fine Arts has formed the directors of some of our major institutions; unless the coming generation of directors is willfully exposed to basic principles of conservation, theoretical and practical, there is little hope that they will be equipped to encourage their curators or to preach to their Trustees the importance of conservation. Conservation is a craft, but it is also a discipline. We must instill in those who will be called to administer our museums, and historical societies, the necessary understanding.

Collectively, those involved in the museum profession are trustees, not in the financial sense, but in the sense of being entrusted with a responsibility for the future. Unless we do far more to quantify the need, and assess the numbers that will be required to meet it, we may find ourselves, as a nation training 45 or 50 conservators a year, while, undoubtedly, the minimum required is 90, 100, or more. I am confident that the market can afford such increased number, and, unless we provide them our resources will continue to crumble and the knowledge and pleasure that they could impart will be lost.

The building whose inauguration we are celebrating is evidence of maturity. It has splendidly orchestrated functional spaces, harmoniously interacting with one another. It is a tremendous achievement to have squeezed so much in so little space.

Here locally, conservation has emerged from a physical basement to a place of prominence, material and spiritual. We must now seek ways nationally and internationally, to foster the notion of conservation and promote the social status of conservators, their remuneration, and the recognition they should receive to a level of equality. If this is to happen, I am sure, that the major cause will be the leadership of those who created and led the Institute over the last 50 years: Walter Cook, Craig Smyth, Jonathan Brown, and Richard Turner, and who founded and directed The Conservation Center, Sheldon Keck, Larry Majewski and Norbert Baer.
The Authors

Paul N. Banks's career began in printing, with particular interest in book printing. While working in publishing production, he studied hand bookbinding, which led to interest in book restoration and work with the noted book conservator Carolyn Horton. He served as Conservator and Head of the Conservation Department of the Newberry Library in Chicago for seventeen years. In 1981 he left to establish the first graduate training program in book conservation at the School of Library Service, Columbia University, in conjunction with the Conservation Center. He is now an associate professor at the School of Library Service. Following the flood of 1966 he was invited to help with the rescue of books in Florence. He received a Guggenheim Fellowship in 1980, has served as President of the American Institute for Conservation of Historic and Artistic Works, and is working on a book on the philosophy and ethics of book conservation.

John Brealey studied with the late Dr. Johann Hell, Conservator and Art Historian from 1947 to 1951 and then with Stephen Rees-Jones at the Courtauld Institute of Art, University of London, from 1951-1952. From 1952 until 1975, he treated important pictures from a lengthy list of major public and private collections including the Royal Collection.

In 1975, Mr. Brealey was appointed Conservator of Paintings at the Metropolitan Museum of Art. He was appointed Chairman of the Paintings Conservation Department in 1983. He is Adjunct Professor at the Conservation Center, a member of the Advisory Council, Hamilton Kerr Institute, University of Cambridge; Consultant and Restorer to the Yale Center for British Art and to The Frick Collection. He is co-author, together with Maryan Ainsworth, Egbert Haverkamp-Begemann and Pieter Meyers, of Art and Autoradiography: Insights into the Genesis of Paintings by Rembrandt, Van Dyck, and Vermeer.

In May 1984, the Minister of Culture and the Director of the Prado Museum, entrusted Velazquez' Las Meninas to him for cleaning and restoration. After completion of the work, the Minister of Culture invited him to return to Spain to receive from His Majesty King Juan Carlos I, La Medalla de Oro al Merito en Las Bellas Artes.

Norman S. Brommelle was Director of the Hamilton Kerr Institute in Cambridge from 1978 to 1983 and continued as Scientific Advisor until 1985. A graduate of Oxford with a degree in mathematics and physics, he did research for a number of years in the metallurgy of light alloys and, from 1949 held a series of distinguished positions in the Department of Painting Restoration in the National Gallery in London and then from 1960 was Head of Conservation at the Victoria and Albert Museum. Beginning in 1957, he served as Secretary General of the International Institute for Conservation until 1987.
Robert L. Feller studied drawing and painting from early school days and extending into college. He also took most of the courses offered in art history while majoring in chemistry at Dartmouth. Graduate studies in physical-organic chemistry at Rutgers University led to an M.S. degree in 1943 and, interrupted by two years' service in the Navy electronics training programs, a Ph.D. in 1950. In the fall of that year, appointment to the newly established National Gallery of Art Fellowship at Pittsburgh's Mellon Institute, now a division of Carnegie Mellon University, provided the opportunity to combine his long-held interests in both art and science. Dr. Feller has been at the Mellon Institute since that date, becoming Director of an expanded undertaking, the Research Center on the Materials of the Artist and Conservator, in 1976. He is a Fellow of the International Institute for the Conservation of Historic and Artistic Works and an Honorary Fellow of the American Institute for Conservation. During a leave of absence in the spring of 1961, he served as Visiting Scientist, the first lecturer in science at the Conservation Center, New York University.

Paul N. Perrot included six years of study at the Institute of Fine Arts in his varied educational background. In 1972 he assumed the position of Assistant Secretary for Museum Programs at the Smithsonian Institution. In some twenty years at the Corning Glass Museum, about a dozen of those as the Director, he served as an exhibitor, scholar, and major stimulus to scholarship in the history of glass. He is currently Director of the Virginia Museum of Fine Arts in Richmond.

Henry M. W. Hodges studied pathology at the University of Cambridge before the Second World War and, following his service in the Royal Navy returned to the University of London to pursue graduate studies in archaeology. He was appointed Assistant Lecturer in Archaeology at the Queen's University, Belfast and, in 1957 returned to London University as Lecturer in Archaeological Technology and Conservation. From 1974 he served as Professor of Artifacts and Archaeological Conservation at Queen's University in Kingston, Ontario and then as Director of the Queen's University Art Conservation Program. He is presently Secretary General of the International Institute for Conservation (IIC).

Craig H. Smyth served as Officer-in-Charge and director of the Central Art Collecting Point in Munich, Germany (1945-1946), responsible for the recovery and return of stolen works of art. Since 1950 he has been associated with the Institute of Fine Arts serving as its director from 1951 through 1973 and then as a member of its Board of Trustees. From 1973-1985 he served as director of Villa I Tatti, the Harvard Center for Renaissance Studies in Florence. He is the author of numerous articles and and books including Mannerism and Maniera, Bronzino as Draughtsman, and Michaelangelo Architect (with Henry Millon).