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Combining Art and Science

The National Gallery of Art
Research Project in Artists' Materials

By ROBERT L. FELLER PH.D. '50
MORE THAN fifteen years ago, John
Walker, the present director but
then the chief curator of the National
Gallery of Art, Washington, D.C., called
to the attention of authorities at Mellon
Institute the fact that the contemporary
artist was still using linseed oil, canvas,
resins and pigments that had been tra­
ditional for several hundred years. More­
over, the conservator or “restorer” of
paintings was still mainly using traditional
techniques in the important task of pre­
serving paintings in museum collections.
In spite of the development of many re­
markable new materials in industry and
commerce, the introduction of modern
pigments, adhesives and drying oils was
noticeably slow in these two areas of ap­
lication. Walker suggested that a research
laboratory should be established to fa­
cilitate the development and introduction
of improved materials for use by the con­
servator and creative artist.
The result of these discussions was the
establishment of the National Gallery of
Art Research Project at Mellon Institute,
Pittsburgh, Pennsylvania, in 1950. This
long-term program has been made possi­
ble through the generous support of the
Old Dominion and Avalon Foundations. It is the longest continuous research effort
in this country directed specifically toward
the development of new materials and
techniques for the artist and the museum
conservator.
The research project at Mellon Insti­
tute has concentrated on basic research.
In fifteen productive years, the work has
attracted international attention. In these
busy years, however, we have seldom
found time to discuss the principles that
have guided the work. I would, therefore,
like to outline some of the concepts that
have given direction to the research proj­
cert and to review some of the accom­
plishments.
The major museums of the world today
call upon technical advisers to assist them
in the care of their collections. The Na­
tional Gallery of Art chose to take ad­
vantage of the personnel at Mellon Insti­
tute in this capacity. This was an ideal
choice. This institution brings together,
der under one roof, a technical staff of more
than three hundred and fifty persons en­
gaged in fundamental and applied re­
search in the physical sciences. As such
a laboratory, Mellon Institute has more
than fifty years of experience in providing
technical advice on such diverse subjects
as corrosion, analytical chemistry, plastics,
paper and microbiology. Thus, over the
years, the experts here have not only
assisted in the work of the research pro­
ejct, but have been called upon to advise
the National Gallery of Art and other
museums regarding a wide range of prob­
lems: illumination; the preservation of
silk, photographs and prints; and the
examination of pigments, resins and sol­
vents.
In view of the diversity of technical
problems that confront a modern museum,
we believe that significant advances in
the conservation of museum collections
can best be achieved if the specialist with
advanced knowledge and training is in­
troduced to the museum problem that
needs solving. The research project has
done much to foster liaison and inter­
disciplinary cooperation between techni­
cal specialists and museum personnel. We
have not only drawn upon the personnel
at Mellon Institute but also upon experts
in other institutions within the Pittsburgh
research community and elsewhere. Edu­
cational institutions and industrial cor-
The findings of Dr. Feller and his co-workers led to the installation of special plastic ultraviolet filters over the ceilings at the National Gallery of Art.
and practical applications already realized.

When the investigation of varnishes had advanced sufficiently that practical tests could begin, the research project fully recognized the importance of "technical service" and advice. A regular practice was made to answer the call of colleagues and to visit museums on short notice to answer questions concerning the use of new materials. It was not enough to have found durable new resins, for example. It was also necessary to recommend solvents that would allow the new varnishes to be brushed or sprayed. Traditional solvents had to be replaced with new ones.

Working closely with the practitioner in the field, we have assisted him in learning how to use the new products, to reduce as much as possible the time between development in the laboratory and practical application. There are, however, a number of fundamental reasons for slow acceptance of new methods in this work. A major reason is that the museum objects are of great historic and artistic value. It is necessary to be especially cautious in the application of new materials on such irreplaceable items. Accelerated aging tests can give only partial help. New methods and materials must also be given the test of time. Our tests on new varnishes now extend over twelve years and the fading tests on pigments, about seven.

New information does little good, of course, if it is not passed along. The studies on varnish were summarized in a book, _On Picture Varnishes and Their Solvents_, published in 1959 by the Inter-museum Conservation Association, Oberlin, Ohio. Much of the background information on the photochemical problem has appeared in two extensive reviews. On the average, one publication on each of the two main areas of investigation has appeared every year.

At about the time that the research project was established, the International Institute for the Conservation of Historic and Artistic Works (IIC) was founded. This professional society, which now numbers more than a thousand members, has been served by the research project in a number of ways. The semi-annual _Bulletin of the American Group—IIC_ has been edited and published by the author for the past five years. Abstracts of technical publications have been regularly prepared, and for the past three years the author has served as associate editor of _IIC Abstracts_. During the past year, the research project also sponsored the publication of a much-needed subject index to an important early journal in the field, _Technical Studies in the Field of the Fine Arts_.

To provide a sound foundation of knowledge upon which to build greater understanding and future developments, long-term investigations of basic problems are vitally needed. Through the generous support of the Old Dominion and Avalon Foundations, the National Gallery of Art has pioneered in sponsoring such an approach to the problems of the materials used by the museum conservator and the creative artist.

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Dr. Robert L. Feller's work brings together a long association with art and with science. A native of New Jersey, he studied painting and as a hobby early in life and continued the study of art at Dartmouth, where he received his bachelor's degree in chemistry in 1941 and where he was art editor of the campus humor magazine. He entered the Graduate School at Rutgers and received his M.S. in 1943 and his Ph.D. in physical organic chemistry in 1950, finding time while a graduate student to contribute cartoons and drawings to _Anthologist_.

In 1950 Dr. Feller joined Mellon Institute as Fellow in charge of the National Gallery of Art Research Project on artists' materials and became Senior Fellow in 1963. For half a year in 1961 he was on leave of absence as visiting scientist at the newly-established Conservation Center at the Institute of Fine Arts of New York University. His work at Mellon Institute has earned him considerable repute in this country and abroad.

Dr. Feller is a member of numerous honorary and professional societies, including Sigma Xi, Phi Lambda Upsilon, American Chemical Society, American Association for the Advancement of Science, Federation of Societies for Paint Technology, museums associations in the United States and England, the Intern-Society Color Council and the International Institute for the Conservation of Historic and Artistic Works (IIC). A Fellow of IIC since 1956, he is a member of its governing council, associate editor of _IIC Abstracts_ and editor of the _Bulletin of the American Group—IIC_. For the past two years he has been chairman of the American Group—IIC.

His work has led to appointments in an advisory capacity to many museums and professional organizations. He is a member of the advisory board of the Intermuseum Labaratory at Oberlin, Ohio; the Board of Consulting Fellows of the Conservation Center, Institute of Fine Arts, New York University; the committee on laboratories and the committee on the introduction of synthetic resins in conservation of the International Council of Museums; and the National Bureau of Standards' standing committee on permanent artists' pigments. Last year he was invited to become a consulting fellow of the Museum of Primitive Art in New York City.

Dr. Feller is co-author of a book, _On Picture Varnishes and Their Solvents_, and has published and lectured extensively on varnishes, resins, solvents and the deteriorating effects of light.