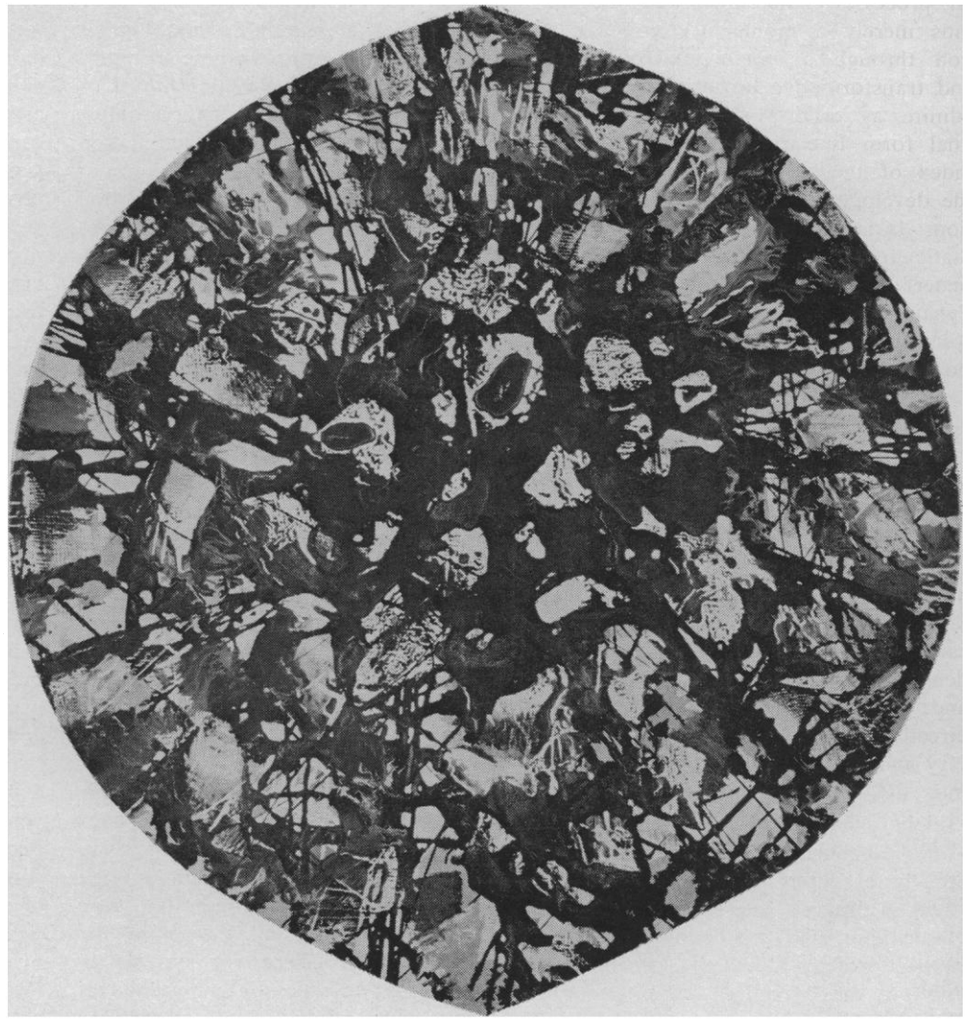
Art in Science



In both art and science today, change and the potential for change are clearly expressed. Whatever we may choose to call beautiful in either sphere will be rooted in the flux and flow of natural events, and forms and patterns as revealed by science have esthetic elements in common with the forms and patterns created by artists.

To call attention to these common elements, an exhibit entitled "Art in Science" will be shown in the University of California Student Union at Berkeley during the 1965 annual meeting of the AAAS. This exhibit, first presented at the Albany, New York, Institute of History and Art, was assembled by Mort Grant and me with the cooperation of the State University of New York at Albany, art galleries and artists in the northeastern United States, and many universities and scientific research laboratories across the country.

Our criterion in choosing the items to be exhibited was simply that their patterns, lines, and colors should give pleasure; we thus sought to provide evidence that science enables us to find beauty as well as scientific truth.

Present-day science is characterized by the use of instruments, ranging from the electron microscope to those with which we study outer space, which provide new ways of viewing our environment. Contrast this with, for example, the Wilkes Expedition of 1836, where the artist Titian Ramsay Peale and the scientist James Dwight Dana collaborated in recording the landscape and the phenomena which confronted them in their explorations. The scientist of today frequently explores new realms where the majority of artists cannot follow and where their presence as collaborators and recorders is not required. The varied techniques of photography have replaced the artist in the processes of scientific investigation. And yet the artist and the scientist still work toward similar goals, both seeking to formulate what experience reveals to them. No longer are their formulations simple "portraitures" of nature. Rather, their experience is expressed in the analysis and synthesis of strange new forms, patterns, and processes.

The observer will recognize striking similarity between the forms of art and those of science. Of this similarity, Willy Jaggi says, "Conscious influence is out of the question; on the contrary, the art historian and scientist, approaching the problem independently, show us here that the real causes are to be found in the intellectual climate of our time." The meaning of this similarity is worthy of consideration by both humanist and scientist.

In 1953, Paul Weiss, in an address given during the annual meeting of the AAAS, expounded a concept of form by which art and science can be related: "In the last analysis, whatever organic form we view has had its his-

tory and has come to be what it is through long sequences of developmental processes. And since all form is thus merely a momentary cross section through a stream of formative and transformative processes, what we admire as order and beauty in the final form is only a product and an index of the measured orderliness of the developmental actions and interactions by which it has come about. Static form is only a precipitate of underlying and antecedent formative dynamics . . . the beauty of forms rests on the lawfulness of their formation."

In Basel in 1958, Rüdlinger, concerned with significant similarities, organized an exhibit of materials from art and science. This exhibit, entitled "Parallel Forms in Art and Nature," showed, as Schmidt reported, "in quite general terms how art, from the moment it began to depart from the representation of visible objective reality, came curiously near to realities hidden from the naked eye." Both science and art have moved away from the directly visible world of the 19th century and have moved, in parallel paths, into the world which we can know visually only indirectly.

More recently, Gyorgy Kepes, painter and professor of visual design at M.I.T., has called for increased linkage between the parallel paths for "inter-thinking between different disciplines in the visual arts and scientific and technical fields." This is more than overdue, Kepes says, for "lacking orientation in the total contemporary world, which holds as much promise as it does menace, many artists have inevitably withdrawn into themselves. . . . Cornered and confused, some of them disguise brutality as vitality and intellectual cowardice as existential self-justification." Kepes urges the search for "new technical tools and materials, new approaches to teamwork among creative individuals in the Arts and in the Sciences with different backgrounds and training, new awareness of the interplay of visual factors in the dynamic urban scene—these are the challenges to collaborative daring."

In "Art in Science" we have searched for new approaches to collaboration in our attempt to give meaning to our new views of the world and of man. We did this, because despite our appreciation of the comfort and mobility which science has given to modern man, we recognize that these are not enough. Man must seek further for a sense of values that will again enable him to feel "at home" in his landscape. George Sarton defined the problem in his Colver lectures in 1930 in proposing a "New Humanism" which, as he said, "will not exclude science; it will include it and . . . it will be built around it. Science is our mental armature; it is also the armature of our civilization. It is the source of our intellectual strength and health, but not the only source. However essential, it is utterly insufficient. We cannot live on truth alone."

The uniqueness of the exhibit "Art in Science" lies in its goals and organization. In the original show approximately 80 percent of the material came from science fields. The rest was made up from invited materials from established artists who have concerned themselves with themes related to science and from a regional art competition which focused upon artistic response to science. This balance of program established a linkage between the arts and sciences through the beauty of their materials and products. No attempt was made to change the role of either artist or scientist or the character of their materials. In this form the exhibit was founded upon the appreciation of beauty common to all men. We believe the exhibit demonstrates a new and promising approach to resolution of the apparent isolation and depressed communication that seem to characterize relations between the arts and humanities and the sciences. The exhibit should be viewed with these goals in mind. They are worthy of further consideration.

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(Opposite page) Released Energy, *oil on canvas by Stella Scarano, Utica, New York. It was awarded fourth prize in "Art in Science" regional competition. (Upper right) Electron micrograph of lens tissue (about × 2300)* [*Dale L. Zabel, Interchemical Corporation, Clifton, New Jersey*]. *(Bottom right) Crystallized microscope slide mounting medium (about × 23)* [*Alfred A. Blaker, University of California, Berkeley*]. *All photographs are part of the "Art in Science" exhibit.*