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5000 MILES TOWARDS A CONFERENCE

In a borrowed home at Big Sur I look southerly along the coast where the mountain curves down to the ocean. Here nature spreads diagonally visible and open. Artists live here, but there is no art colony. The new freeway leaps from the south towards the toadstool cluster at San Simeon. Above, northwards, after a five-year battle, the Highway Department has withdrawn from its plan to build a four-lane freeway along the ocean faces of the Sur. Gradually one house and then another will be added. The old shacks that have hidden away so many of the community will go down or be rebuilt. The long and lonely Sur coast will accommodate other refugees in its large peacefulness, too big for art I believe—art needs neighborhoods.

When our youngest son died at the end of April after six years of recovery and accomplishment in spite of total paralysis, I took a leave of absence from the office and went away with my wife from home for a long travel through the Southwest. We went first to San Francisco and then by way of Placerville behind the Sierra, brilliant with fresh snow that weekend, down to Big Pine and through lava mountains and desert to Las Vegas and Hoover Dam, thence by way of Zion and Bryce Parks and the high bridge over the Colorado at Glen Canyon Dam across the Painted Desert to Gallup and Albuquerque, to visit our grandchildren. Afterwards we drove north along the Sangre de Cristo range to Salido, east to Royal Gorge, and by an abandoned narrow-gauge roadbed up through Phantom Canyon to Cripple Creek, a former ghost town ghosted again this year by the dollar depreciation of gold, then to Colorado Springs and Denver, and by highway 6, and a side-trip to Aspen, through the Colorado mountains and the deserts of Utah and Nevada to the Yosemite and at last the Sur.

Several years ago I had sent an article, *Who Are The American Intellectuals?* to a new magazine *Arts and Society*, published by the Adult Extension Division of the University of Wisconsin. This article has evidently won reputation, because it was early this year, an invitation to write at length on the subject *The American Artist* and later, June 8-10, attend a conference on Regional Art Centers at Wingspread, a large residence built by Frank Lloyd Wright, now given by its owners to be the conference center of the Johnson Foundation near Racine.

A miracle is something that does happen. That is one of the themes of my too constricted paper, which aiming at the requested 15-25 pages came out in the fourth month and final one of 38 of my pages or reyped to be issued as a working paper for the conference, 47 pages with proper margins. It will be published in this form in a subsequent issue of *Arts and Society* among the other working papers.

Miracles do happen: one can expect but not depend on such event. Yesterday and this morning the Nebelmeer, a layer level of cloud seen from above, has hung low above an ocean fretted with whitecaps. Why does not the wind, close fretting the whitecaps, disturb the cloud?

If your are indifferent to the event, you will not see the miracle. To explain it reduces it to reasonableness. And then, if the explaining has not dispersed but rather concentrated your attention, you may discern what is inexplicable. Between explaining and indicating, or by closer attention to what can be indicated, only a necessary minimum of explanation dispersing the attention, one may, as in a museum, direct: look at this, this, this. One cannot make another see, yet, surprisingly often, that will happen.

At the Museum of Fine Arts, Colorado Springs, one room of selections from the Spanish and Indian art of the Southwest centred on those forces that produced the crucified Christ of the Flagellants, real hair, bodies pierced and bloodstained face enrapatured in pain—protest without need, one may think without desire, of improvement or correction. This is as it is: a ritualized and formally satisfying hopelessness, without cynicism. One goes through into a dark chamber of the world's religiousness between the practical Stone Age, surviving late in the Southwest, and the latter religiousness of the transcending explanation: thought that eventuating into reason generated philosophy, sentimentality, cruelty, and the blind chance of events, on the one side the faith of the Flagellants, on the other economic materialism. Thrusting out beneath the drab black of a seated figure of Death, the pink, great, elongated feet of its pursuit. In a case outside three tall, sculptured dolls, Christ, John the Baptist, and the Virgin, dressed in lineaments of humanity, the Virgin in an ankle-length, plain woman's dress of the last century, hair drawn tightly back, the entire strong body inclining slightly forwards, holding out great hands as crude and dispropionate as the pink feet of Death—fretted with whitecaps, asking no worship, willing help. Very different from the lovely doll Virgin in the Cathedral at Santa Fe, its exquisite ornamental dress a symbol of love in worship, that has survived in protection from the early days of the human, one may think, but no longer a visible force.

Behind each image has been a human intelligence and vision—and behind, working through that? Here in another case five pieces of pottery from the prehistoric Mesa Verde hold attention by character of the ornamental design, as if by an enlightenment. One reenters the prehistory of design, or words, or thought, or knowledge, groping backwards into time and forwards into the reality of abstraction towards presentness, a new intelligent dimension.

Crippled, as everywhere about us, by the educator's inattentive lie, the stumble of unimagination. At the Denver Museum of Natural History one reads, above the entrance to a superb selective display of the prehistoric American cultures, the fixed foolish explanation that these people came to America 10,000 years ago by way of Bering Strait. In a nearby room are displayed Sandia and Folsom points (spearheads), each as it was found, among the bones of the mammoth which died by it; the bones still embedded in the clay, as the bones have been found in the caves in the desert, that has held them, the accompanying notice tells, 30,000 years. No one to explain how the primitive chippers of these excellent sharp points came to the plains below the receding ice during the great age of mammals. Are not these hunters, themselves mammals, as indigenous to the plains as the rhinoceros, the camel antelope, the mastodon, the dire wolf, the surviving bison, whose bones have been found there in quantities unequalled elsewhere.
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  contents of each issue of ARTS & ARCHITECTURE is available to subscribers in a Microfilm edition.
in the world? So often the facts point straight, while theory points astray.

Art, the work of art, epitome of pointing fact, leads as crooked ways among real painted mountains as the road of the Emperor Ming-huang’s Journey to Shu, that I saw among the Chinese masterpieces from Formosa at the De Young Museum in San Francisco. Here were the great scrolls, masterpieces of the Tang, the Five Dynasties, the Sung periods, hanging on the walls or unrolled in cases, all under glass, the glass directly reflecting, vertically or horizontally, the overhead skylights in each room, so that what began as aesthetic privilege became torture for the eyes. The single chance of a lifetime to see together in one place these masterpieces of Chinese painting, and one could not for a moment escape the callous indifference to the facts of human eyesight or forget the bad taste of the administrators. The attributions were so neatly there, each with period and date, yet if I am to judge by three authoritative books on the subject I have since consulted many dates were incorrect. One could not carry away a catalogue for reference, because the catalogues had sold out during the first days of the exhibition and had not been reprinted. That might not have mattered so much, if one could have seen the paintings undiminished. From nearly across the room I was able to make out the grandeur of one mighty landscape; it was if I recall correctly, Traveling Among Streams and Mountains by Fan K’un.

I reveled among the smaller paintings in the lesser rooms, rejoiced in the presence of the four Chou bronzes, each exemplary, and the earlier pictographic writing incised in them, twisted my Western wits to distinguish the abstract aesthetic on rolls of ancient Chinese script—in some styles it is so evident, but these one suspects may be the ornate—and went at last, a second time, to rest my sight on the two types of Sung blue glazes, emblems of eternity, not to be seen but seen through, brought to focus on two square shallow bowls of equal size, set together, one of each glaze.

Bringing to remembrance how, many years ago, the Director of Fine Arts of Washington, D.C., burdened with an eager young man who knew nothing, whisked him through the rooms of Whistlers in the Freer Museum, past the painted scrolls, the carvings, to come at last before a case, where in one corner sat a tiny bowl. “It is our greatest treasure,” he told me. “It is Sky-after-rain.” Afterwards he showed me the twenty-foot Indian wall carving, a Pantheon of gods, before which in the preceding week Matisse had stood a half-hour marveling at the clean balance of asymmetries.

During the trip I have been awed by the past, penetrated by it, when I encountered the helmeted skull of that great fish, abstractly sculptured and more dreadful than the nearby spinosaurus, Tyrannosaurus, that by so many million years preceded the surrounding assemblage of dinosaurus at Denver; the past that tumbled itself actively about me in the geological turmoil of the mountain chains we drove through, the power of thrust that tipped the rock bastions at the magnificent Red Rock theater outside Denver, (where this summer there will be no symphony concerts because the subsidy has failed), the power of ice that shaped the massive domes of the Yosemite.

Regional art centers or a concert subsidy may seem slight mind-play among such anti-intellectual ancestry. The happenstance of the occurrence, requiring perhaps a scheme or programmatic scale of several million years, takes on measurement and plan not at its inception, timeless as the first bubbling of a broth, but in the mind of a thinker, during the brief instant of modern time that has sufficed for this measured reopening of the past, work of expeditions, museums, imagination, science, vision, working with the unstable verities called "facts". The first reaction has been to reject deity; the second would better be to conceive timelessness within time, or the reverse, each being suitably inside the other, seeking as never before the continuing miracle in the material, the event that is not of chance but of unexpected necessity outside chance. Materialistically one asserts: If this had not happened, that could not have occurred; whereas the statement would within scope of present reality have to be: This exists, therefore that.

Kenneth Burke writes, in the latest and most close-packed of his philosophical studies of rhetoric, The Rhetoric of Religion: "A big eye-opener to me was a chapter in Bergson's Creative Evolution, on 'The Idea of Nothing.' Surely this chapter is a..." (Continued on page 28)
SURREALISM by Patrick Waldberg (Skin, $6.50, distributed by The World Publishing Company).

Patrick Waldberg investigates the work of the pioneers and pathfinders, Duchamp, Picabia, Man Ray, Hans Arp and those whose work enriched the surrealistic aesthetic and completes his succinct monograph with studies and analysis of such artists as Max Ernst, André Masson, Rene Magritte, Yves Tanguy, Joan Miro, Hans Bellmer, Dorothea Tanning and others important to the movement.

Paul Eluard described Surrealism as something more than a doctrine or a school; he referred to it as a "state of mind." It was a state of being which proclaimed the power of dreams, insisted on the value of automatism, and found truth in the irrational with deference to the thaumaturgic and oracular. Guillaume Apollinaire named the movement Surrealism and Andre Breton fathered it with an unprecedented fervor. Patrick Waldberg likens Breton to the Jules Verne character, Doctor Ox, "the crotchety scientist who had invented a machine that launched a ray increasing the oxygen content in the air of a small town which had given him a bad reception. This had the effect of goading the ordinarily placid townsfolk to a sort of madness; people started bawling at each other, picking futile quarrels; discord was sown in quiet homes, friends fell out and free fights were the order of the day." Breton being the Doctor Ox of Surrealism. He was all reality, and preached the beauty of the Marvelous. Surrealism did much to free the world of art from academicism and changed our way of seeing things. There are 60 reproductions in color, a chronology and a selected bibliography.

GRAPHIS 100 (Graphis Press, Zurich, $4.50).

A Jubilee edition of this well known publication, double its usual size and devoted to a single theme—the Sun. Lavishly illustrated in color and black and white and printed on a variety of special papers this one-hundredth issue will undoubtedly become a collector's item. GRAPHIS 100 tells the story of the Sun as a symbol of Light, Truth and Joy in the art of mankind and its contents include: Global Dispersal of the Sun Cultures; Solar Symbolism among Ancient Peoples—the place of the Sun-god in the religions of Egypt, Mesopotamia, India, the Mediterranean world and pre-Columbian America; Christian Sun Symbols; The Sun in the Sign-Language of Alchemy—In its magic books the face of the Sun is a forerunner of surrealist painting; The Sun in Popular Art and Customs; At the Sign of the Sun—the Sun inn in Central Europe; Sundials from the 13th to the 18th Century; The Sun in Applied and Advertising Art; Fierro Fornasetti and His Sun; Antonio Frasconi: A BOOK OF MANY SUNS—Frasconi's exciting Suns in woodcuts, including those in a special limited edition which is an anthology of writings on a solar theme; The Sun in Contemporary Painting and Sculpture; The Sun in Jean Lurcat's Work; The Child and the Sun. GRAPHIS 100 contains 188 pages, over 378 illustrations of which 38 pages are in full color. Captions in English, French and German.

FORM AND SPACE: Sculpture of the Twentieth Century by Eduard Trier (Frederick A. Praeger, Inc., $15.00).

Avoiding the usual chronological method, Dr. Trier has given careful consideration to the problems of form, meaning and purpose of modern sculpture by describing the work of some 182 sculptors of various countries. In paying the strictest attention to the mutual arrangement of illustrations and text, the author succeeds in bringing the reader in close contact with the works themselves. Among the artists represented in the 215 particularly choice photographs are Arp, Brancusi, Giacometti, Léhmbruck, Lipchitz, Marini, Moore, Picasso, Rosenthal, Runyon, Vouillos and Zadkine. Recommended.

MERCHANTS OF ART: 1880-1960 by Germain Seligmann (Appleton-Century-Crofts, Inc., $10.00.)

An engaging account of the colorful Jacques Seligmann, founder of the famous Galerie Seligmann on the Place Vendome, later purchaser of the Palais de Sagan—the sumptuous 18th century house in Paris which he used as a museum for such important clients as J. Pierpont Morgan, the Barons de Rothschild, Joseph Widener, William Randolph Hearst and others. The dedication of an unusual man to the world of art as told by his son in a sequence of anecdotes and experiences involving great collections, staggering sums of money, discriminating purchasers and indiscriminate magpies. Charming reminiscences by the savant son of a savant father.

townscape by Gordon Cullen (Reinhold Publishing Corp., $10.00).

The assistant editor of the estimable ARCHITECTURAL REVIEW stresses the "art of relationship" in his keen examination of the elements of environment: closure, defining space, pedestrian ways, hazards, etc., in a casebook for successful town planning. He rounds out his thesis with eight town studies and several proposals for new projects—all illustrated with a profusion of photographs and sketches. A witty and intelligent survey with cogent remarks on topotra. Should not be overlooked by architects and town planners. Recommended.

BOOKS RECEIVED:

THE ARCHITECTURE OF MONUMENTS; F.D.R. Memorial Competition by Thomas Creightons (Reinhold Publishing Corp., $7.95).

DESIGN IN MOTION by John Halas and Roger Manvell (Hastings House Publishers, $12.50).


THE EARTH, THE TEMPLE AND THE GODS; Greek Sacred Architecture by Vincent Scully (Yale University Press, $15.00).

HOTELS, RESTAURANTS AND BARS by W. S. Hattrell & Partners (Reinhold Publishing Corp., $15.00).

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The notion that "science" is something that belongs in a separate compartment of its own, apart from everyday life, is one that I should like to challenge. We live in a scientific age; yet we assume that knowledge of science is the prerogative of only a small number of human beings, isolated and priestlike in their laboratories. This is not true. The materials of science are the materials of life itself. Science is part of the reality of living; it is the what, the how, and the why of everything in our experience. It is impossible to understand man without understanding his environment and the forces that have moulded him physically and mentally.—Rachel Carson.

Never in history has there been a greater need than today for the popularization of science. It has now become almost trite to speak of the gap which separates the scientist and specialist from the ordinary man in the street; and it hardly seems necessary nowadays to repeat that the steady widening of this gap is fraught with danger. Nevertheless it may be worth stressing two distinct aspects of the dangers involved.

The public is usually ill-equipped to judge scientific and technical developments adequately and so is at a loss when called on to take decisions which may have serious social or political consequences. Similarly, the scientist and technician run the risk of losing contact with their fellow citizens and hence of becoming an isolated group in their community. The scientist and research worker need a public which can understand them, just as the public needs to be able to follow the work of the scientist. But the task is far from easy.

People are no longer content to learn about the more or less classic achievements of science in the past fifty years; they are eager to understand and talk about the new thinking of science today, such as the discarding of the principle of parity or the new theories of science today, such as the discarding of the Carnot principle, represent the syntheses of thousands of experiments and calculations.

It is from these heights of the scientific world that the observer can expect to see all the valleys converge on a common source; it is from these heights that he can hope to reach the pinnacles from which he will obtain a synthetic view of the whole complex system whose exploration has taken so many years.

What is it that prevents the untrained public from following the scientist in this ascent? I personally believe that it is the capacity for abstract thought that is lacking. Just now I mentioned those fundamental concepts which are linked with one another by basic laws and principles and the synthesis of which provides the vast framework of modern science. Those concepts are essentially abstract. Certainly they are based on familiar ideas, on those things that are self-evident—numbers, size, speed, position in space and time of similar or dissimilar objects; but these familiar ideas must be the groundwork for intense intellectual effort leading to abstract structures like those of mathematics. Only thus is it possible to clearly understand a fundamental concept such as that of the relativity of space and time.

Some highly skilled writers have believed it impossible to present to a reader who is intelligent, but has had no fundamental scientific training, the chain of reasoning and the logical construction that lead from the concrete and familiar concept to the abstract one. In certain cases this can be done without mathematical formulae and by using everyday terms. Unfortunately, however, such a feat produces scarcely any more real understanding than does the watching of a conjuror’s tricks. The reader thinks he understands; each step of the argument seems to be within his grasp; but if afterwards he tries to handle the abstract con-

(Continued on page 29)
Although my background has been in painting, in recent years I have been compelled to express my ideas in ways relative to performance. I have urgently felt the need for stretching imagery into a format of presentation in real-time, real motion, real space. A suitable architectural environment had to be conceived to receive the dynamic play of form. Special equipment and techniques for manipulating light and sound in space had to be developed.

As a Fellow of the Graham Foundation for Advanced Studies in the Fine Arts, I had an opportunity of establishing a studio for experimentation in what I call SPACE THEATRE. The area for performance was an icosahedron—twenty triangular surfaces approximating a spherical enclosure—and spectators sat in three open segments on the ground plane. The imagery was moved over the canvas surfaces by means of a central battery of projectors.
directed at rotating mirrors and prisms. Tape music was often used. Also musicians, located at various positions outside the space, responded improvisationally to the moving image endowing performance with the intrinsic dimension of live sound.

For five months public performances were realized. About thirty people could be accommodated and it was my purpose to totally involve them in intense cyclic dramas of light and sound. Image was alternately abstract and concrete and sound was electronically synthetic as well as instrumentally real. Events, both audio and visual, were formally organized in a serial manner and within these rigid references, chance and improvisation were allowed to inject a certain element of astonishment. I believe it is in the interplay of the programmed and the spontaneous that this art form finds its energy and its meaning.

Where to from here? — I have been encouraged by this experience to consider the establishment of a permanent theatre for performances of integrative scope. Poetry, dance, music and projected imagery might represent the mise-en-scène of the envisioned SPACE THEATRE. Encompassing all, a structure must be designed to contain with total flexibility all the potentialities of dramatic event. It is my hope that such a space will present a truly sympathetic and contemporary reference for expression.

PROJECT UNDERTAKEN THROUGH A GRANT FROM THE GRAHAM FOUNDATION FOR ADVANCED STUDIES IN THE FINE ARTS. MR. COHEN WAS A GRAHAM FELLOW FOR 1961.
THE UNIVERSITY OF ILLINOIS AT CONGRESS CIRCLE — CHICAGO

On today's typical university campus, a building is devoted to a single area of study. A chemistry building, for example, houses chemistry classrooms, laboratories for research in chemistry and offices for teachers and administrators in the department.

In a dramatic departure from traditionalism, designers of the University of Illinois at Congress Circle have planned special purpose buildings to serve functions rather than disciplines. Each university activity will be housed in the type of structure which can be utilized most efficiently and economically.

This functionalism is the keystone of design for the new campus, which consists of an academic core of 40 acres and of only 106 acres in the ultimate stage of development, making it one of the most intensively developed university locations in the nation.

The problem facing the architects was to build a campus for 9000 students in the relatively short space of three years, to design it so that facilities can be added and expanded to accommodate 20,000 students within another five years, and so that it can continue to grow as conditions demand beyond that time. The architects' imaginative solution relates the campus both to its inner individual environment and the outer urban environment in a most pleasing manner, solves problems of traffic flow both to and within the campus and achieves coherence in design.

Three concepts guided them in drawing the master plan: buildings must be expandable, to provide for orderly growth; they must be flexible and they must be interchangeable, to provide for new teaching techniques such as the increasing use of television and films and for the closer interrelations among the academic fields of study.

Students going from one class or laboratory session to another must move in sizeable groups in short periods of time. Consequently, classrooms will be situated in clusters of three- or four-story buildings that do not require passenger elevators for mass movement.

Laboratories also will be in low-rise buildings, but in structures separate from the classrooms. This division yields economies in that laboratories require 12-foot ceilings, classrooms only 9-foot ceilings. Within this design concept, both types of structures will be usable for different types of courses, providing flexibility. There will be no social science building or chemistry building. Offices and seminar rooms, used by smaller groups and with more evenly distributed traffic, will occupy elevator-served high-rise buildings that can make maximum use of land.

Finally, by laying out in advance the master plan for the total campus as it is expected to develop over the next decade and beyond, the architects have been able to provide for economical expansion. All high-rise buildings are on the outer rim of the campus, surrounded by large open spaces, providing maximum visual impact upon the surrounding area and establishing the campus architecturally as an urban institution. Low-rise buildings are in the center, making the campus a self-contained entity. Thus is the campus related both to the individual student within and to the outer urban environment. The building distribution achieves a result that is neither a "concrete canyon" nor a sprawling campus unsuited to an urban location where economical use of land is an important factor.
At the center of the campus, where the most intensively used facilities will be located, will be "The Great Court," actually the roof of the Lecture Center. The four large lecture rooms in the center are expressed on the court by four circular areas paved in contrasting materials. The court will connect with the express walkway linking the north and south sides of the campus, and with the Union and Library, shown in the above photograph to the left and right of the Great Court respectively.

The staff office and administration building, left, will be the tallest building on the campus, 23 stories. It is to be built by September 1964. The auditorium, right, is scheduled for construction sometime a little after 1969.
PART II

An impressive proportion of the art community is violently hostile to the sciences. It is not uncommon to find artists taking pride in their scientific illiteracy, as if comprehension of mathematics or biology, physics or genetics might betray their creative daemon. This antagonism to science is premised on the notion that the fruits of scientific thought have proven inimical to human purposes. The artist's ways of thought are essentially poetic rather than ratiocinative. His work therefore enlarges consciousness in ways excluded from the purely scientific enterprise. Such schools of twentieth century art as Expressionism, Dada, Surrealism were conceived by their initiators as poetic assertions of primal experiences threatened with extinction in a world intellectually governed by the scientist.

Alienation of the artist from one of the mainstreams of modern life appears to confirm Sir Charles Snow's contention that our society has fissioned "two cultures"—the scientific culture at the intellectual control panel of modern civilization, and the traditional culture of the arts out of touch with the crucially important realm of the sciences. Sir Charles has observed that even though many first-rate scientists are esthetically illiterate, their work does not require them to be familiar with the traditional culture of the arts. However, such is the nature of the artist's work, everything that happens to him and transpires in the world around him is grist for his creative mill. The artist, therefore, has more to lose in the game of mutual illiteracy, particularly as the scientist is the prime mover of change in our world, and the person most future-directed in his thinking.

The hostility to science of many individuals in the art community often stems from failure to comprehend what it is they oppose. The artist, by training and temperament, tends to shy away from the kind of mental processes required for mastery of a scientific discipline. Frequently he compensates for his inadequacy in academic learning by devoting his full energies to the work he can execute with confidence. But if the intellectually naive artist is common enough, his numerical preponderance has not exerted a decisive influence on the course of modern painting and sculpture. Developments in twentieth century visual art usually have been initiated by painters and sculptors intellectually sophisticated enough to be susceptible to the currents of ideas exciting the inquisitive minds of their generation. In this regard, Sir Charles' case for "the two cultures" is flawed.

Novelist as well as scientist, Snow shares the common tendency of writers in England and America to be out of touch with developments in the nonverbal arts—most particularly, painting and sculpture. Indeed, very few poets, novelists, literary critics and historians in the English-speaking world appear to have more than a nodding acquaintance with the visual art of their time, as contrasted with the sophisticated awareness of twentieth century painting and sculpture usually found among their counterparts on the Continent and Latin America. Sir Charles has made the mistake of equating the quarantine of science in twentieth century English and American literature with a similar cordon sanitaire in the visual arts. But the works of many genuinely creative painters and sculptors reflect the impact of changes in the modern world brought about by modern science and technology. Futurism represented a bold and aggressive attempt to come to pictorial terms with the age of speed, the machine, the dynamic tempo of modern urban life. Cubism, perhaps the most consequential movement in the art of our century, was involved in the translation of scientific concepts of the physical world into a pictorial language. Such innovators of Abstraction as Kandinsky and Mondrian abandoned the reproduction of optical experience as a result of their assimilation of contemporary science. Moreover, those movements in twentieth century art implacably opposed to the rule of reason—Expressionism, Surrealism, Abstract Expressionism—present images that could not have been created if it had not been for developments in the sciences. Many of the leaders of these movements have been far from scientifically naive, even though a goodly number of their followers assume a posture of opposition without quite knowing why.

This is not the place to demonstrate the influence of the scientific culture on modern art. Suffice it to say here, the principal tendencies of twentieth century painting and sculpture would not have emerged without the instigation of such concepts as space-time, indeterminacy, relativity, repression, inhibition, and free association. The somewhat shrill opposition of certain persons in the art community to the sciences and technology has obscured the creative sustenance modern painting and sculpture have drawn from the other camp.

Over the last fifty years, painting and sculpture have accumulated a fundamental capital of ideas—such as the concept that the picture plane is a spatial realm with unique properties; the notion of the visual image as a distinctive kind of metaphor which incorporates the physical substance of pigment, ink, metal, wood or other material; the awareness of the work of art as the end product of a dialogue between the artist and an evolving image; the deliberate exploitation during the creative process of chance, accident, the fortuitous, the spontaneous; the conscious attempt to tap the visual resources of the unconscious. This capital of ideas shows signs of depletion. Meanwhile, many contemporary artists, who have been living creatively on this inherited capital, seem to have lost sight of how it came into existence in the first place.

The second law of thermodynamics—which states in effect, that all energy systems run down—can be seen taking place in the visual arts, just as it has in poetry and the novel, in those forms of expression in which earlier breakthroughs are being refined to the point of exhaustion. The arts need infusions of viable ideas (or energy systems) if they are to enjoy a renewal of creative impetus. Considering the vigorous state of scientific thought at the present time, it would seem that here is a rich vein of ideas awaiting to be mined by the artist.
I do not mean to suggest that science and its attendant wonders are new deities for the artist to celebrate with uncritical enthusiasm. The intoxication of the futurists with the technological wonders of the age constituted a shortcoming of sorts in that it confined their vision to surface appearances of the modern world. A search for forms appropriate to our civilization must go beyond illustration of scientific concepts. Confining the artist to the role of illustrator would be to repeat the fallacy of the futurists' descriptive approach with all of its remarkable intuitive ingenuity. Only a penetrating comprehension of modern science will enable the artist to probe beneath the surface.

The genuinely creative artist is not likely to become a publicist for the new ways of life and thought brought about by the sciences, nor is he likely to hold the scientist in awe as a Superman. Instead, the genuinely creative artist can be expected to call attention in his work to the lacerated human condition in the scientific culture—to anxieties, guilt, despair, repulsions, frustrations, aggressions, to the absurdity of placing god-like powers in the frail hands of men, to the contraction of consciousness in a society dominated by specialists, many of whom are unable to communicate with each other.

The efficacy of science results (in large part) from narrowed fields of inquiry, from concentration on limited goals in research. Therefore all of us are laymen in the sciences, including scientists who have mastered particular specialties. The visual arts, on the other hand, are addressed to the whole man. Indeed, the more science fractures into specialties, the more urgent the need for poetic enhancements provided by the arts. Science and art, we are beginning to realize, are complementary forces, the ying and the yang of the human spirit. Complementary, not conflicting. Science interprets the phenomenal world with reference to the coherences of structure and behavior. Art transforms the phenomenal world into poetic metaphores with reference to emotions unique to man. Both are indispensable to the enrichment of life in our civilization, and each can only benefit from a mature reciprocity with the other.

Wordsworth was aware of this mutuality of art and science. In the Preface to the 1802 edition of the Lyrical Ballads, he considered the future consequences for poetry of the fledgling science of his era. What he said is worth recalling now—

"If the labours of Men of Science should ever create any material revolution, direct or indirect, in our condition, and in the impressions which we habitually receive, the Poet will sleep them no more than at present; he will be ready to follow the steps of the Men of Science, not only in those general indirect effects, but he will be at his side, carrying sensation into the midst of the objects of science itself... If the time should ever come when what is now called Science, thus familiarized to men shall be ready to put on, as it were, a form of flesh and blood, the Poet will lend his divine spirit to the transfiguration, and will welcome the being thus produced, as a dear and genuine intimate of the household of man."

Wordsworth’s buoyant faith in the mutuality of art and science scarcely can be said to have been fulfilled as agreeably as he predicted. Nevertheless, the substance of the argument remains valid, even though "the two cultures," appear to be racing in different directions. Some observers who despair for the future of the arts in the age of science are convinced that as the domain of scientific investigation widens, the realm of poetry, myth, imagination is destined to become smaller. But we have our myths as they had theirs in the Homeric Age. We have astronauts as they had Icarus. Today the frontiers of the imagination are without discernible limits, thanks in no small part to the intellectual vigor of scientists.

If one grants that Wordsworth's poetic approach to experience in the age of science is essential to the full life, the question arises, "How can the solitary artist, onlooker rather than participant of the scientific adventure, enrich our existence in a world dominated by science?" The answer resides (to a considerable extent) in his very detachment. In a society bent on Togetherness, Membership, Belonging, Organization Man, the Research Team, the artist provides experiences excluded by their nature from Group Activity. The solitary artist, searching for a mode of vision stemming from his personal experience, represents a way of life our systematized and impersonal scientific culture cannot afford to lose.

It is conceivable that one day science and technology may reduce the visual arts to little more than residual reflexes. Then perhaps only perverse characters will seek refuge from computers, laboratories, automated factories, and the ubiquitous eye of Big Brother by resorting secretly to the delights of painting and sculpture. I believe the artist's poetic ways of thought will become more rather than less necessary in the age of science. Our faith in our capacity to manage our affairs admittedly is badly shaken, but our faith in the powers of intelligence and imagination should be secure, provided these powers are fully employed, nurtured and cultivated as our most precious assets. Considering the amount of creative energy now pouring into the sciences, one must anticipate many extraordinary developments. Though the future of the arts appears less certain at first glance (the amount of creative energy entering the arts is comparatively small) the artist enjoys many advantages. So long as he persists in Not Belonging, and approaches his work with daring and passionate conviction, the world he shares with the scientist is full of raw material for him to transform into meaningful works of art. What these pictures and sculptures will look like twenty, fifty, a hundred years from now is almost impossible to imagine. A great deal depends on the adaptive flexibility of the artist, whom I believe will find appropriate visual metaphors for the new ways of life and thought brought about by the scientist, if only because the odds are favorable that the human species will continue to produce that singular, sometimes perplexing, sometimes astonishing, breed of person—the genuinely creative artist.
A shell forms, the edges appear as curving lines, surfaces turn with light, and the nothingness of space gains life, movement—becomes a stage for living, characterizing the continuum of paradoxical events that is the living process. Spaces multiply, grow up and out to create an inner landscape of community.

The concept of free form in building is an integration—a common denominator to which all of the specialized functions of form and use can subscribe. It is putty in the hand—containing all of the floors, ceilings, walls, windows, doors and equipment of building, tightly packed and unified, waiting to be played out into an idea for spatial expression. As the most flexible means with which to describe volume, it alludes to a realm beyond style—can produce an architecture of infinite variation in continuous transition. It offers a way to extend space with movement, making it flow, roam, cascade, drift, become finite or limitless, to reflect the dynamic processes suggested by our new knowing.

In exploring the potential of a monoplastic form one turns instinctively to the arts and to the endless diversity found in natural phenomena and moving relationships. There, the endless variety of pattern and growth provide stimulation and an initial understanding of the breadth of freedom and sense of discipline in the new idiom.

As the means for its being begin to appear our manner of spatial use from room to community will find new flexibility. The physical ties that have bound us and made our past patterns will begin to disappear as the new energies, materials and systems that monitor systems ultimately become the building tools of tomorrow. The machines that make and serve, our omnipresent companions in living, are already beginning to change principle and miniaturize into remoteness—leaving but a button in the hand and the effect of its service.

Only space survives to be shaped and given meaning. This is the art form of the architect.
Project developed under a Fellowship Grant from the Graham Foundation for Advanced Studies in the Fine Arts—1961.
HOUSE BY TIGERMAN AND KOGLIN, ARCHITECTS
The site is located on the north boundary of the Park Ridge Country Club in Chicago with an uninterrupted view for one half mile to the south. This fact, combined with an access road from the north automatically infers the appropriate siting of the structure. The client's spatial and functional requirements resulted in a building of 4,000 square feet disposed over two stories, and consisting of twelve rooms and a three-car garage.

The structure is of conventional framing bearing on masonry bearing walls. The use of materials has been limited to brick, cement plaster, quarry tile and glass on the exterior and sand plaster with Brazilian rosewood paneling on the interior.

Spatially the house was considered to be a continuing series of experiences expanding upon themselves as one would proceed from the access road to the north through the driving courtyard into the house and through to the open vista to the south. A 6'6" high vestibule opens to a top-lit, 26'0" high foyer, under a bridge and down to the living spaces. Enhancing this is a suspended ceiling running transversely through the house to accommodate ducting of the mechanical system. Terraces have been located on the country club side as well as in the entrance courtyard to offer change of vistas insofar as any view, no matter how pleasing, can become oppressive if that is all that is preferred in living spaces. Much of the seating is built into the house in the form of nooks and lookouts located under stairs, or pits down to the through fireplace.
The CBS building was designed by the late Eero Saarinen who completed the plans in 1961. This was his first and only skyscraper, and as his plans neared completion he wrote, "Its beauty will be, I believe, that it will be the simplest skyscraper statement in New York."

The building will occupy the east side blockfront of the Avenue of the Americas between 52nd and 53rd Streets. Expressing the architect's conviction that a skyscraper should be "a soaring thing, the building will be a rectangular, free-standing, granite clad, sheer tower rising 491 feet. It will be centered on a spacious, granite paved plaza which will be slightly lower than street level. The tower will occupy 60 per cent of the site; the remaining 40 per cent will be open plaza on all four sides.

The verticality of the tower is accented by graceful, triangular piers which thrust from the plaza upward to support the building on all four sides. The triangular structural columns also house wiring, heating, air conditioning ducts, and, in the words of the architects, "keep glass areas to a desirable minimum. In addition, they will provide a changing relief of granite and glass with sculptured surfaces as one moves around the building."

The CBS building is scheduled for completion in 1964. The new structure will be one of the tallest reinforced concrete buildings in the country. Its facade will be of dark granite. This color, Mr. Saarinen pointed out in his concept of the building, will convey a sense of permanence, dignity and strength to stand out in its surroundings of metal-paneled skyscrapers.
ARTS & ARCHITECTURE’S CASE STUDY HOUSE NO. 25 BY
KILLINGSWORTH, BRADY, SMITH AND ASSOCIATES, ARCHITECTS
STROMBERG AND SON, GENERAL CONTRACTORS

Progress continues at a rapid pace, and Case Study House No. 25 is nearing completion. Now that the walls are solid and the final forms have developed, the space in the house appears to be right. The relation of the 8'-0"-high living room to the 18'-0"-high courtyard is excellent. The contrast in heights gives the living room an intimate quality. The tall opening of the 17'-0" door to the courtyard develops this space into something rather special. The door for this opening was originally scheduled as solid-core wood, but the possibility of warpage due to its extreme height made a change to metal necessary. The door is being developed by Arcadia Metal Products of a honeycomb core and aluminum seamless sheets on either side. It will be painted and hung with six ball-bearing hinges.

The plastering is complete on the interior and the exterior needs only the final coat of pneumatically applied stucco. It is being applied in this manner to provide texture to the large masses of simple wall forms. The Arcadia sliding doors and the glass are in place. These have been set earlier than usual so that the building could be closed, and to hasten the completion time. The Arcadia doors have been supplied with the latest in finishes for aluminum to repel oxidation in salt air. It is grayed bronze in color and has a jewel-like quality. This is one of the first uses of this finish which is believed to be much superior to any other on the market.

The cabinets will be installed in two weeks and should prove a handsome addition to the house. Those in the kitchen, service area and baths on the second floor are ribbon grain walnut. Portions of the cabinet between the living room and the dining area are of rosewood. Interior furnishings and objects are now being assembled, a few of which are shown here.

The Hacienda Beige Quarry Tile from the Mosaic Tile Company has been set in the stepping stones over the pool at the canal side of the house. The tile in the courtyard will be complete within the next few days.
ADMINISTRATION AND WAREHOUSE BUILDINGS

BY HARRY SEIDLER, ARCHITECT

The construction program called for an administration building and a warehouse. Both of these, being fundamentally different in use, are housed in separate buildings joined by a bridge connection. The entire complex was designed for future expansion, additional bays to the administration building toward the west, extension to the warehouse toward the west, a new office and light manufacturing building at a lower level, to the north, and a possible production facility at the east end of the four-and-a-half acre site.

Both buildings are on an east-west axis in order to fit easily into the contours of the property and to have the long glazed facades of the administration building face north and south, and the overhead roof lights of the warehouse to the south. In this way no objectionable low-angle sun orientation of glass areas results to the east and west.
The main entrance to the building is through a pavilion on the south side of the three-story administration building placed level with the large, paved car and trucking areas. This pavilion houses the main reception and visitors' lounge and is one half level removed from the upper and middle floors of the administration building. It is connected to the various offices by a bridge.

The employees' cafeteria, kitchen, stock rooms, and mechanical equipment are located on the first floor of the administration building; laboratories and the various divisions of the company on the upper two floors. Horizontal concrete overhangs on the north side give protection from the sun to all office floors during the hot months. The east glass wall of the reception pavilion is protected from undue sun penetration by vertical concrete louvers.

The warehouse is a fireproof building housing both storage and production on two levels. The light roof to the south is formed by shell concrete vaults, each spanning 54' with a thickness of only 3". A stair connects the two levels and provision is made for vertical connection of production processes on the two levels by a flexible steel grid floor in the production bays.

The materials used throughout the building have been selected for their complete freedom from maintenance. The entire building is constructed of reinforced concrete, left off-the-form on the outside with infill walls of dark gray concrete bricks. All windows are of clear anodized aluminum. Interior walls are of the same facebricks as the exterior walls. Partitions are set in aluminum frames with infill panels of mountain ash. Ceilings throughout the administration building are of removable acoustic plaster sections interrupted by continuous recessed fluorescent light troughs.

PHOTOGRAPHS BY MAX DUPAIN
The house, on a narrow, sloping lot in northern California, was designed for a developer who required a versatile plan with all the amenities possible within a limited budget. Taking advantage of the slope, the economy inherent in a two-story scheme was realized. The upper floor was raised to street level to obtain maximum view and to allow an easy transition by way of a bridged deck from street to house in addition to providing outdoor living area without resorting to grading and fill. Storage space was located in the basement.

Bedrooms and study were placed on the lower floor for privacy, overlooking the trees and hills. The living-dining areas, family room, kitchen area are on the upper floor, opening onto the deck, and with views to the San Francisco bay and the hills. These rooms are opened to each other and combined with the balcony and the deck provide a sense of space and permit flexibility in entertaining. The fenced-in front deck with its close relationship to family room, kitchen and bath, serves as an excellent level play area for the children, easily supervised.

Changing vistas within the house and to the outside, together with a number of visual accents—an open stair well, an alcoved fireplace, a sloping ceiling lowest at the kitchen and reaching its peak in the living room—help to relieve any sense of monotony.

Structure: Foundations: concrete; Frame: floors, wood joists; walls, post and stud; roof, planks and beams; Exterior Finish: redwood; Roofing: built-up, 5-ply; Interior Finish: gypsum board and redwood; Flooring: hardwood throughout except Vinyl in kitchen and baths; Countertops: plastic laminate in kitchen, ceramic tile in bathrooms; Cabinets: mahogany; Heating: warm air system.
The conviction that children deserve as much privacy as their parents was the main consideration in the design of this split-level family house. The three-level plan gives the three children what amounts to a house of their own. Furthermore, by building up and down instead of on one level the house, containing 2,600 square feet, fits on a small 75' x 131' lot and it was possible to save ten old trees that were on the property. Alternate expanses of brick and glass provide seclusion although the house faces a busy suburban street with buildings on each side.

On the ground floor are the living room, dining room and kitchen, and, in a wing of its own, the master bedroom. The children's rooms are a few steps from the centralized kitchen, the boys' rooms and bath on the upper floor and, on the lower floor, the girl's bedroom with bath and family room adjoining. The basement where the laundry equipment is located, is under the living-dining-kitchen area. The living room is reached from the entrance hall by crossing a wood bridge over a gravel moat with a steel hooded fireplace in the center and large plants. The moat separates the living room from the dining room and removes the living room from the natural path of household traffic. A screened-in porch extends out from the dining room. The entrance hall, with walnut storage walls and blue stone paving, is the link that ties all parts of the house together.

The construction is made up largely of 12" face brick cavity walls filled with 4" of insulation, thermopane sash, interior plastered walls, walnut paneling and doors, and ceilings of sprayed-on acoustical plaster inside and cement plaster on the outside. The basic framework is made up of laminated construction with 2 by 14 roof rafters. There are two separate heating systems, one for the upper and lower levels and one for the kitchen, dining, living and master bedroom level.
PRODUCTS for the new Case Study House

The following are the specifications developed by the architects for the new Case Study House No. 25 and represent a selection of products on the basis of quality and general usefulness that have been selected as being best suited to the purposes of this project and are, within the meaning of the Case Study House Program, "Merit Specified."

Case Study House No. 25 by Killingsworth, Brady, Smith and Associates, architects, for the magazine, Arts & Architecture

STRUCTURAL

Frame—Douglas fir; The West Coast Lumberman's Association, 1410 South 8th Street, Portland 5, Oregon.

Cement—Portland Cement Association, 160 West Fifth Street, Los Angeles, Calif.

Insulation—Owens-Corning Fiberglas Corporation, 1393 Telegraph Road, Los Angeles 22, California.

Roofing—Owens-Corning Fiberglas Corporation, 1393 Telegraph Road, Los Angeles 22, California.

Skylights—Skyco, Inc., 3210 Van Owen, Burbank, California.

FINISHES

Quarry Tile—The Mosaic Tile Company, 131 North Robertson Boulevard, Beverly Hills, California, and Zanesville, Ohio.

Counter Tops—Parkwood Laminates, Inc., 134 Water Street, Wakefield, Massachusetts.

LIGHTING

Switching Controls—Reiner Industries, Sweep Remote Control Division, 4811 Telegraph Road, Los Angeles 22, California.

Fixtures—Marvin Electric Manufacturing Company, 6100 Wilmington Avenue, Los Angeles 1, California.

APPLIANCES

Kitchen Equipment—Thermador, 5119 District Boulevard, Los Angeles 22, California.

Garbage Disposal—Waste-King Corporation, 3300 East 50th Street, Los Angeles 58, California.

DOORS

Aluminum Sliding Glass Doors—Ardad sliding doors; Northrop Architectural Systems, 5023 Trigga Street, Los Angeles 22, California.

ALTEC LANSING HI-FI EQUIPMENT

The hi-fi unit located in the cabinet dividing the living room and dining room will be by Altec Lansing. This hi-fi center will supply the ultimate in fine sound bath for tapes and records. It has been located in this cabinet to provide the best for listening in the living area. Altec Lansing Corp., 1515 South Manchester Avenue, Anaheim, California.

POTS BY AFFILIATED CRAFTSMEN

These excellent pots will be used in the main courtyard and at the terrace on the second floor. The texture and finishes of the pots as well as their timeless forms have made them a choice selection for the house. Affiliated Craftsman Studio, 1840 Alden Drive, Los Angeles 49, California.

CERVITOR KITCHEN

The Cervitor Refrigerator has been a great help to the design of the bar. This handsome unit has made it possible for the bar to be left as an open buffet type cabinet instead of the usual concealed tucked away area. The refrigerator features a door which can be fitted with matching woods providing a total design. Cervitor Kitchen, Inc., 204 East Olympic Boulevard, Los Angeles, California.

SYSTEM CADO

This is a prefabricated paneling system which will cover the west wall of the second floor study. It is of Bangkok teak and has a flexible dowel system to support shelves, cabinets, desks or other pieces of furniture. It provides excellent flexibility yet still remains furniture. System Cado, 1130 3rd Avenue, New York, New York.

MONTROSE LIGHTING

Exterior flood lighting will be the new low voltage "Allura-Lite" manufactured by Montrose Lighting. This system provides illumination from a low voltage system with each lamp supplying an equivalent of 75 watts yet in a soft glow rather than the usual harsh blast of 110 volt wiring. One feature which is excellent is the simplicity of installation and flexibility where change is necessary. Montrose Lighting, 3527 North Verdugo Road, Glendale, California.

ROBBINS VINYL FLOOR TILE

This fine product will be used at the terrace bedroom on the second floor and a portion of the terrace bath. The material was selected for its excellent color and texture which blends with the mosaic tile on the terrace yet never dominates. Robbins Floor Products, Inc., 320 North Robertson Boulevard, Los Angeles, California.

MUSIC (Continued from page 6)

...major moment in the theory of language, for it helps one to realize that the negative is a peculiarly linguistic marvel, and that there are no negatives in nature, every natural condition being positively what it is." Reversing the statement, thought having been recognized by definition in the negative ("the tree" verbally spoken of is not a tree) must restate it in the positive, and this is a continuing procedure, so that the tree becomes more distinctively and at length intuitively (to be found when we want it; without conscious thinking effort) both the tree it is and all we know about that tree. Thus the idea, "the tree," becomes idiomatic, having its own inflections in the unconscious usages of language, and both philosophy and art, being educated into us as language, carry on grammatical discussions having nothing whatever to do with the landscape. Then someone points out Nature to us, and we try to reassemble the experience; here art remains primacy for a short while, until "Nature" reenters the vocabulary as part of a new definition.

Learning that Kenneth Burke would be at the conference I had been reading extensively among his books. In the presence of the man, apart from the mass and energy of his writing, the silent man whom I assumed the privilege to sit beside during two or three sessions of the conference, I returned to the essential fact of nature. The quiet presence of such a man surrounds one like a landscape, and when he speaks one listens not for derivative sententiae, nuggets of wisdom, but for the personal—character, which Charles Ives believed to be the central fact of art.

We were gathered to discover new ways for assembling towards the purpose of a freshly conceived esthetic existence that amorphous mammalian portion of living kind that has been named, by the negative emptiness of post-aristocratic naming, "man—mass"; we were trying to make that humane lumping vital again in its units—of whom I believe there are some four billion.

Professional esthetes hold that of this four billion human entities only a very small number subsist in esthetic recognition, and of these a still finer percentage have training enough to recognize esthetic 'standards.'

Examination of a Sandia or a Folsom point—I speak of them together because I lack experience to distinguish between them, and the distinction may awash less than the similarity—provokes an attentive mind to reopen the question along the line, Form Follows Function. And then to proceed, looking about at present day artifacts: Aimlessness of Function Destroys Form. Then, meditatively, to question whether to begin once more by the reconsidering of Function or of Form, since the improvement of Form alters or varies Function. And then to recognize and accept that two must work together: an intensive, long-labored, one would suspect, a preconscious reconsideration of Form (technique abstracted) made possible the killing of a mammoth with a Folsom point.

The professional tends to fix the teaching of the past by his determination and definition of rules he believes to have been given by it. The most utilitarian articles surviving from prehistoric cultures are evaluated and classified first of all according to esthetic criteria. The amateur tends continuously to break down these rules by looking at the natural object itself with an innocent eye and then playing with the chance and possibility of new forms. I read about those amateur literati of the Sung, who despising the insensibly perfect imitations of the past made by their professional contemporaries brought Chinese landscape painting to its highest pitch. One must at the same time credit to the anonymous professionals those exact, if "lifeless," copies of earlier masterpieces that have preserved for us, if we are to accept the opinions of present-day scholars, nearly all that we presume we know about the masterpieces of the preceding centuries.

As for the word "lifeless", which is applied in the same way to later Greek artisan copies of Greek classic sculpture: are we to believe of the Pentateuch and the Iliad that these, too, being later restatements of earlier originals, are "lifeless"? These are judgments of taste, within the taste of a period, sharing its own not fully articulated standards. Did change of standards enable us to recover the aesthetic world of the Stone Age? It appears likely. So that we seriously misjudge the non-esthetic necessity,
available in an explanation but meaningless in our own way of life, that required an exact identification between the representation and the presence of the beast. No concourse of esthetic opinion sank a Folsom point between the rib bones of a mammoth or governed the courage of the man who chopped the exquisite deadliness of the point—the mammoth over twelve feet high at the shoulder, carrying a preposterous weight and curvature of tusk, the chopped point perhaps a little longer than an inch. Far from esthetic convention, the hunter’s exact representation and identification of himself with the fact of nature in the beast enabled and became the character that made and sank the point.

The truth of the fact rather than any explanation should be the central and directing force of art. The explanation, through its multiple defining, should enable us to see more closely the multifaceted truths of the fact. “Définir une chose, c’est substituer à la définition la chose. La sensation c’est la révélation.” George Braque reflects. (To define a thing is to substitute the definition for the thing. Sensation is revelation). Are the nudes by Maillol, so peasant-French, to be rejected because they are not, as the first vision assumes that they purport to be, of Greece? The fact includes both the similitude and the difference. I would quarrel with Braque’s second statement: sensation can be revelation only for that individual who has directed his attention toward it. The revelation is not from but in the attention.

The argument hangs therefore not on standards or, differently, sensation but on the possibility of attention in the individual. Anybody can be moved by mountains or give pet names to rock formations, but Darwin in *The Voyage of the Beagle* ruminating on the landscape enables us to perceive in time lessently the geological moving of a continent. Darwin’s theories, like Freud’s, became the more ambitious the more he debated them, but his observations do not. Freud’s recording of his observations, filtered through an esthetic preconditioning, became creative fictions; Darwin’s recording focusses upon a precise elucidating of the facts. To perceive the facts he must set them in relationship. The exactness of his observation becomes esthetic: beauty appears in and by relationships. Fictional inventing is unnecessary. In Freud’s intelligence, by contrast, the fact precipitated fiction; the fictions also precipitate relationships which are or become beauty. For posterity the opinions and explanations, the dogmatic theorizing, which stirred antagonists to battle over key words, will seem curious, archaic, and subordinate. The facts and the fiction retain esthetic wholeness: the character of the man, the “is” of art.

Between observation, opinion, and the accretion of opinion into theory there is a very narrow, perhaps no margin. That is why theory and hereditary dogma, however noble, however aristocratic, need to avoid the rigidity of divine right, of presuming uncertainty principle and the principle of genetic information. That divine attention stretches beyond the possible horizon of attention in the individual. Art is one way of looking farther than the eyes see. We should therefore regard art not as in itself sacred but as one means of observing the sacredness of humanity in nature: for the reader either a form of words or a potential life.

Out of these ideas, here strung together on some experiences of my recent travel, difficult, vague, very notional ideas one may feel, I tried at the Wingspread Conference to organize, as well one is able in large meetings, some manner of presentation that would break through—a revelation, a miracle, as by public prayer. Or one might say, a fretting of the ocean surface under low cloud. In the next article I’ll try to summarize that meeting.

NOTES IN PASSING
(Continued from page 9)
cept which he believes he has acquired, if he tries to make use of it in other arguments, he at once realizes that he has still not acquired a sufficiently deep understanding. There may even be some danger in the simplicity and extreme neatness of certain expositions, however brilliant they may be. I remember at the university a particularly able professor of mathematics whose lectures were so clear that they could be followed without the slightest effort and who could lead his students through the mazes of integral calculus in such a way that they seemed like broad avenues beautifully laid out. But once his lectures were over, as soon as we wanted to use these concepts in order to make an actual calculation, we often realized that we had to start all over again and that we had travelled, as it were, some of wilderness which in fact we had no map. So let us not delude ourselves. To understand these abstract concepts and to reach the syntheses they make possible, much thought is needed and much reflection. The chain of reasoning must be followed over and over again from beginning and each time we must recognize that in fact we are only advancing a little further, only parting a little wider the veils that enwrap the new idea we wish to grasp.

This is an individual task; no one else can do it for us. The scientific writer can guide us, help us, supply us with all the equipment needed to move forward, but he cannot “think” for us. Newton said that he had discovered his principle “by thinking about it.” Similarly, we must think and re-think if we are to make any worthwhile progress along the path which the great scientific explorers have blazed for us.

The difficulties of abstract thought are not the only ones which the popularizer encounters in his work. There is also, so to speak, the question of “shock.” The brightest rockets of modern physics or biology have so shocked the common sense of many highly developed people (their common sense, not their good sense) that these people have been unwilling or unable to make the effort needed to follow their flight. The principle of relativity, and more particularly the relativity of time, still seem inadmissible to many people who, although educated, are insufficiently trained in the intellectual discipline of science. The same is true of the uncertainty principle and the principle of genetic information. Generally, moreover, such people are under the impression...
that there is no reason to make any undue effort since these things are only the provisional speculations of scientists, useful perhaps for their specialized work but meaningless from the point of view of real life. Others, having thought more deeply, see in them the overthrow of certain "values" which mean so much to them that their elimination is intolerable.

In regard to genetic information, for example, there are some people who, for religious or other reasons, cannot admit that all the characteristics of life are materially embodied in a list of chemical molecules, however complex. They remain persuaded that life cannot be explained on the basis of physical-chemical phenomena and that a totally different type of entity, often termed a "vital" force, must be invoked. They will not be convinced until a chemical synthesis of the first artificial living organism has been achieved, even if it be no more than a virus.

In such cases, the popularizer cannot hope for anything more than to transmit a clear understanding of the problem, an exact definition of what must be accepted if the scientific adventure is to be followed further. We can, of course, also make this adventure so attractive that the lure of the quest becomes stronger than the traditional attachments. It is here, incidentally, that the fantasies of "science fiction" might have their most valuable effect.

If the difficulties are so great, just what can the scientific writer do? Let us make use of a comparison. Everyone knows that the actions of any specialized group, when seen from a distance, remain incomprehensible even to the attentive observer. The crew of a sailing ship or the workmen on a building site or mountain climbers on a rockface all behave in a seemingly bewildering manner: they stand about doing nothing, for no apparent reason; they hurry to and fro, gesticulate, concentrate themselves on the effort, again without any apparent reason. Their behaviour can only be understood if they are observed from close at hand and even then some technical explanations will be needed.

It is the same when scientists and specialists are at work: they toll away, they give up, they exult and broadcast their triumph in their publications. But we understand nothing of it, it is all too far off. The popularizer offers us an admirable telescope with which we can peer into the very place where the work is going on. He provides us with a hearing aid by means of which we can hear the replies to the questions we put; he gives us the explanations which become necessary as we proceed with our exploration.

Nevertheless, he will not turn us into mountain climbers or sailors. For that, we should have to live on the ship or climb the rocks, with every movement having a definite and often vital inner meaning. The reader comes to share the research worker's outlook and, having understood him, will be interested in his task and will be ready to help him as far as possible. He may become enthusiastic about this science whose spiritual value he can at last appreciate, whereas before he knew nothing of it but its material implications. If he is still young enough, he may be tempted actually to bridge the gulf which the popularizer has cleared in his mind and become a research worker himself. What better justification could one wish for the scientific writer?

Men of the highest distinction, sometimes even famous scientists, have devoted themselves to this task of popularizing science which is at once so difficult and so enthralling. They have not hesitated to give much of their time and thought to the exposition of scientific knowledge in its most accessible form and without diminishing its value.
AUGUST 1962

ARCHITECTURAL POTTERY

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Decorative Accessories

Doors and Windows

Decorative Accessories

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Doors and Windows

(332a) Northrop Architectural Systems' product line includes Arcadia sliding windows available in a wide range of colors and styles with aluminum sliding glass in stock and custom panels, Acme 500 sliding glass door for light and custom designs, including the Arcadia Brise Louvers or sun screening. Write to Acme 500, First Street, Los Angeles 15, California.

(332b) Jaylis Traversing Window Coverings—Room Dividers: Contoured from DuPont Lucite and DuPont Zytel Nylon; reflects 88% infrared rays and absorbs 99% ultra-violet rays. Useful in areas where a lifetime; may be used indoors or out; stacks one inch to the foot. For complete details write to Jaylis Sales Corporation, Dept. A., 514 West Olympic Boulevard, Los Angeles 15, California.

(336a) Sun Control: New 8-page catalog describes Louver-Drapes as the most flexible, up-to-date sliding window covering available today. Designed on a 3½ inch module, these vertical blinds fit any maintenance; tubular: any size, shape and feature washable, flame-resistant, colorful fabric by DuPont. Specification details are clear and organized and the catalog is profusely illustrated. Write to Vertical Blinds Corp. of America, 1710 25th Street, Santa Monica, California, tel.: FACulty 1-1461.

(310a) Saum Aluminium Windows—Series 900: From West's most modern aluminum plant, Saum's new aluminum windows offer these advantages: aluminum finish for longer wear, low maintenance, transparencies for maximum strength, larger glass area; snap-on glazing beads for durable, permanent glazing. Spacing lock for neat, weather-tight seal; blind-free, 90° openings; ¾" magnified, anti-arch, mast, installed by trained local crews. For information write to George Cobb, Dept. BB, Saum Steel Company, 2575 Tennyson Street, San Francisco, California.

(335a) Window Wall Systems: New 8-page catalog presents the Arcadia 800 Series Window Wall Systems of aluminum framing for self-contained floor-to-ceiling installations. Any desired configuration of fixed and sliding panels, spandrel or transom panels, double or single glazing units are available in a wide range of colors and styles with aluminum sliding glass in stock and custom panels, Acme 500 sliding glass door for light and custom designs, including the Arcadia Brise Louvers or sun screening. Write to Northrop Architectural Systems, 5022 Triggs Street, Los Angeles 22, California.

(327a) Sliding Doors & Windows: Metal Products consists of steel and aluminum sliding doors and a steel sliding window used for both residential and commercial purposes. Designed and engineered for easy installation and trouble-free service. Units feature live wool pile weather-stripping which can be replaced at any time, and 1½" thick felt strip at bottom and back; cast bronze or aluminum hardware and custom designed lock. Doors and windows are wide enough and have safety bolt to prevent accidental lockout. Catalog and price list available. Write to Bellevue Metal Products, 1314 East First Street, Los Angeles, California.

(327b) Sliding Wardrobe Doors: Doormen, manufacturers of sliding wardrobe doors, announces a new type steel sliding wardrobe door, hung on nylon rollers, with a boron treated frame. The new design, available in 35 stock sizes and sizes required, is both attractive and functional. Cost no more than any good door. Doormen, 1207 Northeast 45th Street, Seattle, Washington, Phone: VERNonton 4-5452.

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(290a) Solar Control Jalousies: Adjustable louvers eliminate direct sunlight and skylights; some completely dark for inside. Control of louvers: manual, switch-activated, electric, completely automatic. In most cases the louvers are selected for institutional, commercial and industrial buildings. Lumar Solar Control Jalousies are actually free. Services include design counsel and engineering. Write for specifications for individual installations. Write for catalogs and coordinated swatches: Lumar, 180 1st Street, P. O. Box 166, Los Angeles 22, California.

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(273a) Jalousie Sash: Information available on a low-cost sliding sash window which features new advances in design and smooth operation. Positive locking, engineered for secure fitting, these new low sashes are available in either clear or obscure glass, mounted in stainless steel or aluminum and latched. Minimum of working parts, all of which are enclosed in the stainless steel casing. Write to Steelbilt, Inc., South Gate, California.

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(304a) Permanent Brick Company manufacturers of Modular Steebyd Common Brick and other structural clay products, are now exclusively manufacturing the Red Air Flight. The 6" x 12" x 2" nominal dimension of the brick provides an ideal unit for patios, pool decks, window ledges, garden walls, wall-capping and many other uses. Offers 45% savings in construction costs. Sample brick and literature available from Permanent Brick Company, 4701 East Floral Drive, Los Angeles 22, California.

(304b) General Concrete Products, Inc. has a new compact file folder illustrating fifteen screen or venter block of concrete; gives the advantages of residential and commercial, exterior and interior uses; tells measures and design fashions of special interest to architects, contractors and interior decorators. For this informative work-sheet folder write to: General Concrete Products, Inc., 15025 Onyard Street, Van Nuys, California (57a) 5-1120.

(305a) "Interior Finishes," a color-clothed, eight-page booklet by the California Redwood Association is a detailed discussion of treatments for redwood siding from no finish at all—favored by the Association —through water repellents, bleaches, stains, and paint. The booklet replaces and combines former CRA exterior finish and weatherproof redwood data sheets, and includes the results of years of research by the Association and others. It repeats the wood industry's warning against the use of clear finishes, such as varnishes, on exterior surfaces; available free from Dept. AA-2, California Redwood Association, 570 Sacramento Street, San Francisco 13, California.

(305b) "Douglas Fir Lumber — Grades and Uses." This well illustrated catalogue includes detailed descriptions of boards, finish, joints and panels, and light framing with several full-page examples of each; conversion tables, stresses, weights, properties of Douglas Fir, Fomer CRa Technical Bulletin No. 16, available from the California Redwood Association, 570 Sacramento Street, San Francisco 13, California.

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(308b) "Ideas from Architects' Own Redwood Homes," a 16-page color brochure, shows how architects in every part of the country have used redwood for siding, paneling, beams and structural areas; spandrels on small apt., commercial buildings; inexpensive storefront remodeling; interior walls, ceiling, counters. For detailed information, write Dept. AA, Douglas Fir Redwood Association, Tacoma 2, Washington.

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