"A Paradigm for Perception." The first day of the symposium, arranged by Rudolf Arnheim of Harvard University, will present formal explanations of perceptual processes in such varied contexts as the history of environmental perception, cartooning, non-Euclidean space in Van Gogh, and ambiguity in the prints of M. C. Escher. The second day will feature discussions of creative processes through which artists and others exploit perceptual processes, including a paper, "Aesthetics and the 'Right Answer'" by Frank Oppenheimer, Director of the San Francisco Exploratorium, and a panel discussion with artists from the Washington environs, arranged by Gene Baro, Director of the Corcoran Gallery of Art.

The first of two symposia on psychohistory will be offered on 28 December, concentrating on the history of consciousness, arranged by Robert L. Hall of the New School for Social Research. In what sense do human nature and consciousness change over time, and what light does this shed on contemporary cultural dilemmas? On 30 December a symposium on the psychohistory of science will feature presentations on Schliemann and the psychoanalytic study of biography, arranged by Herman M. Serota of the University of Chicago.

Space Science and Astronomy

Perhaps the most fundamental advances in space science of the recent past and near future are associated with the astrophysics of x-ray, gamma-ray, cosmic-ray, and infrared sources and the sun.

"Recent Advances in Space Physics and Astrophysics" is the subject of a symposium scheduled for Wednesday, 27 December, and arranged by Herbert Friedman of the Naval Research Laboratory and George B. Field of the University of California, Berkeley. This symposium will examine the implications of recent advances in space science as well as consider what new astronomical projects may soon be allowed by near-future space vehicle systems.

The subjects to be covered are: Solar Physics; High Energy Astronomy; Infrared Astronomy; Cosmic-Ray Astronomy; Solar-Terrestrial Physics; and Magnetospheric Physics. Participants include: Leo Goldberg of Kitt Peak National Observatory; Edward Ney of the University of Minnesota; Peter Meyer of the University of Chicago; Francis S. Johnson of the University of Texas; and Juan G. Roederer of the University of Denver. Full of authoritative information and interpretations about our universe and recent measurements of physical phenomena, this program promises to be an in-depth review complete with insights about future work and should be of interest to specialist and nonspecialist alike.

A related program, "Copernicus . . . and Modern Dynamical Astronomy" is arranged by P. Kenneth Seidelman of the U.S. Naval Observatory. Scheduled for Thursday, 28 December, this symposium will cover: Planetary Theories; Lunar Theories; Cometary Motions; Minor Planet Motions; Planetary Probes; The Origin of the Solar System; The Problem of Three Bodies; Stellar Dynamics; Galactic Dynamics; and Computerized Analytical Manipulation. The second session on Friday morning, 29 December, will be held at the U.S. Naval Observatory.

What circumstances during the early history of the earth led to the evolution of its surface chemistry, from inorganic to organic and eventually to a global prolification of the biota? Is this evolutionary track unique to the earth or are all the planets following the same path but at varying rates depending on their size, mass, and distance from the sun? These are some of the basic questions which are related to the fundamental problem of defining the place of the earth in the solar system.

The primary data on the other planets when studied in context with Earth, can be expected to eventually answer some of these questions. In the last few years, we have systematically unveiled many of the mysteries of Mars and Venus. The symposium "NASA's Planetary Research" arranged by S. I. Rasool of NASA and scheduled for 29 December will discuss what we have learned so far and how it affects our understanding of the solar system.

On Saturday, 30 December, "Redshifts of Galaxies and Quasars" arranged by George B. Field of Harvard University will attempt to clarify some of the issues related to the recent challenges to the traditional interpretation of the redshifts of galaxies.

Classically, redshifts of galaxies are attributed to velocity shifts associated with the expansion of the universe. The discovery of the very large redshifts of quasars, and the apparent spatial association of some quasars with objects of small redshifts has challenged this interpretation, with profound implications for cosmology. It may be that the apparent spatial associations are not real—a decision on this matter calls for careful analysis. Participants in this program include: Halton C. Arp of Hale Observatories and John E. Bahcall of the Institute for Advanced Studies, Princeton, N.J.

Modern Physics

The significant discoveries in physics often come from the most abstract, internally motivated research, and take the form of new points of view whose profound practical importance then unfolds as they are explored. A symposium, "From Abstraction to Reality: Two Revelations—the Laser and Superconductivity," will illustrate this pattern with case histories of two such revelations concerning the behavior and control of matter: superconductivity and the laser. Both of these now play indispensable roles throughout all science and technology. Participants include: Benjamin Bederson of New York University and John K. Hulm of Westinghouse Research Laboratories.

A second symposium, "Physics: Its Future, and Its Role throughout Science" arranged by Rolf M. Sinclair and scheduled for Thursday, 28 December, will consist of two lectures on physics.

The first talk by D. Allen Bromley of Yale University will present a popular summary of the recently completed NAS Physics Survey Report. It will outline the present size and problems of the physics enterprise, and will discuss the regions of greatest promise of fresh discoveries in physics of the next decade and the priorities accorded them.

The second talk by Edward C. Creutz of the National Science Foundation will illustrate the crucial role that the ideas and techniques of measurement and analysis in physics have come to play in providing a quantitative framework for all of science. Thus, such techniques as x-ray crystallography, nuclear magnetic resonance, or artificial radioactivity, which were originally developed within physics, have spread through such disciplines as chemistry, biology, and archeology to revolutionize them.