

that the moon can give us an important clue to the early history of the solar system, a clue which certainly should be exploited. Did the moon assemble like the earth? Then how do we account for such obvious discrepancies between the earth and moon as the lower lunar density which is caused by its relative scarcity of iron, as well as

the more recently discovered scarcity of volatile substances on the moon?

These and other questions will occupy the symposium on the Early History of the Earth-Moon System. Through a happy coincidence it follows by one day the 400th anniversary of the birth of Johannes Kepler on 27 December 1571. A Kepler Symposium will be

held at the Franklin Institute in Philadelphia on 27 December. It would indeed be a fitting tribute to Kepler himself if during his quadricentennial year one of the most fundamental problems of the solar system could be brought toward its solution.

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## **29 December**

### **Communications Technology and Its Effect on People**

Communications technology now makes feasible the inexpensive delivery of video, voice, and data channels to the home by coaxial cable. Cable television systems, providing bandwidths at least 10,000 times greater than those of conventional telephone circuits, are being developed or planned commercially in most U.S. cities. Beyond carrying 20 or more television channels one-way into the home, they will evolve into two-way communication networks within the next few years. Other types of wideband communication systems in cities also have been proposed.

To what uses will the new communications capacity be put? Who will use and control it, and how will it affect people's lives, if at all? Estimates of the near-term impact of this technology range from trivial (more tele-

vision situation comedies to choose from) to profound (a greater sense of community cohesiveness from locally originated television programs with direct viewer response).

Two areas of specific impact may be education and local politics. Instructional television in the home with individual student feedback could be important to both formal and informal education at all levels. Interactive television could lead to direct, immediate opinion polling on local political issues—the “instant referendum.” Health care delivery, law enforcement, and other urban services may also be influenced by the availability of new communication channels.

The construction of urban cable communications networks in the 1970's will provide an important example of

the interactions between technology, commercial development, and public policy. The social benefits and costs of this technology should be assessed and widely discussed today—before the new systems are in place. This symposium will bring together current research and policy studies on these questions, focusing on developments now under way or likely to be implemented in the next 5 years.

Speakers and titles of their papers are: Edward S. Mason (Sloan Commission on Cable Communications), “The social impact of cable communications”; Peter C. Goldmark (National Academy of Engineering), “New urban applications for communications technology”; and George F. Mansur (Executive Office of the President), “The government role in new communications developments.”

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## **27 December**

### **Technology and the Humanization of Work**

The symposium, “Technology and the Humanization of Work,” will explore attempts to humanize industrial work, particularly in relation to technological and cultural changes. The issue of the humanization of work is particularly important at a time in which both cultural patterns and technology are in process of change.

Social and cultural changes in the United States have led to rising expectations and demands about life and work. Modes of work acceptable in the past are today considered oppressive by many young workers who want to avoid jobs that are monotonous, repetitive, overcontrolled, and isolated from interaction with others. In contrast, workers seek jobs that require activeness—planning and judgment on the part of the worker—autonomy, variety, and that are demanding enough to stimulate learning. Most workers are

also greatly concerned with opportunities for career development. In addition, workers are increasingly concerned that the work be “meaningful”; that it involve clearly useful tasks; and that it require sufficient skill to be worthy of respect. Taken together, these requirements move in the direction of the humanization of work. In contrast, dehumanized work implies a job which transfers the worker into a machine part, totally controlled, fully predictable, easily replaceable, and alienated from himself as a human being.

In some industries, opportunities for the humanization of work have resulted from technological developments. In other industries, the restructuring of work has been stimulated by management's desire for increased productivity and improved labor relations. Some experiments in the humanization of work have led to the satisfaction of

both workers and management. Other experiments have been stopped because they stimulate pressures toward a more basic restructuring of industrial life.

Participants in the symposium include social scientists, labor leaders, managers, and government officials. They will describe programs that have been carried out in the United States and Europe. The pressures for change and the constraints on the humanization of work will be considered in particular cases. Some of the speakers have themselves reorganized work situations. Others have studied such programs. Further speakers will report on studies of workers' attitudes. Time will be set aside for questions and contributions from the audience. Members of the audience who have themselves participated in relevant industrial programs are invited to share their experiences at the symposium.

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