

that the logical empiricist account of reduction may fail in explicating the relationship between Mendelian and molecular genetics and that the inability of evolutionary theory to predict future phyletic events does not compromise its status as a scientific theory.

The complexity of biology provides both its strength and its uniqueness. If celestial mechanics had to treat interaction of thousands of objects with frequent, complex, and largely stochastic environmental change, then the study of planetary motions would become a "historical" science—but no less of a science for that. R. K. Merton has long argued that somewhere between the grandeur (or emptiness) of fully general theory and the day-to-day empirics of data gathering there must be room for "middle range" disciplines in sociology—a sociology of science or of religion, for example. There is, in the same manner, a legitimate philosophy of biology; and it must enlighten any comprehensive statement about science with its special treatment of all the problems that life's complexity inspires.

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A discussion session entitled "What are the critical experiments?" represented the culmination of the week's presentations and discussions. The chairman, J. E. Gunn, began by listing ideas on the most important general areas in which observations could help define the emission mechanism in pulsars. In subsequent discussion this list was expanded and ideas for important specific experiments were developed and discussed (see box). These observations will surely help to establish the nature of the pulse emission mechanism in pulsars. The importance of several theoretical problems (in particular, the structure of the magnetic field and the distribution of particle flow within the pulsar magnetosphere) was also emphasized during the discussion.

Because of the great quantity and diversity of observational data available, it is often unclear which are the "typical" properties of pulsars and which are unusual or exceptional. To alleviate this situation, the observers at the symposium compiled a list of properties which appear to be fundamental to the pulse emission mechanism and also common to essentially all pulsars. This list, together with a list of important properties seen in only some pulsars, is given in Table 1.

As a further aid to both observers and theoreticians, a group of seven pulsars was chosen which exhibits most of the important properties of pulsars. Additional criteria for these "standard" pulsars, which are listed in Table 2 together with five secondary standards, were that they be observable at most of the major observatories and also be relatively strong. It is expected that observers will concentrate their efforts on these pulsars, and that theoreticians will find the list useful in giving a small group of "typical" pulsars for comparison with theories.

Notes

1. Participants at the symposium were J. G. Ables and M. M. Komesaroff, CSIRO, Division of Radiophysics; D. C. Backer, Goddard Space Flight Center; W. J. Cocke and D. C. Ferguson, University of Arizona; J. Cordes, T. H. Hankins, and B. J. Rickett, University of California (San Diego); M. J. Disney, Australian National University; M. Elitzur and J. E. Gunn, California Institute of Technology; T. Gold, Cornell University; P. A. Hamilton and P. M. McCulloch, University of Tasmania; S. Hinata and D. H. Roberts, University of Illinois; G. R. Huguenin, R. N. Manchester, and J. H. Taylor, University of Massachusetts; I. Lerche, University of Chicago; A. G. Lyne and F. G. Smith, University of Manchester; F. C. Michel, Rice University; V. Petrosian and P. A. Sturrock, Stanford University; R. M. Price, Massachusetts Institute of Technology; J. M. Rankin, University of Iowa; P. E. Reichley, Jet Propulsion Laboratory; M. A. Ruderman, Columbia University; and J. M. Sutton and A. E. Vaughan, University of Sydney.

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