

## Extraversion-introversion paradigm

*The Measurement of Personality.* By H. J. Eysenck. Pp. xviii+511. (MTP: Lancaster, 1976.) £12.50.

EYSENCK is remarkable in many ways, not least in his ability to generate books both as author and editor. This one, a collection of reprints, linked tightly and at length by editorial argument, deals almost entirely with the personality dimension of extraversion/introversion but has no overlap with the papers covered by his recent three-volume work on the same topic.

Nevertheless, the papers are carefully selected to exemplify and support the case for Eysenck's particular approach to the study of personality which he describes as a 'paradigm' in the Kuhnian sense of a professional or disciplinary matrix. This paradigm is closely modelled on physical science, depends on measurement and hypothetico-deductive procedures but goes beyond Popper to Lakatos' view of a research program which yields predictions of novel facts but tolerates anomalies among its findings; and in fact progresses from experimental analyses of these anomalies.

Eysenck's program is based on the claims that there is a set of invariant general traits underlying individual differences in behaviour, that these are explicable in terms derived from general experimental psychology, and that the broader and more important personality factors are likely to derive from more basic biological variables which, in turn, are largely determined by genetic factors. Apart from intellectual abilities he believes that there are only three higher order factors of this type. Extraversion/introversion (E) is one of these and the related behaviour is postulated to be a non-linear function of individual differences in characteristic levels of "cortical arousal". Sections of the book deal with models of personality, its physiological basis, differential reactions to pain and other sensations, and individual differences on vigilance tasks, in perceptual reactions, motor behaviour, learning, memory, fluency and creativity, and in social behaviour.

Many of Eysenck's opponents consider his objective, nomothetic approach inappropriate for the study of personality and engage in a holistic idiographic search for understanding, which he sees as fruitless. Others remain within his frame of reference but lay greater stress on the situational determinants of behaviour, which he

regards as largely irrelevant or as interfering factors to be controlled in his studies. He does recognise that they may have an important function in certain real life situations but even then stresses their interactions with an individual's personality. Other critics also quarrel with the heavy weighting Eysenck grants to heredity in his rather "either/or" approach to nature/nurture questions. A particular phenotype is the outcome of a developmental process in which experience may affect organismic maturation in a number of ways: by channelling it in certain directions but also by facilitating or inhibiting normal development. This is particularly true of early neural maturation, which plays an important role in Eysenck's theory.

The great strengths of Eysenck's personality program, however, are that it embraces more levels of functioning—biological, behavioural and social—in a more comprehensive way than any other and that it is closely related in an interactive developing fashion with an ongoing experimental research programme. In this book he certainly substantiates his claim to a "paradigm" and a theory in transition from "soft" to "hard". His critics should read this book with care: they will not find it easy to produce an equally powerful counter-argument.

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## Solar flares

*Solar Flares.* By Z. Svestka. Pp. xiv+399. (D. Reidel: Dordrecht, The Netherlands and Boston, Massachusetts, 1976.) Cloth Dfl115; \$39.50; paper Dfl69; \$23.

THERE may be a temptation to regard Svestka's book as an update of Smith and Smith's work of the same title published fourteen years ago. To do so would, however, be to grossly underestimate the magnitude and success of Svestka's undertaking in this new book. For, firstly, the quantity of observational material to be reviewed has expanded since 1963 with a growth rate perhaps exceeded only by solar flares themselves. And, secondly, although the subject matter is intended primarily to be observational, an admirable awareness has been retained throughout of the need for objective interpretation in the areas of both classification and physical theory.

Approximately one-third of Svestka's efforts are devoted to the chromospheric flare as observed in optical wavelengths, and to flare-associated optical phenomena. Although this distribution may still reflect some of the historical overemphasis of hydrogen Balmer line observations, it seems well justified in view of Svestka's personal expertise in this area, and, also, of the observations being well tempered by theoretical discussion of such matters as inference of magnetic fields and models of chromospheric flare heating.

A comparable section is dedicated to "The High Temperature Flare" embracing not only the thermal XUV emissions but also the non-thermal hard X-ray and radio bursts. Much of this material appears here in mono-

graph form for the first time, having been born of the advances in space techniques over the past decade. The coverage given to Skylab and other recent results is remarkably good for a review of such a rapidly expanding field. Ample attention is again given to basic data interpretation and to detailed physical models where these exist—specifically for hard X-ray, microwave and Type III sources.

Following a chapter on particle emission, Svestka finally turns to the matter of flare models. In a sense, this is the weakest section since many different models are rather cursorily dealt with. This is not surprising since a second volume by the late L. D. de Feiter had been planned on purely theoretical aspects. Given, however, the current motley state of flare theory, and the complexity of the plasma physics involved, it is perhaps better simply to relate the broad features of models to observational manifestations rather than to attempt a survey of this difficult and incomplete area of theory.

Finally, it might have been appropriate to set the flare problem in a wider plasma astrophysical context such as theory of flare stars and energetic galactic phenomena. To do so would, however, have been to enter speculative realms not in keeping with the systematic objectivity which characterises this book and Svestka's work in general. This quality alone should suffice to remind astrophysicists of the intrinsic interest of the flare phenomenon, and certainly makes the book a must for all solar physicists.

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