

Stars and sceptics

H.J. Eysenck

The Gemini Syndrome: A Scientific Evaluation of Astrology.

By R.B. Culver and P.A. Ianna.

Prometheus Books, 700 East Amherst St, Buffalo, NY 14215: 1984. Pp. 222. Hbk \$18.95; pbk \$11.95.

THE question of whether astrology is a science or a pseudo-science is not one which normally gives scientists a great deal of trouble. The well-publicized anti-astrology statement in the *Humanist* magazine of September 1975 was signed by 186 scientists, including 19 Nobel Laureates, and it probably mirrored the views of most people engaged in astronomy, physics, chemistry or psychology. Philosophers, too, have looked askance at astrology. Karl Popper, using his falsification criterion to separate out science from pseudo-science, grouped together astrology, psychoanalysis and Marxism as pseudo-sciences, arguing that none of them make falsifiable predictions.

Unfortunately there are difficulties with this position. The 186 signatories of the *Humanist* statement were fundamentally ignorant of the empirical evidence, and none have ever done any work in this field. Their declaration was clearly an act of prejudice; and while their verdict may be the correct one, the method used was not in line with the normal procedure of science. *Ex cathedra* pronouncements of this kind have no evidential value, and should be disregarded.

Karl Popper, equally, is not a good guide. I would agree that astrology, psychoanalysis and Marxism are pseudo-sciences, but not because they do not make falsifiable predictions. Every textbook on astrology is full of factual statements which can be tested, and indeed *The Gemini Syndrome* gives a good account of tests carried out to discover the truth or falsity of these predictions. For Popper the fact that most if not all of these predictions were in fact falsified may be irrelevant; for most scientists this will be more important in forming an opinion of the value of astrology than the simple truth that astrological predictions are falsifiable. Popper was equally wrong about psychoanalysis and Marxism; both make falsifiable predictions, and in both cases these predictions have usually been falsified!

Does all this mean that astrology is in fact a science? And can the same be said about psychoanalysis and Marxism? The answer surely must be that the criterion of falsifiability is a bad one for the purpose of demarcation. Much more important is the question of whether a given discipline has any positive contribution whatsoever to make, and on that basis astrology for the most part must be considered a pathetic failure. Culver and Ianna paint a dismal

picture of the inability of empirical research to verify any of the tenets of astrology, and in my book (with D. Nias) *Astrology — Science or Superstition?* (Maurice Temple Smith, 1982), I came to much the same conclusion. All the abracadabra of Sun signs, aspects, angles and whatnot cannot disguise the fact that horoscopes do not predict the future, do not give evidence about a person's character or intelligence, and cannot tell us anything about the diseases to which he is prone. Culver and Ianna write elegantly, with knowledge and fervour about these experiments, and it would be difficult to disagree with their wholesale dismissal of much of the evidence.

Unfortunately they throw out the baby with the bath water, as careless males are wont to do. In all the rubbish there appears to be a nugget of gold, namely the work of Michel and Françoise Gauquelin, and this is scandalously neglected by the authors. They do indeed give much space to the negative results reported by the Gauquelins, which are among the most impressive in the book, but their treatment of the positive results achieved is not only far too short to be intelligible, but is also inaccurate. In our book, Nias and I gave a whole chapter to the Gauquelins, and that is the least that their work demands; Culver and Ianna devote hardly two pages to it, and leave the reader completely unable to find out just what it was that they did, or how it should be evaluated.

Put briefly, the Gauquelins assembled, from library sources (biographies), lists of famous sportsmen, actors, scientists, medical men, military men, literary personalities and so on, and then looked at the planetary positions at the time of birth of these people. They found that certain positions (immediately after rise, and immediately after the upper culmination of a planet) were very significantly related to the various professions, Mars being important for sportsmen and soldiers, Jupiter for actors, Saturn for scientists and doctors, and so on. Note that the particular relationships between planet and profession are as predicted by astrological law, and that while the effects are small, the large numbers involved makes them very highly significant. Note further that the procedure was completely objective, with all the names of the individuals published in detail, so that all the results could be checked. Culver and Ianna are wrong in suggesting that the statistical methods used are questionable; this might have been true of the earliest attempts of the Gauquelins, but they have taken into account such criticisms, and their later work has been declared acceptable even by their severest astronomical critics. Moreover, there have been replications by others, a fact not recognized by Culver and Ianna, and these replications have been successful, such as that of the Belgian Committee headed by the Astronomer Royal of that country.

However, the Gauquelins' work has

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extended much beyond this. In collaboration with Dr S. B. G. Eysenck, they looked at the personality traits characteristic of all their thousands of subjects and found that these were related to the position of the planets in a meaningful and predictable fashion. They found very highly significant relations between the positions of the planets at the birth of a child, and those at the birth of his parents. They found that these relations obtain only when the birth was natural, but vanish when the birth was induced. This is not the place to give a complete description of all the Gauquelins' later work, but it very much reduces the value of *The Gemini Syndrome* that it fails abysmally to go into details about these experiments, that it does not mention more than a small part of them, and that it makes criticisms which are quite erroneous in the light of later developments. In view of the fact that the research of the Gauquelins is now recognized as the major positive support for astrology, the authors of a book such as this should have been especially careful to make sure to discuss it in detail; and if they were unwilling to agree with my own estimate of the value of these studies, they should have provided detailed criticisms which, if incorrect, could be refuted. Their failure to do so makes the book unacceptable as "a scientific evaluation of astrology", to quote the subtitle — a scientific evaluation does not leave out almost entirely evidence on one side of a question, while dwelling exclusively on that favouring the other side.

The work of the Gauquelins does not make astrology a science, but it does suggest that there are factual observations embedded in the mass of nonsense, and that it may be a legitimate task for science to dig them out and try to explain them. The extreme prejudice with which the Gauquelins' results were treated by many scientists does not constitute a good advertisement for the objectivity that scientists are supposed to manifest, and the way Culver and Ianna deal with the topic is unlikely to restore one's faith. □

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Behind the cue and the complex

Stuart Sutherland

The Hans Legacy: A Story of Science.

By Dodge Fernald.

Lawrence Erlbaum: 1984. Pp.241. Hbk \$29.95, £22.95; pbk \$19.95.

CLEVER Hans and Little Hans both achieved celebrity in the early years of this century. One was a horse whose feats included reading, arithmetic and telling the time. The other was a small boy who developed a fear of horses and who was analysed by Freud: his case plays an important role in the history of psychoanalysis because it was thought to provide some of the most striking evidence for the Oedipus complex. In *The Hans Legacy* Dodge Fernald retells the two stories on the pretext that they both illustrate the application of the scientific method.

Fernald's account of Clever Hans is of considerable interest, since the story has not been told in such detail in recent years. The wily horse's pretensions were exposed by Oskar Pfungst, a graduate student in psychology. Hans's owner, an honest man, had trained him to reply to questions by tapping out the correct number with his foot. In an investigation of great thoroughness, Pfungst showed that when the right number was reached people in the audience tended to raise their heads slightly and that Hans used this movement as a cue to stop tapping. His replies were random when he could not see anyone, while if Pfungst himself deliberately raised his head after the wrong number of taps, Hans made the corresponding mistake.

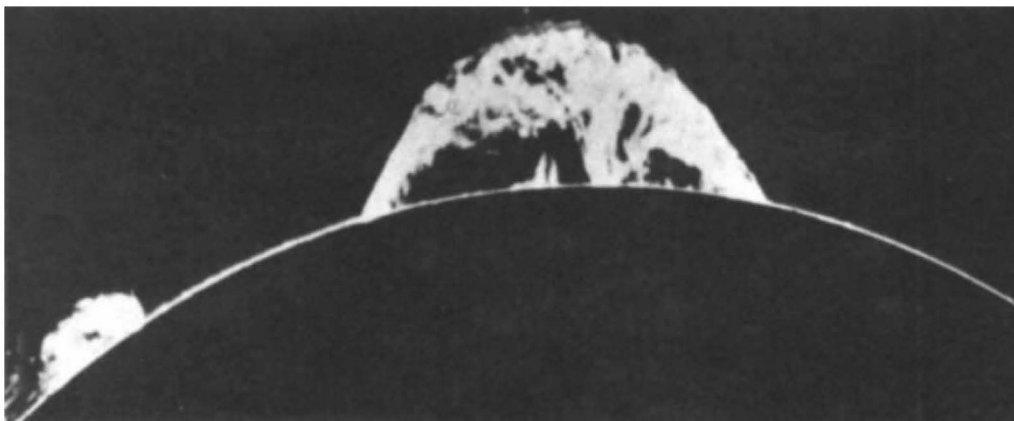
Much has been written about the other Hans, but regrettably Fernald does not cite one of the most important articles, that by Joseph Wolpe and Stanley Rachman who debunk Freud's claim that Little Hans's phobia provides evidence for the existence of the Oedipus complex. Little Hans himself claimed that his phobia stemmed from seeing a horse fall down in the street, a terrifying experience for a small boy. In

fact, Freud only saw his patient once during the analysis most of which was conducted at one remove by Hans's father, himself an ardent disciple of Freud's.

The father appears to have set out to convince the poor child that he had an Oedipus complex. Hans at first resisted suggestions that horses were a symbol for his father, and that he feared his father and wanted to supplant him in his relationship with his mother, but being a well-mannered and obedient lad he eventually gave a reluctant assent. Although Fernald brings out some of the ways in which Freud and the father misused the evidence, he does not reveal the extent to which they deceived themselves and insists on regarding the analysis as an example of the scientific method. If the cases of Clever Hans and Little Hans have anything in common, it is that both the horse and the boy were trained to respond in a certain way and that their trainers — Clever Hans's owner and Freud respectively — then proceeded to misinterpret the effects of the training.

Fernald frequently digresses. For example, he gives a brief but informative account of N-rays in whose existence French scientists believed for a time. The two main stories and the digressions are, however, more interesting than the lessons about scientific method that Fernald is determined to draw. He breaks up both investigations into the formation, testing and verification of hypotheses and he discusses the preparation of scientific reports, using as examples those written by Pfungst and Freud. Pfungst obligingly conformed to the standard format — "Introduction, methods, results, discussion"; Freud did not. Fernald's account of scientific method seems jejune, so much so that it is unclear at whom the book is aimed. No hints are given of the role of serendipity or hunch in science. He discusses scientific fame, but fails to acknowledge that it is often achieved not by those who discover important truths or who build interesting theories, but by those who make the most noise. □

Stuart Sutherland is Director of the Centre for Research on Perception and Cognition, University of Sussex.



Splendid outburst — the photograph, of a prominence on the limb of the Sun, is reproduced from *Secrets of the Sun* by Ronald Giovanelli.

The book is a highly illustrated account of the Sun and solar phenomena, and is published by Cambridge University Press (price £11.95, \$19.95).