

Walton transmuting lithium with protons; Chadwick finding the neutron; Blackett recognising the positive electron; Crick and Watson elucidating the structure of DNA; Josephson predicting his effect; Hewish and Jocelyn Bell finding pulsars. Besides this Himalayan chain of peaks of discovery in the Cavendish itself there have been major discoveries by Cavendish men working elsewhere—for example, the wave nature of the electron by G. P. Thomson or the π -meson by C. F. Powell. But the Cavendish story is not just of these peaks; there has been an enormous amount of supporting work over a wide range of physics, and from the Cavendish many physicists have gone outside to other universities, to the schools, to industry, and to government establishments.

So many achievements could induce complacency; but so long as the Laboratory maintains the spirit of Professor Pippard's 'The Cavendish Tradition' (*Nature*, 249, 602–603; 1974) it need have no fear that "Nothing fails like success".

R. V. Jones

The Ciba Foundation: An Analytic History, 1949–1974. By F. Peter Woodford. Pp. viii+212+8 plates. (Associated Scientific: Amsterdam, Oxford and New York, 1974.) Dfl. 38; \$14.75.

THE decision of the Ciba Foundation to commission an analytical history of its first 25 years has turned out to be a wise venture. The analysis, undertaken by Dr Peter Woodford, has been carefully performed and, through his avowed aim to be critical, he has managed to bring out a number of points of importance. The Ciba Foundation with its symposia and publications is so well known that it is in danger of moving beyond the range of criticism. It is, therefore, of importance to analyse the secret of its success and to try and separate the method from the qualities of those who run it. Inevitably, that is an impossible task.

The Ciba Foundation is a product of the knowledge, experience and attitudes of Dr Gordon Wolstenholme and his able colleagues. The fact that their purpose and method of working was timely and has filled a special place in the world of medical research is a further tribute. Maybe all our institutions are a product of individual effort at a special time. Certainly, it is always very difficult for any successor to take over and continue where his predecessor left off and this will be equally true of the Ciba Foundation because of the unique, accumulated interpersonal relationships developed by its staff.

Scientists only human in their quest

Originality and Competition in Science: A Study of the British High Energy Physics Community. By Jerry Gaston. Pp. xix+210. (University of Chicago Press: Chicago and London, 1974.) £5.50.

GASTON'S sociological study of the British high energy physics (HEP) community is most interesting. Knowledge in the natural sciences with all its fallibilities is less uncertain and less subjective than knowledge in the social sciences or the humanities. The corollary has, too often, been a belief that natural scientists conduct their scholarly inquiry in a more rarefied way than other people and are indeed rather more rarefied people. This belief has been encouraged by the historians and philosophers of science and sociologists have added their norms. Dr Gaston quotes four norms or rules which Robert Merton ascribes to scientific activity: organised scepticism, universalism, communality and disin-

terestedness. Each norm is not unique to science but together they are said to be peculiar to the ethos of modern science. American sociologists of science, led by Merton himself and by scholars such as Hagstrom have, however, shown how often scientific activity diverges from those norms.

Dr Gaston looks at some of the norms in relation to the British HEP community at one point in time—1967–68. One of the advantages of his study is that its coverage is almost complete and does not rely on small samples: about 220 scientists were located at 23 different universities or government establishments, of whom 203 provided information and were interviewed.

The author has analysed their social, educational and professional background; the kinds of research they conducted; their contributions to the scientific community—that is, their productivity; the recognition they received from the scientific community; their attitudes towards research; the prevalence and severity of competition; and their communicative behaviour. Throughout the book, in pursuing these themes, Gaston distinguishes between the views and habits of theoretical and experimental physicists.

He also makes valuable comparisons with the studies of American scientific communities. It is, however, unfortunate that he follows too closely the pathways set by his predecessors so that some of the problems which are especially interesting in HEP are omitted. Thus, he omits the scientists who operate accelerators and other machines "because they are more akin to engineers than scientists". He does not mention the machine builders at all, but it is wrong to dismiss the machine-providers whose performance in terms of sheer physics alone has been so great. The relationship between them and the machine-users is important in the study of any HEP community. Again, in high energy physics, the identity of the individual scientist has increasingly been lost within team identity. Much more attention needs to be given to the effects of this change in the property system of science upon motivation and relationships.

These qualifications apart, Gaston produces 45 statistical tables which reveal fascinating positive or negative correlations. For example, why are high energy physicists significantly more productive at some institutions than at others? How is the number of publications related to prestige of the university at which the PhD was gained, prestige of present affiliation,

The importance of this book lies, therefore, in its analysis of those features of the foundation that may be greater than its leaders. The analysis of the reasoning which led to the decisions on the size and nature of the meetings in general and also for more specific topics is thus the most important aspect of the book.

It is also important that a study has been made of the impact on medical research of the activities of the foundation. This has proved to be a difficult task which has daunted many who have previously attempted it in other organisations. Sufficient to say that the record of the Ciba illustrates the flow of progress that can develop from bringing together, in relaxed surroundings, people from different disciplines and nations so that they may stop for a while to contemplate matter that are set on one side in the busy working day. The Ciba Foundation has achieved its aim and provides the ideal illustration of the importance of having specialised activities supported by private funds. It also shows that it is not size, but quality, that counts.

I can make only one factual criticism. It is not correct to say (page 4), "The essence of the law (Charities Act) is that those who provide the money disposed of by the trust may not be represented on its governing body". This book will be of interest to all those who know and admire the Ciba Foundation through its books or meetings. It is a worthy tribute to the singleness of purpose of Gordon Wolstenholme.

P. O. Williams