

ate indeed were the attempts to explain gravitation by means of mechanisms, often belonging in a general way to the same order of ideas as the vortices proposed earlier by Descartes.

While gravitation bulks largest in Prof. Koyré's book, other Newtonian fields (optics and theology, for example) are by no means neglected. The reader should not be put off by occasional passages in which a nervous style becomes amusing in its qualifications (see, for example, the long sentence on p. 4 which begins "Besides, all of us, or if not all still most of us, have been born and bred—or better and more exactly, not *born* (as this is impossible) but only *bred*—in the Newtonian or, at least, a semi-Newtonian world . . ."). The book is valuable both as a compendium of information (including its numerous references and its many quoted passages made more conveniently accessible) and as an acute discussion of the ideas of Newton and his various adversaries, critics and apologists.

The book is well produced, the printing is excellent, with few misprints, and there is a useful index. I should have welcomed somewhat larger type, especially since the footnotes, which may be described as never occupying more than 90 per cent of the page, are crammed with detail and often call for careful reading. A. FLETCHER

## FREUD WRITES TO HIS FRIEND

### A Psycho-Analytic Dialogue

The Letters of Sigmund Freud and Karl Abraham, 1907-1926. Edited by Hilda C. Abraham and Ernst L. Freud. Translated by Bernard Marsh and Hilda C. Abraham. (The International Psycho-Analytical Library, No. 68.) Pp. xvii+406. (London: The Hogarth Press, and the Institute of Psycho-Analysis, 1965.) 63s. net.

**A** *PSYCHO-ANALYTIC DIALOGUE* is an interesting book for those wishing to learn of the earlier happenings in psycho-analysis and the personality of the master and his disciples. It consists of letters from Freud to Abraham over 19 years, translated by two different translators in order to give a feeling of individual style. This has been done so well that the impression is of the originals not having been written in a foreign language at all.

If a science consists of the collection of facts, their examination and the meaning deduced from them, and the prediction of further facts as a result, the psycho-analysis can claim to be a science, or at least the beginning of one. The only thing which it lacks is measurement, which must depend on better means of estimating emotion.

Freud and Abraham spent long hours every day in clinical work, in listening to patients talking without guidance in free association. Indeed, Freud says in one of his letters that he has been doing so for 11 hours a day (page 143) and Abraham for nearly as long. Surely this must be regarded as similar to the collection of facts in a laboratory? The formulation of theories to explain what was found led to the body of ideas which is the basis of psycho-analysis to-day.

The discovery of methods to investigate the mind, leading sometimes to cure of the disease, and the potential fields revealed naturally attracted others who were eager to theorize without the trouble of clinical work. This would have led to a distortion of what Freud felt was the basis of his work and naturally he set his face against it. In his letters to Abraham he sometimes releases his irritation for those intruders and expresses his weariness. (This is not surprising when one learns that he was writing books, such as *Totem and Taboo*, as well as seeing patients all day.)

Freud has sometimes been accused of intrigue, although this seems to be contrary to his personality, but in these letters, when dissidents like Adler, Stekel and Jung are mentioned, he does not plot against them, except only

inasmuch as he wishes them to leave the movement. Sometimes his language showed his irritation as when he writes of "the brutal sanctimonious Jung", but his efforts are always towards shedding those who will not conform to clinical findings, not their injury.

It would be absurd to pretend that there is a great deal which is very profound in these letters. They are the exchange of comment between two men, one twenty years senior, who are interested in the same work and the same movement. Yet they seem to throw a light on the sort of people they were and the respect which they felt for each other.

They begin with the exchange of letters devoted purely to analytical matters and end on a much more affectionate note, as if Freud had adopted Abraham as a most intimate friend, and Abraham had reciprocated. All through the correspondence there is this friendly note, but Abraham was by no means a mere affirmative to Freud. Indeed, he disagreed strongly in such matters as the personality of Jung and was eventually proved correct in his estimate. A great deal of the contents of Freud's letters has found its way into the various histories of psycho-analysis, but those interested in the original statements will find it fascinating to know what was occurring and said at the time. No one will learn complete psycho-analytical theory from them (although some can be gleaned), but as a study of two eminent men they are of great interest.

C. ALLEN

## BRAIN AND SELF

### The Brain and the Unity of Conscious Experience

(The Nineteenth Arthur Stanley Eddington Memorial Lecture, 15 October, 1965.) By Sir John Eccles. Pp. 45. (London: Cambridge University Press, 1965.) 4s. 6d. net; 95 cents.

**S**IR JOHN ECCLES'S Eddington Lecture for 1965 entitled *The Brain and the Unity of Conscious Experience* is a most distinguished addition to the series. Three-quarters of it is devoted to brilliant and penetrating survey of the latest neurophysiological evidence linking neuronal activity with the existence of conscious states. Much of the work quoted is as yet unpublished, and very important new advances by Moruzzi, Mountcastle, Libet, Myers and Bremer are outlined. Perhaps particularly outstanding is the recent work of Libet and his colleagues, who have utilized the responses of the somesthetic area in an attempt to discover the nature of the neuronal activity that leads to conscious experience. It was found that with all conditions of threshold stimulation there is a delay of at least 0.5 sec before the onset of the experienced sensation—a sort of 'incubation period' of a conscious experience at threshold level. In the visual system also, there is evidence that at least 0.2 sec of cortical activity is required before the first threshold flash of light can be detected. There is also an excellent account of Sperry's work on the experiences and behaviour of human split-brain patients. This condition in these patients results from the operation of severing the corpus callosum, the anterior commissure and the massa intermedia—an operation which has been highly successful in some cases of severe and long-standing epilepsy.

The final part of the lecture considers whether the uniqueness of the experiencing self derives from genetic uniqueness. Here, Sir John goes back to some little-known, but important, speculations by the eminent American biologist, H. S. Jennings, published in 1930. Since identical twins have identical gene combinations he concludes that these combinations must obviously be compatible with distinctiveness of experiencing selves. He thus concludes that the uniqueness of the individual self cannot be due solely to the uniqueness of the individual gene combination. He further concludes, by what appears to be sound reasoning, that neither can the