

discoveries made in the earlier part of the century, merely sketching their later developments. We do not blame the author for omitting many discoveries of importance, but it is a great pity that he did not realise that the present selection gives a somewhat one-sided view of scientific aims and methods.

Having said so much about a weak point in the book, it would be unfair not to dwell on several useful features. The specialist working in one branch of science is very apt to forget what he ever learnt about other directions of scientific progress. In these days, over-specialisation and over-elaboration are being carried to greater excess every year. Even the subdivision of the Royal Society's Proceedings into two series has completely destroyed their former all-round character. A book like the present, taken up and read in a leisure hour, will recall to the specialist many interesting points in the history of different branches of science of which he would otherwise never think. If there is one class of specialist who is more likely than others to benefit by reading the book, that is the mathematician himself, and next to him, possibly, the physicist. These, in particular, will be brought into contact with ideas quite different from those with which they are commonly associated, and it may be hoped that the mathematician will learn a lesson, and be less prone to hide his light under a bushel, when he finds how his genius is unappreciated by the writers of popular treatises.

G. H. BRYAN.

ANCIENT AND MODERN LEICESTER.

Glimpses of Ancient Leicester in Six Periods. By Mrs. T. Fielding Johnson. Second edition, with supplementary notes. Pp. xv+439. (Leicester: Clarke and Satchell, London: Simpkin, Marshall and Co., Ltd., 1907.)

THIS book was first published in 1892 as a "History of Leicester from the Earliest Times to the End of the Eighteenth Century." The present edition has been enlarged considerably by a supplement, in which more recent developments have been dealt with. The author belongs to a Leicester family which has taken a leading part in the public life of the town for several generations. Local histories are wont to be rather dull, but in this case, thanks to a lucid and lively style, the writer has succeeded in producing a volume of more than usual attraction for the general reader.

Leicester appears to have been an important Roman settlement, of which the chief remains are a part of the old rampart, now called the "Jewry Wall"; some fine examples of tessellated pavements; and a milestone with an inscription to the Emperor Hadrian, said to be the oldest stone inscription in Britain. During Saxon times the Church of St. Nicholas was built on the site of a Roman temple. This church "still includes in the north wall of its nave portions of the identical walls of the original Saxon church, showing a quantity of material taken from the Jewry Wall and other ruined Roman buildings near the spot." "Under the Norman and Plantagenet kings, Leicester reached its highest point

of importance as a mediæval borough," under its greatest earl, Simon de Montfort. Several buildings of this period are in existence; amongst them may be mentioned the Newark Gateway and the Old Town Hall. Memorials of the sixteenth century may still be seen in the Abbey and the Queen Elizabeth Grammar School.

The supplement gives an interesting account of the development of the place from a market town with a population of 17,000 at the end of the eighteenth century into an industrial centre of nearly a quarter of a million people.

In this connection reference should be made to the excellent description of the rise and progress of the present important knitting and hosiery trade. A great impulse was given to the prosperity of the town by the opening of the Leicester and Swannington Railway. This was the second railway in the country, and was built by George Stephenson in 1832. Some of the original rails and other specimens of early railway work are preserved in the town museum.

This useful institution owes its origin to the Literary and Philosophical Society, through which it gained the nucleus of its present valuable collection. The scientific activity of the town has always centred round this society, which was founded in 1835.

The attention of the reader of Mrs. Fielding Johnson's book will be attracted to the names of several of her townsmen who have attained distinction in scientific pursuits, amongst whom may be mentioned Russel Wallace, the naturalist Bates, and another, not so well known, Mr. Ludlam, who assisted Dollond in the production of achromatic lenses for his telescopes.

The history of the educational institutions of the town receives adequate treatment. Secondary education is mainly in the hands of the Wyggeston and Queen Elizabeth Grammar Schools, and Alderman Newton's School, the latter an eighteenth-century foundation. During last century a working men's college and a mechanics' institute were started. The former does useful work still, whilst the latter has developed into a fine technical school.

A special interest attaches to the new edition of this attractive work in view of the forthcoming visit of the British Association to Leicester, and intending visitors would find in it a pleasanter account of their place of meeting than the pages of an ordinary guide-book can afford. The book is admirably illustrated, and is provided with an index. R. E. T.

A NEW LIFE OF HUXLEY.

Thomas H. Huxley. By J. R. Ainsworth Davis. (English Men of Science Series.) Pp. xi+288. (London: J. M. Dent and Co., 1907.) Price 2s. 6d. net.

MR. DAVIS has produced in small compass an account of the life and work of Huxley that is at once readable and stimulating. It was inevitable that he should draw largely upon Mr. Leonard Huxley's biography of his illustrious father, but the materials have been skilfully employed, and the book

is far from being a mere abstract of the larger work. Huxley's energy, industry and fixity of purpose are brought into due prominence; while his intellectual keenness and honesty, his intolerance of pretentious ignorance, his appreciation of everything good in art and literature, his jealousy for the right use of the mother tongue, his admirable social and domestic qualities, all have ample justice done to them in the pages of this modest volume.

The attentive reader will easily discern how it is that among the great names of the Victorian epoch few take a higher place than that of Huxley. Eminent as an original worker in science, whose investigations covered an unusually wide field, he was scarcely less distinguished as a philosopher and as a practical man of affairs. By dint of unwearied industry, of a single-minded love of truth and of a nature at once candid and fearless, he made for himself a reputation in the intellectual life of the last century which will outlive many of those that, for the time being, bulked more largely in the public view.

In controversy, as Mr. Davis often reminds us, Huxley was a strenuous but never ungenerous adversary, though it sometimes seemed hard for him to realise that his opponents might hold their convictions as sincerely as he did his own. The popular notion of Huxley as an intellectual pugilist who found his chief delight in propounding dogmas, the more startling the better, in science and philosophy, is scarcely borne out by the facts of his career. It is true that in his own judgment he was "rather prone to jump at conclusions," and when he felt sure of his ground no man could speak with greater confidence. But questions, even of the first magnitude, as to which the data were not in his opinion sufficient for a solution, were by him left open to the end.

Perhaps the most conspicuous instance of this truly "agnostic" attitude was the position he took up in reference to Darwin's theory of natural selection. Curiously enough, while his acceptance of the fact of evolution was hastened, if not caused, by the publication of the views of Darwin and Wallace, he never committed himself to an unqualified approval of those views. He was converted by, but not to, the doctrine of natural selection. This, however, did not prevent him from acting as Darwin's champion against attacks dictated by ignorance and prejudice, nor from treating the Darwinian hypothesis as "the most powerful instrument of investigation which has been presented to naturalists since the invention of the natural system of classification, and the commencement of the systematic study of embryology."

It is probable that we here touch upon one of Huxley's limitations. Unrivalled as he was in many departments of biology, it is clear that field natural history did not come to a great extent within his sphere of mental activity. Had this been otherwise, and had his attention been more directed to the study which now goes by the name of bionomics, it seems fair to conjecture that his views as to the validity of

Darwin's theory might have undergone some modification.

There are certain slips in Mr. Davis's book which should be remedied in a future edition. We note a few, as follows:—*Ephestia elatella* (*recte* *elutella*) is not a "small beetle," but a Phycid moth. In the letter given on pp. 204-5, Huxley wrote "inconceivable," where Mr. Davis has "conceivable" with much detriment to the sense of the passage. Finally, Duns Scotus we know, and Scotus Erigena we know, but who is Scotus Erigenus?

F. A. D.

PHYSICAL AND INORGANIC CHEMISTRY.

- (1) *Practical Physical Chemistry*. By Dr. Alex. Findlay. Pp. xii+282; illustrated. (London: Longmans, Green and Co., 1906.) Price 4s. 6d. net.
- (2) *Physical Chemistry in the Service of Medicine*. Seven addresses by Dr. Wolfgang Pauli. Translated by Dr. Martin H. Fischer. Pp. ix+156. (New York: John Wiley and Sons; London: Chapman and Hall, Ltd., 1907.) Price 5s. 6d. net.
- (3) *Vorlesungen über anorganische Chemie für Studierende der Medizin*. By Dr. Ernst Cohen and Dr. P. van Romburgh. Pp. viii+431; illustrated. (Leipzig: Wilhelm Engelmann, 1906.) Price 15 marks.

(1) **S**LOWLY but surely the necessity of systematic laboratory instruction in the methods of physical chemistry is being recognised. One of the causes which may have contributed to the absence of such instruction in many university courses of chemical study has been the lack of a suitable practical textbook. With the appearance of Dr. Findlay's work this regrettable deficiency in laboratory literature can, however, be no longer said to exist. The apparatus required for the measurement of density, viscosity, surface-tension, refractive index, molecular weight, conductivity, transport numbers, electromotive force, velocity of chemical change, solubility, transition temperatures, and thermal changes is described, and instructions for the carrying out of the measurements are given in an easily intelligible form.

The course is modelled on that of the Leipzig school, which for many years occupied a unique position as the Mecca of students of practical physical chemistry. This is doubtless partly due to the author's personal association with this particular school. It may perhaps account for the omission of several important types of experimental exercises. In particular, electrochemical experiments involving the estimation and separation of the metals and the preparation of different classes of compounds afford many valuable applications of physicochemical principles, and the omission of chapters dealing with these phases of the subject is regrettable. Some difficulty may be experienced in interpreting what is meant by the term "maximum apparent error" in the first chapter. With a vocabulary of errors in which relative, absolute, possible, probable, and apparent errors may be spoken of, a careful definition of terms is essential. In the dilatometric determination of transition temperatures (p. 274), Glauber's salt is not