

## Charles Lapworth : an Appreciation.

AS announced in our April number, Professor Charles Lapworth died at his residence, Edgbaston, Birmingham, on March 13.

For an account of his life and work our readers are referred to an article—one of the “ Eminent Living Geologist Series ”—which appeared in the July number of the Magazine in the year 1901. At the time when that article was written the main results of his work in the field, the outcome of thirty-three years of labour, had already been published, and we need therefore add but little to its records.

In 1902 he was elected President of the Geological Society, a position which he would certainly have occupied many years before that date had circumstances permitted. In the following year he delivered his presidential address to the Society, to which further allusion will be made presently. Unfortunately illness prevented him from retaining the Presidency for the usual two years, and geologists were accordingly deprived of a second address, which would doubtless have attained the high level of that which was actually delivered.

In the year 1902 he was also appointed a member of the Royal Commission to inquire into the coal resources of this country, and the importance of his contributions to the report of the Geological Committee of that Commission on the resources of the concealed and unproved coalfields, published in 1905, is widely recognized.

His work on applied geology became more varied as time advanced, and he was in great request as a consulting geologist on questions which concern the miner, the engineer, and others. The city of Birmingham in particular was indebted to him for work of this character, with the result that the hard-headed businessman was taught the value of geology in a manner which specially appealed to him.

Among the later honours conferred upon him we may mention the honorary degree of LL.D. of the University of Glasgow in 1912, and the award of the Wilde Medal of the Manchester Philosophical Society in 1905. We would note, also, that since our former account of Lapworth was published, the monograph of the British graptolites, by Miss Elles and Mrs. Shakespear, has been completed. It forms a fitting conclusion to his great work on this group of organisms, for, as its authors fully admit, it was inspired by Lapworth and he superintended its production throughout.

In attempting an appreciation of Lapworth's life-work, it must be stated at the outset that he was pre-eminently a stratigrapher and field-geologist, though he utilized all branches of geology in pursuing his work, and in so doing added materially to our knowledge of them. His work on the Lower Palæozoic rocks of the Southern Uplands of Scotland forms the foundation upon which his later

work was based, and the unravelling of the complex of those uplands was logically followed by that of the much greater complex of the North-Western Highlands.

At the outset he found that field-work in the Southern Uplands required to be supplemented by study of the fossil evidence, and accordingly devoted himself so assiduously to the study of the graptolites that he rapidly became the leading authority upon this group of organisms, and remained so to the day of his death. In acquiring his knowledge of these animals, he mastered the biological memoirs treating of their nearest living allies, and thus incidentally trained himself as a first-rate palæontologist. How accomplished he was as such was later shown by his ingenious restoration of the structure of the trilobite, *Olenellus* (*Callavea*) *Callavei*, from study of the imperfect fragments which he discovered in the Cambrian rocks of Comley.

Again, when solving the riddle of the North-West Highlands, various petrographical questions confronted him, and his study of petrology enabled him here to contribute much to our knowledge of the processes of metamorphism.

The severe illness developed as the consequence of his work in the Highlands had a permanent effect upon Lapworth, and brought to a close the strenuous days of his field-work. Although he subsequently accomplished much among the old rocks of the classic region of Siluria and elsewhere, the work was not marked by the intense vigour which characterized the prosecution of his earlier labours. When we recognize that in his earlier years he was hampered by want of leisure, and in his later by lack of health, we are amazed at what he actually performed.

But though his field-work was impeded in later years, the activity of that most original mind was unimpaired. Lapworth's early training in geometry always stood him in good stead, and enabled him readily to visualize in three dimensions. His work in the Uplands and Highlands of Scotland aroused his interest in tectonic problems, and led to the elaboration of his fold theory. He treated of this at much length in his Presidential Address to the Geological Section of the British Association at Edinburgh in 1892, and finally turned to it once again in that part of his Presidential Address to the Geological Society which deals with geology and physics. Many of the sentences in this are pregnant with meaning, and give us a glimpse of the workings of the mind of a seer. How one regrets that he had neither time nor opportunity to write a great work upon theoretical geology embodying his riper conclusions!

Those who wish to gain a just idea of Lapworth's work should read not only the account given in this Magazine in 1901 but also his own address to the Geological Society. Parts of that address may be regarded as autobiographical, for when he writes of the varied duties of a geologist he is often unconsciously describing his own methods of work in research, scientific practice, and education.

We claim Lapworth as one of the foremost geologists of all time. His output of published work must be estimated by quality rather than quantity, for there is no doubt that his ill-health of later years prevented him from publishing as fully as would otherwise have been the case.

The profound influence exerted by what is published is generally realized, and we need dwell no longer upon this part of his work. But much of his knowledge which he did not commit to print is not lost, but is bearing fruit, and will continue to do so. For Lapworth was a great teacher, and his students have proved this in many ways. His influence, however, was not by any means confined to the lecture-room, and during the years of his Professoriate at Birmingham the city was a geological Mecca, where geologists of all classes went to discuss their work with one who was always ready to help, and they ever came away enriched with new ideas, which will aid materially in swelling the stock of geological knowledge.

Many of us will recall the evenings when, after a hard day's work in the examination-room or elsewhere, and having partaken of a cheerful dinner, Lapworth would perhaps sit down at the piano and play his accompaniment to some gay song from the latest popular opera, and the listener would think that the day's work was over, until a move was made to the study and the Professor poured out treasures from the storehouse of his mind until the small hours of the morning, and the brain of the awed listener reeled. Or, after the consumption of the midday sandwiches on some mountain-slope, he would explain the structure of the surrounding country during the frequent intervals between the relighting of his pipe, until its aspects during the different geological periods seemed to glow before the hearer's vision.

Experts and tyros alike have had these experiences, sitting at the feet of the master. This was, indeed, a liberal education, and one which will prevent his unpublished ideas from being for ever lost. How sad it is to realize that the experiences are now things of the past! But the memories of them are dear, and we treasure the recollection of the waves of joy and earnestness alternating on his animated face, like the changes of light and shade on a hillside beneath a dappled sky.

Would that we could present a faithful picture of him to those who had not the privilege of knowing him, but the task is impossible. We have lost a great geologist, and withal a man of very beautiful character.