

He became a Fellow of our Society in 1851, and for many years was a regular attender at the meetings, and he served for several years on the Council. Although not himself a scientific worker, he took much interest in hearing of the progress of science in the world, but the papers on the literary side of the Society, then more numerous than of late years they have been, probably had greater attractions for him. He passed away on 28th July 1890, at the ripe age of ninety, preserving his intellect unclouded and his interest in life unabated to the end.

Although he could not be described as a great preacher, his pulpit ministrations were appreciated by his successive flocks, and his kindly interest in their welfare secured the affection of many. Probably his most characteristic quality was his sagacity as a counsellor, whether amid the turmoil of ecclesiastical strife, or, later in life, in the management of the numerous societies and institutions with which he was connected. His memory will be cherished as that of one who realised the dignity of his high profession, and exhibited in his person some of the best qualities of a Scottish clergyman of a school now fast passing away.

Professor Kolbe. By Prof. Crum Brown.

Professor Herman Kolbe was the eldest son of the Rev. Carl Kolbe of Elliehausen, near Göttingen, and was born on the 27th of September 1818. He was educated at home by his father till his fourteenth year, when he entered the Göttingen Gymnasium. In April 1838 he began the study of chemistry, under Wöhler, in the University of Göttingen, where he also acquired a thorough theoretical and practical knowledge of physics and mineralogy under Listing and Hausmann.

In 1842 Kolbe was appointed assistant to Bunsen in the chemical laboratory of the University of Marburg. He took the degree of Ph.D. in that university in the following year, the title of his thesis being "On the Products of the Action of Chlorine on Bisulphide of Carbon."

In the autumn of 1845 he removed to London as assistant to Lyon Playfair. In the spring of 1847 he returned for a short time to Marburg, and in the autumn of the same year removed to

Brunswick, to undertake the editorship of the great *Dictionary of Chemistry*, begun by Liebig and Poggendorff in 1837.

In 1851 he was called to Marburg to succeed Bunsen, who had been translated to Breslau. He remained in Marburg till 1865, when, on the unanimous request of the Faculties of Medicine and Philosophy, he was called to succeed Kühn as professor of chemistry in the University of Leipzig.

In 1870 he added to his professorial work that of the editorship of the *Journal für praktische Chemie*. He died very suddenly, of heart disease, on the evening of the 25th November 1884.

This short notice of the principal landmarks in Kolbe's life has been taken from the full and interesting account given by his son-in-law, Professor E. v. Meyer, in the *Journal für praktische Chemie*.

Perhaps the most striking feature of Kolbe's scientific character was its independence. His opinions and views were his own, and were to an extraordinary degree unaffected by the opinions and theories of others. This independence gives a peculiar value to his theoretical writings, but it had also its disadvantages. The individual character of his style of thinking and writing certainly confined his immediate influence very much to those—comparatively few—chemists who took the trouble to learn his language and understand his methods. The ideas which he originated have now been to a great extent translated into the language of modern chemistry and form part of the common doctrine, but many chemists are unaware of their source, and would scarcely recognise them in the form in which they were first published. The loss to science was temporary, and Kolbe's fame may be safely entrusted to future historians; but the misunderstanding, which was a misunderstanding on both sides, led sometimes to a kind of strife painful to all the friends of those involved in it.

It is not possible, within the limits of an obituary notice, to do more than very briefly indicate the general character of the groups of investigations made by Kolbe, and of the theoretical conclusions he drew from their results.

Kolbe's first great research, published in 1845, was on the compound formed by the joint-action of chlorine and water on bisulphide of carbon. This substance has the composition CCl_4SO_2 , and its investigation formed the natural sequence to his graduation

thesis mentioned above. From this "sulphite of perchloride of carbon" Kolbe obtained the potassium salt now represented by the formula $\text{CCl}_3\text{SO}_2\text{OK}$, and from the corresponding hydrogen salt, by successively replacing the chlorine by hydrogen, $\text{CHCl}_2\text{SO}_2\text{OH}$, $\text{CH}_2\text{ClSO}_2\text{OH}$, and $\text{CH}_3\text{SO}_2\text{OH}$.

A great series of investigations, beginning with a joint work by Frankland and Kolbe on the action of caustic potash on the cyanides of the alcohol radicals, led Kolbe to theoretical views as to the constitution and relation to one another of the group of acids now known as "carboxyl compounds" and the corresponding aldehydes, alcohols, ketones, &c. These considerations profoundly influenced the history of chemistry, although, for the reason already mentioned, Kolbe has not even now obtained full credit for what he did. It is true that we are very apt to read old papers in the light of recent discoveries and to find in them more than their writers intended, and the composer of an *éloge* is specially liable to this error; but it is impossible to read Kolbe's papers without seeing that he fully recognised, at a time when no one else had a glimpse of the truth on the matter, what is the real relation of the "sulphone" and "carbone" acids to sulphuric and carbonic acids respectively, and expressed these relations and those of the acids to the aldehydes, alcohols, ketones, &c., with perfect distinctness. His theory enabled him to predict the discovery of the secondary and tertiary alcohols; and when Friedel published his discovery, that acetone gives, by treatment with nascent hydrogen, a propylic alcohol, Kolbe at once declared that this must be one of his secondary alcohols, and that on oxidation it must give, not propionic aldehyde and acid, but acetone, as was soon after found to be the case.

A very early and most interesting investigation by Kolbe, on the "Electrolysis of Potassium Valerianate and Potassium Acetate," belongs to the period of his short residence in London. The most striking result was the synthesis of the hydrocarbons R_2 , if we write the potassium salt electrolysed $\text{R}\cdot\text{COOK}$; but the products of the electrolysis were very carefully examined by Kolbe, who detected among them the ethers $\text{R}\cdot\text{COOR}$.

Another important and extensive series of researches bear upon the "oxy-acids." His investigations on lactic acid, and the long and interesting controversy with Wurtz on the constitution of lactic

acid, the synthesis of salicylic acid (by Kolbe and Lautemann), and the reduction of numerous oxy-acids by means of hydriodic acid, carried out by his pupils, belong to this group. In this connection it is right to note that it is to Kolbe that we owe our knowledge of the antiseptic action of salicylic acid.

Besides numerous scientific papers, chiefly published in the *Annalen der Chemie und Pharmacie* and in the *Journal für praktische Chemie*, Kolbe wrote many of the articles in the great *Dictionary of Chemistry*, of which he was editor, and a very valuable *Ausführliches Lehrbuch der organischen Chemie*. In the first and second volumes of this *Lehrbuch* (the only part written entirely by Kolbe) we have a very full account of his views on the constitution of the alcohols, acids, and their derivatives. He also published two short text-books, one on inorganic, and the other on organic chemistry.

James Duncan Matthews. By Professor W. Carmichael M'Intosh, F.R.SS. Lond. and Edin.

(Read January 5, 1891.)

The story of a long life, spent in the service of science, for the most part tells its own tale, and is more or less independent of the biographer; but it is different when a young worker, broken in health, and thus hampered in his efforts, succumbs before reaching middle age.

Born in Aberdeen, Mr Matthews commenced life as an architect in the office of his father (ex-Lord Provost Matthews of Springhill), intending to follow this profession. At the age of nineteen, however, he suffered from a severe attack of typhoid fever, which greatly enfeebled his constitution, and permanently injured his lungs. Though he made several long sea-voyages to Australia and America for the benefit of his health, he only partially succeeded, for the chest-affection continued slowly to progress.

Though in feeble physical health, his active mind was eager for action, and he was led to pursue microscopical work. He then entered Aberdeen University, and studied various biological subjects—especially zoology—which was taught by Professor Ewart, then newly appointed, and with whom a friendship sprung up. Greatly interested in the subject, he resolved to devote his