

taken to have the illumination homogeneous. This condition was secured by causing the light from each source to pass through a combination of blue glass and blue paper steeped in a solution of sulphate of copper. This combination of glass and paper was enclosed in two tubes. If the apertures were equal, the blue spots seen on admission of a source of light were exactly of the same tint and intensity; but if one of the apertures were a little smaller, one spot not only seemed darker, but of a slight difference of colour. This peculiarity, when combined with a definite modification of the aperture of the tube next the source of light to be compared, enabled the observer to determine gradations of light with fully more exactitude than the method of equal shadows.

Mr Ponton was much occupied with the laws of chromatic dispersion, and read papers on that subject at the meetings of the British Association held in 1859 and 1860. At the latter meeting he also read a paper "On the Laws of the Wave-Lengths corresponding to certain points in the Solar Spectrum." Indeed, it is a remarkable circumstance, that at the time of his death, notwithstanding his advanced age, he was engaged in constructing an instrument for making apparent to the eye the different lengths of the waves of light emanating from two differently coloured media.

In addition to the scientific papers enumerated, he wrote several treatises. His most important work is entitled "The Beginning, its When and its How."

He endured his protracted affliction with exemplary patience, and endeared himself to all who knew him by his cheerfulness and thorough kindness of disposition.

It was on the 3d of August 1880 that Mungo Ponton, who will ever be remembered along with Daguerre and Fox Talbot, as one of the fathers of photography, passed away.

THOMAS KNOX. By the Hon. Lord Shand.

Mr THOMAS KNOX was born at Greenlaw in Berwickshire in 1818. At an early age he left his father's house and came to Edinburgh, where he was apprenticed as a draper. Soon after having completed his apprenticeship he went to Dundee, where he remained for some time as an assistant in an extensive warehouse. It was there he

gave evidence of that public spirit which was so conspicuous through life, and where the foundation of that career of usefulness for which he was distinguished was laid. At that time the hours of shopmen were excessive, and impressed with the evils of this, he, in union with others, inaugurated the movement for shorter hours. It was at a meeting of young men that Mr Knox set himself to expose the bad effects of protracted hours of labour, and to point out the importance of intellectual improvement of the class interested. Before he left Dundee his gifts as a public speaker attracted attention, while his aspirations after mental culture and social reform secured for him the position of a trusted leader among the young men with whom he associated. After a few years spent in Dundee, he returned to Edinburgh, and ultimately commenced business as a partner in the well-known firm of Knox, Samuel & Dickson. Mr Knox was a man of remarkable strength, both mentally and physically, and there were few public men better known or more generally respected among his fellow-citizens. His appearance was commanding; he had fine features, an open frank countenance, a high forehead and dark expressive eyes which gave an impression of intense earnestness to all who met him. He was distinguished by a breadth of thought and enthusiastic attachment to every movement that aimed at the moral, educational, and social elevation of the people, and he was attracted to almost every platform which sought to correct public abuses or lend a helping hand to the struggling and helpless. There was at the same time a geniality of feeling and kindness of disposition, stirred by generous impulses, which secured for him a hearty welcome among all classes. As a politician he belonged to the advanced Liberal or Radical section of reformers, but he was at the same time tolerant of the opinions of those who differed from him, whether Whigs or Conservatives. As a sanitary reformer he was a fellow-worker with Dr Begg, Dr Guthrie, Dr James Cowan, and latterly with Dr William Chambers, who found in him a hearty coadjutor in carrying out the grand scheme for the improvement of the city, by substituting open well-aired streets for ill-ventilated and confined lanes and closes. In order to the enterprise for that object being carried out, a large amount of preliminary education was necessary to prepare the public mind. With one or two other social reformers, Mr Knox explored the slums and dark places of the city by day and night, and by the

use of his pen he laid bare the true state of matters, by which the citizens were taken by surprise. The exposure which he thus made, by speeches and pamphlets, and through the columns of the press, were the necessary precursors of the City Improvement Act. It was the explorations carried on by him and others among the masses crowded in the lowest localities of the city which also paved the way for the formation of the Association for Improving the Condition of the Poor,—an association which has for a number of years been the means of relieving great distress amongst the deserving poor. The old town was divided into districts, and the sad truth ascertained, by personal visitation, regarding the depth of misery and immorality in the city slums. The result of their labours was to produce a series of pointed and striking articles in the daily press, and also a report of the most melancholy and startling character, and as previously stated these were followed by the formation of the above Association. No sooner had the Improvement Act become operative than Mr Knox cast about for other fields of philanthropic effort. His free winter dinners for the street Arabs of the city, which have gladdened many a half-starved child, and his warm and enthusiastic interest in the Edinburgh Industrial Brigade and the Mars Training Ship as schools for discipline and moral and industrial education, for several years engaged very much of his attention.

As a temperance reformer he was well known throughout Scotland, and the practical results of his labours are to be seen in several clauses of the Forbes Mackenzie and the Public House Amendment Acts. His fearlessness and utter disregard of personal consequences in the proclamation of the truth and exposure of local abuses brought him enemies and detractors amongst those whose personal interests were affected; but, besides the approval of a good conscience, he never failed to secure the trust and confidence of his fellow-citizens, who recognised the noble and generous motives which inspired him.

In his latter years the influence of Mr Knox was powerfully felt in the educational world. The interest and labour which he manifested, in conjunction with the late Mr James Duncan and Lord Provost Boyd, while each in their time were Master of the Merchant Company, were largely instrumental in moulding the educational system as realised in the Merchant Company Schools, which have

proved so successful. Again, so far back as about twenty years ago, he inaugurated an agitation by delivering speeches and publishing pamphlets on the necessity for the introduction of temperance teaching into school books. This proposal was at first treated as too Utopian to be seriously entertained; but before he died he was privileged to see Dr Benjamin Richardson's *Temperance Manual* largely introduced into many of the public schools, while temperance lessons were being introduced into the school books published by Messrs W. & R. Chambers, Collins & Son, Nelson & Sons, and other noted publishers.

The institution which had the benefit of a large share of Mr Knox's interest and effort during the last few years of his life was the Watt Institute and School of Arts, the earliest of the Mechanics Institutes founded in the United Kingdom. He was appointed Hon. Treasurer in November 1876, and since that time a complete revolution has been effected in the interesting history of the School. The time and labour which he gave in supporting and co-operating with Lord Shand, the President of this People's College, in efforts to extend the usefulness of the school amongst the industrial classes it would be difficult to overestimate: the result was an accession of students in increasing numbers in a degree perhaps unprecedented in the history of any educational institution. Having regard to the general interest taken in the School at the present time by all sections of the citizens, it may be mentioned that the number of students in 1875-76 was 1098; in 1876-77, 1404; 1877-78, 1977; 1878-79, 2185; and 1879-80, 2375. Thus in four years the increase was 1280. In that short period the attendance was more than double, and nothing tended to this result more powerfully than Mr Knox's constant attendance at the classes in the evening when his business labours were over, and his kind words of encouragement to the students. It is an interesting fact that the last few hours of Mr Knox's life were devoted by him to this institution. Before retiring to rest on the night of his death, he wrote out the draft of the Annual Report, in which he made an earnest appeal that the directors might be supported in their endeavours, by means of a union with the Heriot Trust, not only to maintain the School in a state of efficiency, but to extend it greatly, so as that it should become a People's College for Technical Education, really worthy of

the nation and the metropolis. He died on the 4th of December 1879, in the 61st year of his age, having devoted the best part of his life in earnest endeavours to promote the welfare of others.

LORD ORMIDALE. By the President.

ROBERT MACFARLANE, a judge of the Court of Session, under the title of Lord Ormidale, died on the 2d of November 1880, in his seventy-ninth year. He was in many respects a remarkable man, and his life had elements of interest and variety apart from his professional success. Vigour of thought and force of character were the principal features which distinguished him, and these enabled him, through many changing scenes and some vicissitudes, to assert a foremost rank at the Bar and on the Bench.

He was born in Glen Douglas, on Loch Lomond, on the 30th of July 1802, among some of the grandest and most beautiful scenes of the Scottish Highlands. Nor were the traces of such a birth-place without a reflection in his character. The quick, ardent, intense enthusiasm which marked the man, were the natural fruit of a boyhood spent by mountain and flood; and the cloud and sunshine flitted across his impressionable spirit, as he must have seen them pass over his native hills.

He attended the University of Glasgow in the four sessions from 1816 to 1819, and then came to Edinburgh. Shortly afterwards he went on a voyage to the West Indies, in connection with the affairs of a relative, and after a short residence in Jamaica he spent four or five months in the United States, before returning to this country.

Having on his return resolved to prosecute the legal profession, he became bound as apprentice to Mr James Greig, W.S. In this occupation he was associated with two men who were afterwards very eminent in their respective careers, and very distinguished members of this society. One was the late Lord Neaves, one of the most brilliant of our body, and the other our late lamented Treasurer, Mr David Smith, the loss of whose invaluable services we so deeply deplore.

On finishing his apprenticeship, Mr Macfarlane resolved to enter the body of Writers to the Signet, and for more than ten years, from 1827 to 1838, carried on business in that capacity, as a