fossil wood, and mounting them on glass with Canada balsam, had been devised by William Nicol of Edinburgh, and was employed by Henry Witham in his "History of Fossil Vegetables." [76]

It was not, however, until 1856 that Mr. H. C. Sorby, applying this method to the investigation of minerals and rocks, showed how many and important were the geological questions on which it was calculated to shed light.[77] Reference will be made in subsequent pages to the remarkable results then announced by him. To the publication of his memoir the subsequent rapid development of the microscopic study of rocks may be distinctly traced. The microscopic method of analysis is now in use in every country where attention is paid to the history of rocks.[78]

In § iii. p. 161 information has been given regarding the

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[76] Small 4to, Edinburgh, 1831. This work, though dedicated to Nicol, does not distinctly recognize him as the actual inventor of the process of slicing mineral substances for microscopic investigation. All that was original in Witham's researches he owed either directly or indirectly to Nicol.

[77] Brit. Assoc. 1856, Sect. p. 78. Quart. Journ. Geol. Soc. xiv. 1858. Micr. Journ. xvii. (1877), p. 113.

[78] Among the best text-books on this subject the following may be mentioned:—"Mikroskopische Beschaffenheit der Mineralien und Gesteine," F. Zirkel, 1 vol. 1873. "Mikroskopische Physiographie der Mineralien und Gesteine," H. Rosenbusch, 2 vols. 2d Edit. 1885–87, and the English translation of the first volume quoted on p. 161; likewise the Tables translated by F. H. Hatch quoted on p. 161. "Elemente der Petrographie," A. von Lasaulx, 1875. "Minéralogie micrographique: roches éruptives françaises," Fouqué and Michel-Lévy, 2 vols. 4to, Paris, 1879. "Microscopical Petrography," Zirkel, being vol. vi. of the Geol. Explor. of 40th Parallel, Washington, 1876. "British Petrography," J. J. H. Teall, London, 1888. "Les Minéraux des Roches," Michel-Lévy and Lacroix, Paris, 1888. The volumes for the last fifteen or twenty years of the Quarterly Journal of the Geological Society, Geological Magazine, Neues Jahrbuch für Mineralogie, etc., Zeitschrift der Deutschen Geologischen Gesellschaft, Bulletin de la Société géologique de France, Jahrbuch der K. K. Geologischen Reichsanstalt (Vienna), contain numerous papers on the microscopic structure of rocks. Rutley's "Study of Rocks," 1879, and his "Rock-forming Minerals," 1888; Cole's "Aids in Practical Geology," 1891; and Hatch's "Petrology—Igneous Rocks," 1891, are useful handbooks. The manual of Rosenbusch and the work of Fouqué and Michel-Lévy, contain a tolerably ample bibliography of the subject, to which the student is referred. The titles of some of the more important memoirs which have recently appeared will be given in footnotes.