the magnetic actions which belong to all substances; introduced the term magnetic "permeability"[1] as descriptive of the degree in which various substances acquire magnetic properties and conduct the lines of magnetic force in the neighbourhood of powerful magnets; and finally demonstrated how, if these properties were considered as having different degrees in the different axes of crystals, in analogy with the different elasticities which they exhibited, the consequence would be a turning effect which would explain the changed optical properties of crystals under the influence of magnetic action.[2] In these investigations the ideas of

[1] This property was afterwards termed "permeability" by Thomson (Reprint, p. 489, 1872). The general rule of magnetic action can then be expressed by saying that "by virtue of differential action a body may behave paramagnetically or diamagnetically according as it is placed in a less or a more permeable medium than itself" (Chrystal in article "Magnetism," 'Ency. Brit.,' 9th ed., vol. xv. p. 248).

[2] On the Theory of Magnetic Induction in Crystalline and Non-crystalline Substances" ('Philos. Mag.,' March 1857; also Reprint, 2nd ed., p. 471, &c.) Poisson had already foreseen the mathematical possibility of what Faraday termed magne- (correctly magneto-) crystallic action, but "ce cas singulier ne s'étant pas encore présenté à l'observation, nous l'exclurons de nos recherches" ("Mémoire sur la Théorie du Magnétisme," 'Mém. de l'Institut, Paris, 1826,' quoted by Thomson, Reprint, p. 484). Stimulated by the discoveries of Faraday, Plücker at Bonn, during the extraordinary interval which separated the second from the first period of his original geometrical speculations (see vol. i. p. 242 of this work), devoted himself to the study of the electric and magnetic properties of gases and crystals, and in 1847 commenced that remarkable series of physical memoirs through which he became the fellow-worker, if not the rival, of Faraday. One of his first discoveries was the action of magnets on crystals, published in 1847 (Pogg. Ann., or Plücker's 'Physicalische Abhandlungen,' ed. Pockels, Leipzig, 1896, p. 6, &c.), which supplied to Thomson "the very circumstance the observation of which was wanting to induce Poisson to enter upon a full treatment of the subject, and made the working out of a mathematical theory of magnetic induction . . . independently of any hypothesis . . . upon a purely experimental foundation . . . important" (Thomson, *loc. cit.*, p. 471). Plücker was an original thinker, and mainly a self-taught genius, imperfectly acquainted with the labours of his contemporaries or predecessors. This has been noted by his biographers as much in his geometrical as in his physical researches (see the memoirs of Clebsch and of Prof. Riecke, prefixed to the two volumes of the 'Gesammelte Abhandlungen').