

“Since this work is thus so important in the history of Inductive Philosophy, I shall give, in a Note, a view³ of its divisions and contents. But I must now endeavor to point out more especially the way in which the various principles, which the reform of scientific method involved, are here brought into view.

“One of the first points to be noticed for this purpose, is the resistance to authority; and at the stage of philosophical history with which we here have to do, this means resistance to the authority of Aristotle, as adopted and interpreted by the Doctors of the Schools. Bacon’s work⁴ is divided into Six Parts; and of these Parts, the First is, Of the four universal Causes of all Human Ignorance. The causes thus enumerated⁵ are:—the force of unworthy authority;—traditionary habit;—the imperfection of the undisciplined senses;—and the disposition to conceal our ignorance and to make an ostentatious show of our knowledge. These influences involve every man, occupy every condition. They prevent our obtaining the most useful and large and fair doctrines of wisdom, the secrets of all sciences and arts. He then proceeds to argue, from the testimony of philosophers themselves, that the authority of antiquity, and especially of Aristotle, is not infallible. ‘We find⁶ their books full of doubts, obscurities, and perplexities. They

³ Contents of Roger Bacon’s *Opus Majus*:

- Part I. On the four causes of human ignorance:—Authority, Custom, Popular Opinion, and the Pride of supposed Knowledge.
- Part II. On the source of perfect wisdom in the Sacred Scripture.
- Part III. On the Usefulness of Grammar.
- Part IV. On the Usefulness of Mathematics.
- (1.) The Necessity of Mathematics in Human Things (published separately as the *Specula Mathematica*).
 - (2.) The Necessity of Mathematics in Divine Things.—1°. This study has occupied holy men: 2°. Geography: 3°. Chronology: 4°. Cycles; the Golden Number, &c.: 5°. Natural Phenomena, as the Rainbow: 6°. Arithmetic: 7°. Music.
 - (3.) The Necessity of Mathematics in Ecclesiastical Things. 1°. The Certification of Faith: 2°. The Correction of the Calendar.
 - (4.) The Necessity of Mathematics in the State.—1°. Of Climates: 2°. Hydrography: 3°. Geography: 4°. Astrology.
- Part V. On Perspective (published separately as *Perspectiva*).
- (1.) The organs of vision.
 - (2.) Vision in straight lines.
 - (3.) Vision reflected and refracted.
 - (4.) De multiplicatione specierum (on the propagation of the impressions of light, heat, &c.)
- Part VI. On Experimental Science.
- ⁴ *Op. Maj.* p. 1. ⁵ *Ib.* p. 2. ⁶ *Ib.* p. 10.