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Duhem, Pierre (June 10, 1861, Paris, France – September 14, 1916, Cabrespine, France), French Historian.

Edward Grant begins his book *Planets, Stars and Orbs: The Medieval Cosmos: 1200–1687* by acknowledging D.: “No study of medieval cosmology could proceed without taking cognizance of Pierre Duhem’s monumental ten-volume study on that subject.” D. was perhaps the first person to recognize the intellectual achievements of medieval science and to challenge the Burkhartian construction of the Renaissance as a radical era which ended the “intellectual stagnation” of the Middle Ages. D. brought to light a series of forgotten philosophers of the 14th and 15th centuries and demonstrated how their physical

theories suggestively prefigured those of Galileo, Leonardo de Vinci and Descartes. In doing so, D. introduced not only the topic of medieval science but also a new thesis of scientific change, claiming that scientific advancement was marked by continuity, not by reaction and revolution.

D. came to the study of history unexpectedly. He began his professional life as a scientist and academic. In 1884 he presented a doctoral thesis in physics on the subject of thermodynamic potential. The thesis challenged BERTHELOT's principle of maximum work, which had been formulated by BERTHELOT and was widely accepted at the time. D.'s criticism of the principle was correct, but BERTHELOT was an influential member of the French scientific community. Because of BERTHELOT's interference, the thesis was refused and D. was ever excluded from an academic posting in Paris. D. received his doctorate in 1887 after completing a second thesis on electromagnetic theory. He began teaching at Lille (1887–1893), moved to a position at Rennes (1903–1904), and then finally became professor of physics at Bordeaux (1894–1916) where he would remain for the rest of his career.

D.'s earlier publications examining 16th- and 17th-century mechanics reveal his budding interest in the historical evolution of scientific thought. The preface to *Les origines de la statique* (1904) contains the first articulation of his continuity thesis, where he characterizes “pretended intellectual revolutions” as “unjust and sterile reactions”; and claims that “[r]espect for tradition is an essential condition of scientific progress” (*Les origines*, I:2). Initially, D. believed that this trajectory of scientific thought was initiated by the Greeks, arrested by medieval scholasticism, and rekindled by Leonardo de Vinci. However, he was forced to reconsider this account of events when he encountered the work of Jordanus de Nemore and his science of weights. Ordering manuscripts from the archives in Paris, D. discovered many more thinkers like Jordanus, who had offered innovative physical theories that suggestively prefigured 17th-century science. D. published his discoveries in a three-volume study, *Études sur Léonard de Vinci*, which appeared successively in 1906, 1909 and 1913. For the first time, the works of the 14th-century philosophers Nicole Oresme and Jean Buridan appeared in print and were disseminated to a wider readership. At the completion of these three volumes, D. was able to define his continuity thesis in more specific terms: he was able to state the precise contributions of medieval science and account for the historical events which led to these conjectures. D. identified the principle achievements of the 14th century to be its theories of projectile motion and acceleration, as well as its system of latitude measurement for recording physical changes. In *Le système du monde*, D. investigated further innovations, such as 14th-century speculations on the possibility of other worlds, of infi-

nite space, and infinitesimal magnitudes. Secondly, D. was able to identify historical circumstances that precipitated these innovations. He claimed that the Condemnations of 1277 had challenged the dominance of Aristotelian philosophy and so allowed philosophers to invent new conceptions of space and time. Thus, he argued that 1277 marked the birth-date of modern science. By the time of his death, only four volumes of *Le système* were in print, even though he had drafted ten volumes. His daughter, Hélène, saw to the posthumous publication of the complete series.

While D. is considered as a founding figure of medieval science, during the initial decades of the discipline, he was also considered its foil. In 1959 Marshall CLAGETT commented that “the succeeding study of medieval mechanics has been largely devoted to an extension or refutation of Duhem’s work” (CLAGETT, *The Science of Mechanics in the Middle Ages*, xxi). The most criticized facet of D.’s thesis was the importance he had ascribed to the Condemnations of 1277. This was the least securely defended aspect of D.’s thesis because he had allowed his personal beliefs to frame his account of the event. He described the Condemnations as a triumph of Church over the determinism of Greek philosophy, and a source of pride for any French nationalist or Christian (*Études* 3: xiii–xiv). Alexandre KOYRÉ challenged that the Condemnations of 1277 could mark the birth-date of modern science, given that the document was riddled with errors and misconceptions. However, Edward GRANT has demonstrated that the date is important for medieval theories of cosmology, since the controversy generated new hypotheses of space. The recent *Encyclopedia of Medieval Science* (2005) lists “1277” as its own entry, indicating that the date is considered a significant one; however the precise nature of its significance has been adjusted and revised. The roster of medieval achievements which D. identified have received continued attention by later generations of scholars such as Anneleise MAIER, Marshall CLAGETT, and John MURDOCH. Even though most contemporary scholars feel that D. overstated the achievements of medieval science, they would nonetheless agree that D.’s work was important for signaling the achievements of medieval science and thus established its basis as a legitimate field of study.

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