THE CARTESIAN CONTROVERSY AT UPSALA, 1663—1689, AND ITS CONNECTION WITH SWEDENBORG'S NEBULAR HYPOTHESIS.[1]

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The inner history of Sweden after the thirty years' war exhibits a series of changes affecting in a fundamental manner the politics, social order and intellectual standards of the whole people. Queen Christina, the gifted daughter of the great Gustavus Adolphus, adorned her court by inviting to it many learned and talented men from the continent, among them the philosopher Descartes. But for the premature death of Descartes the Queen would have established an Academy of Sciences at Stockholm, which might have ameliorated the severity of the intellectual changes whose advent during the latter half of the seventeenth century was accompanied by so much controversy and animosity at the University of Upsala. The final outcome was the establishment of philosophical freedom and of untrammeled scientific research. Strangely enough, Charles XI., whose political power was well nigh absolute, a power built upon the ruins of the authority of the nobles, exercised a determining influence in the great controversy at Upsala in the direction of increased freedom of discussion and liberty of teaching. The occasion of the controversy was the entrance of Cartesianism into the Faculty of Medicine, but as the discussion proceeded its scope extended, involving the remaining Faculties of Philosophy, Law and Theology in a general controversy concerning the limits and relationships of theology, philosophy and the sciences. The present paper can do no more than furnish an historical summary of the tortuous course of the controversy and indicate its influence, especially upon the cosmological philosophy of Emanuel Swedenborg, who in 1734 promulgated a

[1] More detailed information, together with full reference to the literature, will appear in a special work in press at Stockholm.

nebular hypothesis which in several respects anticipated the later hypotheses of Kant, Buffon and Laplace.

It appears improbable that the short residence of Descartes at the Swedish capital was accompanied by any events which were directly connected with the subsequent controversy at Upsala, although it is known that the learned were opposed to the foreigner Descartes, as they were opposed to the other foreigners at the court. Queen Christina, however, was so much affected by the philosophy and personal history of Descartes that not long after his death she ordered that no priest should be granted a professorship in the Faculty of Philosophy at Upsala; Descartes had recently suffered from persecution in Holland.

The University of Upsala was founded in 1477 and was naturally saturated with the theology and scholastic philosophy which then prevailed. Aristotle reigned supreme in the philosophical camp except for the inroad which had been made by the anti-Aristotelian doctrine of Ramus. The Cartesian Controversy began in the Faculty of Medicine, where the first Cartesian in Sweden, Olaus Martini Stenius, had been Professor. He was the teacher and predecessor of the famous anatomist and author of *Atlantica*, Olof Rudbeck. Professors Rudbeck and Hoffvenius, both of the Faculty of Medicine, had studied in Holland, where Descartes had spent twenty years of his life and acquired a great influence. In 1663, in connection with a disputation of Hoffvenius, the rumor began to spread that Cartesianism had entered Upsala, which led to complaint on the part of the priests, in session at Stockholm. That the Cartesian movement met with opposition is also shown by some lines which a teacher in Linköping sent to Upsala by the hands of some departing students. He wrote: "Would that the atoms, pores, and effluvia of the sun might not obtain too great a dominion in your academy, so that the young men are drawn away by the desire for novelty from the useful and ancient manner of philosophizing, so that when returning to their parents they cause more pain than honor, not knowing anything else but how to prattle about atoms, etc." Although there was not lacking sympathy in the Consistory with this complaint, it was nevertheless felt that such an admonition was rather strong and that it was produced by "imbeccilitas animi," so the Rector was instructed to give the author, Andreas Ajalinus, a "scrape."

The discussion concerning Cartesianism might not have become so acute during the early period of the controversy had not some of the professors been prepared to welcome an opportunity for revenging themselves upon Olof Rudbeck, who had shown himself bo be an unflinching enemy of laxity and incompetence.

The prominent representatives of the revolutionary Cartesianism were all Professors in the Faculty of Medicine, and when Professor Hoffvenius in a disputation gave evidence that Cartesianism had entered the University, the House of the Priests took up the question in the Parliament of 1664. The proposal that the lectors of physics in the gymnasia should also be medical men was rejected, and for the reason that most of them were Cartesians. A deputation of priests was sent to the Chancellor, to prevail upon him to prevent the youth at Upsala from promiscuously hearing "subtilities, even perhaps such as they do not understand, like the Cartesian philosophy, whose authors say that things of faith are probably set forth by the Holy Spirit, but not so matters in physics, chronology, etc., which are determined by the opinion of the multitude." The Chancellor was not pleased by this advice, practically a criticism of his government of the Uniyersity, where the news of the proceedings against Cartesianism was received with much displeasure, Rudbeck saying that few had read Descartes' philosophy and none of the students understood it. But not long after one of the students, Urban Hjärne, later known as an enlightened scientist, and the founder of a chemical institute, defended another disputation by Hoffvenius, the Cartesian tendencies of which were found to be so obnoxious to the theologians that a long discussion followed, which, however, did not lead to a decisive victory for either party. Hoffvenius refused to have his disputation altered, the theologian Stigzelius and his supporters refused to have it ventilated unless altered, and finally both parties rested upon their arms, although personal friction continued. One of Rudbeck's disputations had also been found too Cartesian and the attacks against him for this and other reasons did not cease.

After a truce, extending from 1668 to 1686, during which Cartesianism made steady progress at Upsala among the teachers, the controversy broke out anew. The House of the Priests, influenced by the Upsala theologians, approached the King,

Charles XI., with a written application, the spirit of which was to prevent the study and dissemination of Descartes' teachings at the University. Among the means proposed to accomplish this purpose the following sufficiently indicate what drastic steps were resolved upon. It was advised that the Theological Faculty should be placed in a position of censorship over the whole University, that the Cartesian philosophy should not only be forbidden, but that the study of the Aristotelian philosophy should be encouraged by special support, that no stipends should be granted except to those who accepted Aristotle's philosophy. All disputations were to be passed upon by the theologians, as well as the philosophical authors to be lectured upon. Finally, all disputations, and also all books from foreign countries, were to be admitted only after having been passed upon by a censor. In order to crush Cartesianism in its former stronghold, the Faculty of Medicine, it was proposed that the professorship of physics, which had been placed in that Faculty, should be removed therefrom and placed in the Faculty of Philosophy, and the chair occupied by a loyal Aristotelian.

The discussion was not so much concerning the principles of Descartes' philosophy, but rather concerning the limitations to be imposed upon the leaders of the dawning natural sciences, who, basing themselves upon experiments and the principles of Descartes were demonstrating the laws of nature from its own phenomena, thus destroying the structures of Aristotelian Scholasticism not only in the field of the natural sciences, but even in that of theology itself, thus endangering religion.

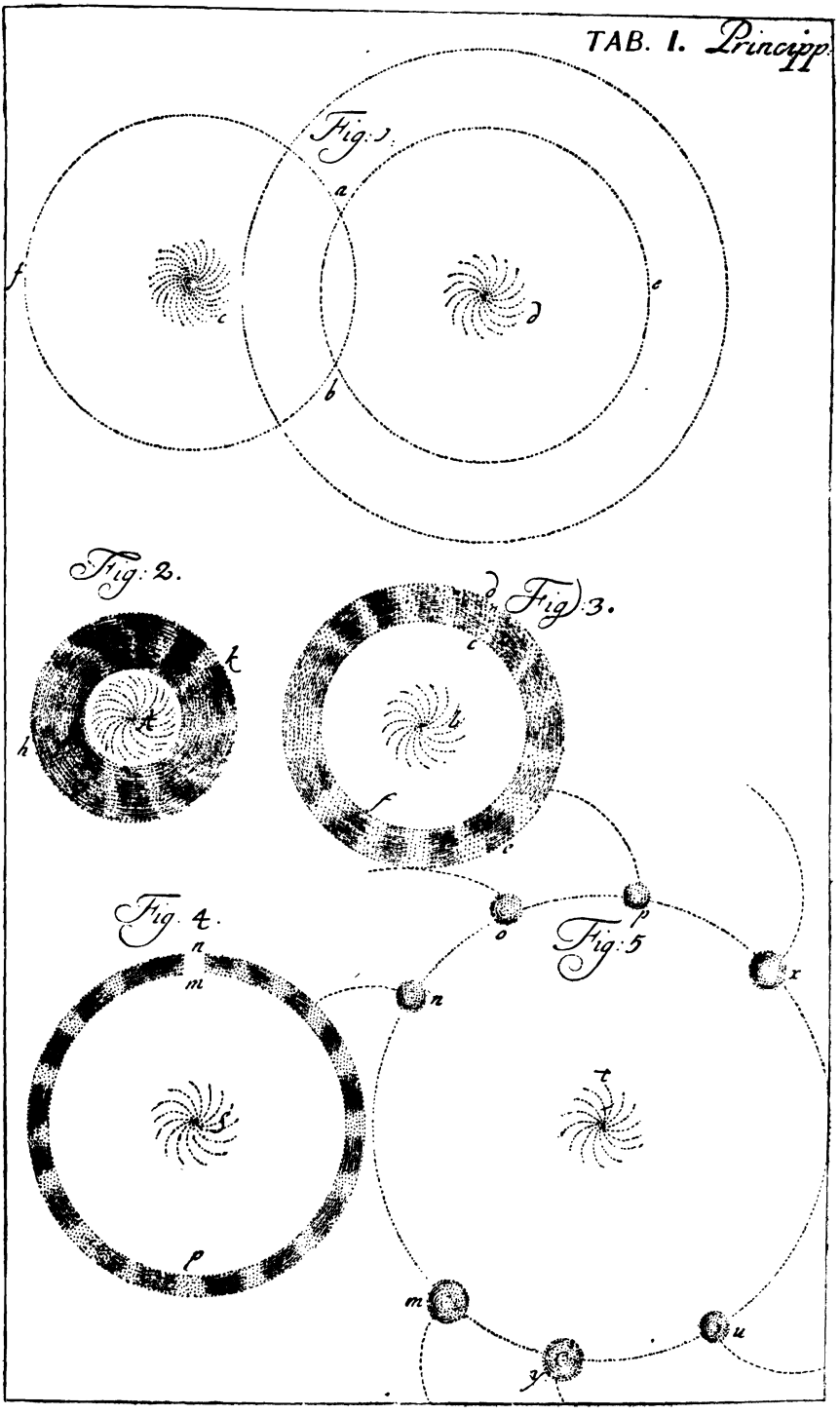
If Charles XI. thought to pour oil upon the troubled waters by sending the accusations of the priests to the accused party, the University, the results were certainly discouraging. The Theological Faculty was opposed by all the remaining Faculties. Rudbeck's influence in the Medical Faculty was strongly in support of Cartesianism, which had also found a strong supporter in the Faculty of Philosophy in the person of Johannes Bilberg, Professor of Mathematics. The King had sent the accusations to the University in January, 1687; all the Faculties had replied by May. The King permitted the matter to rest for two years, possibly to await the assembling of the next diet, which met in 1689. The whole question was then placed in the hands of a committee of five statesmen, who after hearing the evidence

recommended what was in form a compromise, but in actuality a rejection of the accusations against Cartesianism. On the 17th of April, 1689, the King rendered a formal decision that the doctrines of the Christian faith might not be subjected to philosophical criticism, but as for the rest philosophy should be free in practice and discussion. The controversy at Upsala continued for years after the decision, but the crisis had passed. Bilberg was removed from the Faculty of Philosophy, and, that peace might be restored, was appointed Professor of Theology! The appointment, however, failed to restore peace. Not only was further fault found with his philosophical position as set forth in two theological disputations, but another Cartesian, Erik Castovius, was also subjected to severe criticism on account of a disputation, which had been passed upon by Bilberg. But the fundamental question of freedom of discussion and teaching had been answered by the King's decision.

The general results of the controversy were greater freedom of thought and a direct stimulus to unfettered philosophical and scientific research. In 1710 the Scientific Society of Upsala was organised and counted among its members during the century such men as Swedenborg, Celsius and Linnaeus. But that is for the most part a chapter in the history of science.

In the case of Swedenborg (Fig. 1) the influence of the Cartesian Controversy soon appears when an examination is made of his early scientific writings. He also refers favorably to Descartes in connection with some remarkable theories in physiological psychology, and even in his later theological works, in a treatise *De Commercio Animae et Corporis*, where a discussion in the spiritual world by the followers of Aristotle, Leibniz and Descartes is reported, the Cartesians are victorious. We must, however, here confine the discussion to the early scientific writings of Swedenborg, which are chiefly of geological, physical and cosmological content.

Beginning with mathematical, physical, chemical and mechanical researches, partly published in the *Daedalus Hyperboreus*, the earliest scientific magazine of Sweden, edited by Swedenborg at Upsala, 1716—1717, the young investigator applies himself to geological questions at a time when geology as a science did not exist, and makes a number of remarkable discoveries which have been discussed in detail by A. G. Nathorst in the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introduction to Vol. I. of Swedenborg's texts now under publication by the Royal Swedish Academy of Sciences at Stockholm. Swedenborg was also deeply interested in astronomy, and when his early studies had been reported in a series of publications which appeared from 1716—1722, we find him turning his attention during the next decade to general cosmological problems. At the same time he was collecting information concerning the metals and smelting processes, in connection with his duties as an assessor in the Royal College of Mines. The results of his work were published in 1734 at Dresden and Leipsic in three folio volumes entitled *Opera Philosophica et Mineralia*, printed in handsome style by the munificence of the Duke of Brunswick-Lüneburg. The first volume contains the *Principia Rerum Naturalium*, the second and third are works on *Iron* and *Copper*.

The *Principia* has been the subject of some discussion by astronomers and cosmologists, most recently by Svante Arrhenius in his introduction to Vol. II. of the works of Swedenborg under publication at Stockholm. After discussing Swedenborg's various discoveries and theories in cosmology, Arrhenius sums up the results as follows:

"If we briefly summarize the ideas, which were first given expression to by Swedenborg, and afterwards, although usually in a much modified form — consciously or unconsciously — taken up by other authors in cosmology, we find them to be the following:

"The planets of our solar system originate from the solar matter-taken up by Buffon, Kant, Laplace, and others.

"The earth — and the other planets — have gradually removed themselves from the sun and received a gradually lengthened time of revolution — a view again expressed by G. H. Darwin.

"The earth's time of rotation, that is to say, the day's length, has been gradually increased — a view again expressed by G. H. Darwin.

"The suns are arranged around the milky way — taken up by Wright, Kant and Lambert.

"There are still greater systems, in which the milky ways are arranged — taken up by Lambert."

If we now examine the historical development of Sweden-

borg's cosmological theories we find that at Upsala University, where he was a student from 1699 to 1709, the Cartesian Controversy was drawing to a close, but could not have failed to influence many a student. From Swedenborg's early letters it is clear that his mind was active on the subject of series of particles and vortices. That he accepted the theory of vortices is clear; his contact with the opposing Newtonian philosophy during a visit to England had evidently not shaken his previous philosophy. But it is also clear that he attributes properties to his particles which he supposes will not be acceptable to the Upsala Cartesians. He proposes a *Theoria Telluris* with which he says the theories of Descartes and Newton must be compared. In his final results as developed in the *Principia* the fundamental theory of vortices is one of the most prominent features and the theory of series of particles variously compounded and with complex motions is most highly developed.

The primeval solar chaos, which gradually developes into the solar system, consists at first of a solar centre, which centre begins to move in a vortex and forms around itself a solar crust; the crust finally becomes an equatorial solar belt, breaks up into the planets and satellites, and the fragments are carried off in the great vortex around the sun, gradually finding their position in the system as planets (Fig. 2).

Historically considered Swedenborg's cosmology stands midway between Descartes and the so-called Kant-Laplace hypothesis. Buffon, referred to by Kant, had Swedenborg's *Opera* in his library as early as 1736, thus many years before the publication of his own hypothesis, but it is not known whether Kant had direct access to Swedenborg's *Principia*, as he had to the later theological works of Swedenborg. The general question has been discussed by Arrhenius in the above mentioned introduction.

Some of the professors at Upsala were known as Cartesians until well on in the eighteenth century, but, as was natural, with the establishment of the modern experimental methods, and on account of the influx of new philosophical systems, the position of Cartesianism as such declined, but even today one cannot but feel that its historical influence in the North has been of fundamental importance.