Puiseux, Victor | Encyclopedia.com

(*b*.. Argenteuil, Val-d'Oise, France, 16 April 1820; *d*. Frontenay, Jura, France, 9 September 1883)

mathematics, mechanics, celestial mechanics.

Puiseux spent his youth in Lorraine, where his father a tax collector, was posted in 1823. He was educated at the college de Pont-a-Mousson and, from 1834, at the College rollin in Paris, where he attended C. Sturm's course in special mathematics. After wining the grand prize in physics (1836) and mathematics(1837) in the *concours general*, he was admitted in 1837 to the Ecole Normale Superieure. There he became freinds with his future colleagues Briot and Bouquet. In 1840 Puiseux placed first in the agregation in mathematics and then spent an additional year at the Ecole Normale Superieure and preparing a dissertation in astronomy and mechanics, which he defended 21 August 1841.

Puiseux was professor of mathematics at the royal college of Renes (1841-184) and at the Faculty of Sciences of Besancon (1844-1849). During this period he published about ten articles on infinitesimal geometry and mechanics in Liouvile's *Journal de mathematiques pures et appliquees*. In 1849 he was called to Paris as *matre de conferences* of mathematics at the Ecole Normale Superieure, a post he held until 1855 and again from 1862 to 1868.

In addition to his teaching duties, for several years Puiseux attended Cauchy's courses and became one of his closest folowers. Under this fruitful influence, Puiseux wrote several important memoirs on the theory of functions of a complex variable before turning to celestial mechanics. In 1857, having substituted for various professors, including the astronomer Jacques Binet at the College de France and Sturm and Le Verrier at the Faculty of Sciences, Puiseux succeeded Cauchy in the chair of mathematical astronomy at the latter institutioin. He retained this post until 1882, publishing several important memories. Brief tenures as director of the Bureau de Calculs at the Paris observatory (1855-1859) and at the Bareau des Longitudes (1868-1872) permitted him to display his mastery of the techniques of astronomical computation. In 1871 he became a member of the mathematics section of the Academie des Sciences, succeeding Lamé.

In 1849 Puiseux married Laure Jeannet; of their six children only Pierre and Andre survived childhood; both became astronomers. An aistere teacher and tireless worker, Puiseux devoted himself to the education of his children, was active in varioius catholic organizations, and took a passionate interest in botany and alpinism. He was, in fact, a pioneer in the lattyer sport and in 1848 was the first to scale one of the peaks (now bearing his name) of Mount Pelvoux.

Puiseux's scientific work encompassed infinitesimal geometry, mechanics, mathematical analysis, celestial mechanics, and observational astronomy. His first publication (1841), his doctoral dissertation, dealt with the invariability of the major axes of the planetary orbits and with the integratioin of the equations of motion of a system of material points. Although welexecuted, the work lacked great originality. Similarly, his papers on infinitesimal geometry, most of which were published at the beginning of his career, attested his analytic virtuosity but constituted a rather limited contribution to the subject—notwithstanding his discovery of new properties of evolutes and involutes. The most interesting among these paper pertain to questions related to mechanics: the moton of the conical pendulum, tautochrones, a genrralization of the top problem, and of the apparent movements of the surface of the earth.

In 1850 and,however, Puiseux accomplished much more original work,developing, correcting, and completing major asoects of the theory of functions of a complex variable that had been elaborated by Cauchy. Examining functions of a complex variable Z defined by an algbraic equation of the from f(u,z)=0, Pusieux succeeded in separation the various branches and in formulating the expansion in corresponding series. He clearly distinguished, for the first time,the different types of singular points (poles, essential points, and branch points); determined the integration; specified the "mode of existence of non uniform funtions" (C. Hernmite); and pointed out the applications of series containing fractional powers of the variable. Despite its intrinsic interest, Puiseux's theory was surpassed in 1857 when Peiemana, in his *Theorie der abelschen Funktionen*, approached the topic from a topological point of view and introduced the famous "Riemann surfaces." Puiseux subsequently turned to the study of celestial mechanics and astronomy and virtually never returned to his theory.

Following Cauchy, Puiseux to apply the most recent mathematical methods to the fundamental problem of celesital mechantics. His papers on the series expansions of the perturbation function, on related questions constitute in planetary motions, and refinement of earlier workby cauchy. after presenting the lucid exposition "Sur les principales integalites du mouvement de la lune" (*Annales scientifiques de l' Ecole Normale Superieure*, **1** [1864], 39-80), Pusseux took up the difficult problem of the acceleration of the mean motion of the moon. Although laplace (1787) thought he could explain this phenoenon by the secular decrease in the eccentricity of the orbit of the earth, J.Adams showed in 1853 that Laplace's theory accounted

for only half of the observed effect.After extensive calculations, uiseux established (*journal de mathematiques pures et appliquees*,2nd ser., **15** [1870],9-116) that the secular displacement of the ecliptic had no significant influence on the acceleration. Although a purely negative conclusion, Puiseux's finding led to a better delimitation of the problem, which was investigated by G. Hill in 1877.

Puiseux was also concerned with improving the computational methods employed in basic astronomy. At the Bureas de Calculs, he directed the reduction of both the luner observations made at Paris from 1801 to 1829 and the meridional observations of 1837-1838. After comparing the different methods available for deduction the solar parallax from the observation of the preparations carried out for the observation of the 1874 and 1882 transists; he also worked on the observations made in 1874 by French astronomers. During his brief tenure at the Bureau des Longitudes, he served as principal editor of the *Connaissance dse temps oudes mouvements celestes*.

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I. Original Works. Puiseuxrsquo;s only separately printed publised was his dissertations, sur l' invariabilite desgrands axew des orbites planetes, these d' astronomie… Sur l' integration des equations du mouvement d'un systeme de points materials, these de mecanique(Paris, 1841).

Forty-one articles, these memories published between 1842 and 1880 are cited in the Royal Society Catalogue of scientfic papers, v,39-40; vii, 672-673;ix,77; and xll592, Most of these are also listed in Poggendroff, ii,542; and iii,1076. A summary of Puiseux's first publications is given in his notice sur les travaux scientifiques de M. victor latter of which appeareed in 1871.

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RenÉ Taton