If You Missed It in Paris and in Urbana … An Exhibit of the Works of Siméon-Denis Poisson

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From the Poisson exhibit at UPMC in Paris. The *Traité de Mécanique* (1833) is open to the page where he recalls that he "had proved the properties [of the Poisson brackets] in a direct and general manner" in 1809.

Everyone has heard of the Poisson distribution, of the Poisson brackets, and of many other "Poisson somethings." But who was Poisson and what did he do to acquire such fame? At the initiative of its director, Brigitte Laude, the research library, "Mathématiques Informatique Recherche" (MIR), of the Université Pierre et Marie Curie in Paris, on the Jussieu campus, organized an exhibit, "Siméon-Denis Poisson. Les Mathématiques au Service de la Science," which was on display from 19 March to 19 June, 2014, aiming to present some of Poisson's works and their modern continuation.

From Poisson's baptism certificate, drawn up one day after his birth in Pithiviers (a small town south of Paris); to the list of students admitted to the École Polytechnique in year 7 of the Republic, where he is no.1, at the top of a finely written page; to the postcard representing his statue erected in 1851 in his native city, eleven years after his death, we follow Poisson in his brilliant career as a professor at the École Polytechnique (he was appointed at the age of twenty-one to be the successor to Fourier), later at the Faculté des Sciences (since its creation, in 1809), and, after 1812, as an influential member of the Académie des Sciences. Poisson never travelled, but his works did. Several of his books and articles were translated into German and into English, influencing the British mathematical physicist George Green among others.

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All Poisson's Books

Between 1799, one year after his admission to the École Polytechnique at the age of seventeen, and his death in 1840, Poisson wrote approximately 200 memoirs, articles, notes and reports, and ten books. Not long before he died, he drew up a careful catalogue of his published works. The idea of the exhibit at Jussieu was primarily to present the original editions of all his books, and that was almost achieved. Two books, the first version of the mechanics course he taught at the École Polytechnique and a slim, technical volume on the effect of firing a cannon, had to be represented by scanned copies of the title pages. But the

two volumes of his 1811 *Traité de Mécanique*, in their fine leather binding with spines decorated in red and gold, on loan from an anonymous private collection, were displayed and, next to them, his "considerably enlarged" second edition, open to page 399 where he cites Lagrange "who extended the method of variation of arbitrary constants to all the problems of Mechanics" and recalls that he had found and published [in 1809] a direct way to determine the inverses of the expressions that had been found by Lagrange…that is, he had discovered the "Poisson brackets"! His famous *Recherches sur la probabilité des jugements* (1837) was open to page 206, where one reads $P = (1 + \omega + \frac{\omega^2}{1.2} + \frac{\omega^3}{1.2.3} + \cdots + \frac{\omega^n}{1.2.3...n})e^{-\omega}$. Other books and memoirs dealt with his contributions to, among other branches of mathematics and physics, the analysis of integrals and series, differential equations, integration in the complex domain, as well as to the theories of electricity and magnetism, heat, capillarity, elasticity, optics, all of which he expected to include in a "Traité de physique mathématique" that he would not be able to complete before his death at the age of fifty-eight.

The rest of the exhibit contained contemporary and later evaluations, laudative or critical, of Poisson's role in the development of mathematics and physics in the first half of the nineteenth century, and a selection of modern books in which Poisson's work is extended: texts and research monographs on potential theory, probability theory, Poisson geometry in mathematics and physics.

Urbana-Champaign, August 2014

A near duplicate display was re-created by Tim Cole, Mathematics and Digital Access Librarian at the University of Illinois in Urbana-Champaign, and the librarians at UIUC on the occasion of the "International Conference on Poisson Geometry in Mathematics and Physics" (Poisson 2014) organized by Rui Fernandes and Eugene Lerman. The exhibit, entitled "Siméon-Denis Poisson. Mathematics in the Service of Science," was on display in the Mathematics Library at Urbana, August 4–14, 2014.

Berkeley: Another Chance?

If you missed the Paris exhibit, and then again the Urbana exhibit, you may still have a chance to see it! In fact, at the initiative of Alan Weinstein and David Li-Bland, organizers of "Gone Fishing 2014," November 8–9, 2014, this exhibit will be re-created in the Library of the Mathematics Department of the University of California in Berkeley. The inauguration is scheduled for November 7, 2014, and the exhibit will be on display November 7 through December 17.

From the exhibit at UIUC in Urbana-Champaign. Displayed are articles by Poisson published in the *Journal de l'École polytechnique* between 1801 and 1823.

`http://math.berkeley.edu/~libland/gone-fishing-2014.html`

If you do not plan to travel to Berkeley for the occasion, below are the websites where you can download the Paris catalogue in French or in English translation as well as the Urbana catalogue, both of which contain short essays on some of the items that were displayed.

`http://www.jubil.upmc.fr/fr/bibliotheques/mathematiques_informatique2/bib_mir/exposition_poisson.html`

`http://www.library.illinois.edu/mtx/Poisson-Exhibit/`

The librarians wish to thank all the institutions that lent material for these two exhibits.

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