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Craig Fraser* (craig.fraser@utoronto.ca) and **Michiyo Nakane**. *Canonical Transformations and Hamilton-Jacobi Theory 1866–1920*. Preliminary report.

In the second half of the nineteenth century, Hamilton-Jacobi theory provided important mathematical tools in celestial mechanics. One significant development concerned the use of canonical transformations—first introduced by Carl Jacobi—to integrate the equations of motion. In a canonical transformation of the variables of the system, Hamilton’s equations remain valid in the transformed variables. One can obtain a canonical transformation from a generating function. If the generating function satisfies the Hamilton-Jacobi partial differential equation, one is led to a solution of the dynamical problem. The subject as it had coalesced by around 1910 resulted in analytical methods that were adopted by German quantum physicists in their investigation of atomic phenomena. Canonical transformations were also explored on a more abstract level in the work of mathematicians. (Received August 15, 2019)