Donaldson, S. K.
One hundred years of manifold topology. (English) ⎡Zbl 0956.57004⎤
James, I. M. (ed.), History of topology. Amsterdam: Elsevier. 435-447 (1999).

Introduction: The study of the topology of manifolds can be regarded as beginning with the renowned series of papers [J. École Polytechn. Paris (2) 1, 1-123 (1895; JFM 26.0541.07); Rend. Circ. Mat. Palermo 13, 285-343 (1899; JFM 30.0435.02); Proc. Lond. Math. Soc. 32, 277-308 (1900; JFM 31.0477.10); Rend. Circ. Mat. Palermo 18, 45-110 (1904; JFM 35.0504.13); see also Oeuvres, Tome VI, Sceaux: Editions Jacques Gabay 1996] by *H. Poincaré*, published between 1895 and 1904. This granted, the subject has just passed its centenary. In Poincaré's papers we find the beginnings of homology theory, the fundamental group and the birth of the classification problem, notably of course in the Poincaré conjecture on simply connected 3-manifolds. This classification problem; that is the definition of invariants of manifolds and the enumeration of the manifolds with given invariants (in the various categories: topological, smooth, PL, etc.) makes up one pillar in the century of work since then. Other pillars are formed by the interaction between manifold topology per se and neighbouring areas of geometry and analysis. The theme which we will focus on in this article is the topology of complex algebraic varieties, particularly complex surfaces. This was clearly one of the main motivations for Poincaré's work: it is the first of the three examples of the application of topological ideas which he mentions in the introduction to the first of his above cited papers, and it was the subject of the third and fourth compléments in the series [JFM 33.0499.12].

For the entire collection see [Zbl 0922.54003].

MSC:

57-03	History of manifolds and cell complexes
01A60	History of mathematics in the 20th century
01A55	History of mathematics in the 19th century
58-03	History of global analysis
57N99	Topological manifolds

Cited in **2** Documents