Embedded loops in 3-space (known as knots) were introduced in the 1860s by Tait and Kelvin as an attempt to understand atoms in the aether. A hundred years later, they were understood geometrically by Thurston in the 1970s. And then, unexpectedly, the famous Jones polynomial was found in the 1980s, which led to deep questions on quantum field theory, arithmetic, geometry and topology. I will give a brief history of the subject, illustrated with examples and challenges.