and Thomson approached the subject with mathematical analysis and calculated the properties of vortex motion.

Heraclitus proclaimed, six hundred years before the Christian era, the theory that everything moves or flows; but not till this century was the attempt made to work out the definite hypothesis of Daniel Bernoulli, and to explain the properties of bodies, apparently at rest—the pressure of gases, or the phenomena of elasticity—by assuming a hidden motion of the imperceptible portions of matter. The same fate of lying dormant for ages attaches to the suggestive ideas of many thinkers. In every case the awakening touch has been the mathematical spirit, the attempt to count, to measure, or to calculate. What to the poet or the seer may appear to be the very death of all his poetry and all his visions—the cold touch of the calculating mind,—this has proved to be the spell by which knowledge has been born, by which new sciences have been created, and hundreds of definite problems put before the minds and into the hands of diligent students. It is the geometrical figure, the dry algebraical formula, which transforms the vague reasoning of the philosopher into a tangible and manageable conception; which represents, though it does not fully describe, which corresponds to, though it does not explain, the things and processes of nature: this clothes the fruitful, but otherwise indefinite, ideas in such a form that the strict logical methods of thought can be applied, that the human mind can in its inner chamber evolve a train of reasoning the result of which corresponds to the phenomena of the outer world. By such processes did Gauss and Leverrier succeed in tracing the lines in the heavens on which invisible

9. Mathematical spirit.