the history of thought. As the study of stable motion or dynamical equilibrium, it has joined hands with the kinetic theory of gases—*i.e.*, the study of the motion of a swarm of bodies in rectilinear motion, and with the mechanical theory of heat—*i.e.*, of irregular infinitesimal motion of any kind; and it has certainly, through the remarkable results gained by Professor J. J. Thomson, afforded a clue to the explanation of chemical linkage, showing how it comes about that stability of chemical compounds is dependent on, and limited to, a small number of combinations or linkages.[1] The mathematical difficulties in the way of progress are enormous, sufficient to tax the brains of many generations to come, but as it

ideal material system, atomically constituted, which could go on automatically without extraneous support. The value of such a picture may be held to lie, not in any supposition that this is the mechanism of the actual world laid bare, but in the vivid illustration it affords of the fundamental postulate of physical science, that mechanical phenomena are not parts of a scheme too involved for us to explore, but rather present themselves in definite and consistent correlations, which we are able to disentangle and apprehend with continually increasing precision."

[1] See his essay on the "Motion of Vortex Rings": "Let us suppose that the atoms of the different chemical elements are made up of vortex-rings all of the same strength, but that some of these elements consist of only one of these rings, others of two of the rings linked together, or else of a continuous curve with two loops, others of three, and so on. Our investigation shows that no element can consist of more than six of these rings if they are arranged in the symmetrical way there described" (p. 119). "Each vortex ring in the atom would correspond to a unit of affinity in the chemical theory of quantivalence. If we regard the vortex rings in those atoms consisting of more vortex rings than one as linked together in the most symmetrical way, then no element could have an atom consisting of more than six vortex rings at the most, so that no single atom would be capable of uniting with more than six atoms of another element so as to form a stable compound. This agrees with chemical facts, as Lothar Meyer in his 'Moderne Theorien der Chemie,' 4th ed., p. 196, states that no compound consisting of more than six atoms of one element combined with only one of another is known to exist in the gaseous state, and that a gaseous compound of tungsten, consisting of six atoms of chlorine united to one of tungsten, does exist" (p. 120).