researches of Berthelott on affinity as a chemical force. It brought within range of probability the laws of Guy Lussac pertaining to the volume of gases. It enabled Berzelius to develop and apply the Dualistic system of Lavoisier and aided him in his determination of the Atomic weights. By it Dumas was able the more readily to interpret the action of chlorine on organic bodies and thus to deduce the celebrated theory of substitution, not only of one element for another but also of compound radicals for simple elements. From these theories of substitution and of radicals was evolved the theory of types, so simple in form and fertile in resource, embracing, as it did, the whole range of both mineral and organic chemistry and removing forever the barriers which had separated them. From what has been said it is easy to infer that the Atomic Theory embraces the science of chemistry in all its departments and that without it other chemical theories would cease to exist. Established, as we have seen, upon a purely scientific basis chemistry has, during the century just closed, grown and expanded until it is to-day the recognized ally of every other science and an essential factor of nearly every industrial art.

To trace the relation of chemistry to nature, to other sciences and to the arts would far exceed the limits of this paper. I would like, however, before leaving the subject to say a few words on the relation of chemistry to medicine. That we may the better appreciate this relation let us ask the physiologist to what science he is indebted for his knowledge of the proximate principles of life; of the secretions and excretions; of assimilation and metabolism; of the comparative value of foods and of their digestion. Ask the pathologist how he studies the deviations from health in the organs and tissues, in the secretions and excretions of the body. Turn to the bacteriologist and ask him how he determines the presence of bacteria in a specimen and how he differentiates the various species or more important still how he investigates the toxines produced by them. Turn to the surgeon and ask him to what science surgery owes its proud position. Ask the pharmacologist how he studies his drugs, their properties and preparations; let him take his materia medica and strike out all the products of the chemical laboratory and the drugs prepared