

by incorporating with them, in a peculiar way, two laminæ of sheet-copper, uniting these with the metallic masses in the hull by other laminæ, and giving the whole a free communication with the sea. This method was tried experimentally, both on models and to a large extent in the navy itself; and a Commission appointed to examine the result reported themselves highly satisfied with Mr. Harris's plan, and strongly recommended that it should be fully carried out in the Navy.¹⁶]

It is not here necessary to trace the study of atmospheric electricity any further: and we must now endeavor to see how these phenomena and laws of phenomena which we have related, were worked up into consistent theories; for though many experimental observations and measures were made after this time, they were guided by the theory, and may be considered as having rather discharged the office of confirming than of suggesting it.

We may observe also that we have now described the period of most extensive activity and interest in electrical researches. These naturally occurred while the general notions and laws of the phenomena were becoming, and were not yet become, fixed and clear. At such a period, a large and popular circle of spectators and amateurs feel themselves nearly upon a level, in the value of their trials and speculations, with more profound thinkers: at a later period, when the subject is become a science, that is, a study in which all must be left far behind who do not come to it with disciplined, informed, and logical minds, the cultivators are far more few, and the shout of applause less tumultuous and less loud. We may add, too, that the experiments, which are the most striking to the senses, lose much of their impressiveness with their novelty. Electricity, to be now studied rightly, must be reasoned upon mathematically; how slowly such a mode of study makes its way, we shall see in the progress of the theory, which we must now proceed to narrate.

[2nd Ed.] [A new mode of producing electricity has excited much notice lately. In October, 1840, one of the workmen in attendance upon a boiler belonging to the Newcastle and Durham Railway, reported that the boiler was full of fire; the fact being, that when he placed his hand near it an electrical spark was given out. This drew the attention of Mr. Armstrong and Mr. Pattinson, who made the circumstance publicly known.¹⁷ Mr. Armstrong pursued the investigation

¹⁶ See Mr. Snow Harris's paper in *Phil. Mag.* March, 1841.

¹⁷ *Phil. Mag.* Oct. 1840.