

wooden structure in which its operations were formerly conducted, by handsome and substantial erections of stone. It may fairly be allowed to the members of this Institute to indulge the belief that these desirable results were effected, in part at least, by the urgent representations which they and their President at the time made to the Government ; nor will the pardonable pride they may feel in the matter be lessened by the knowledge that, out of all the Colonial Observatories which were in similar circumstances, this is the only one the retention of which has been accomplished. The outlay on the Observatory for its erection and equipment from first to last has probably exceeded £5,000, and I believe that in completeness and efficiency it is not surpassed, if even equalled, by any observatories in the world. Three large quarto volumes, containing the observations made here, have already been published by the Imperial authorities (and a fourth is yet due), carrying the name of Toronto into all parts of the earth where science is cultivated ; and so remarkable and valuable have been the theoretical results deduced from them (to which I shall presently more particularly allude,) that it is not too much to say that the name of a Canadian city, which will be sought for in vain on maps twenty years old, has now become, by means of its Observatory, familiar in the mouths of European savans as a "household word."

Very few, if any, subjects of inquiry are of greater interest and probable importance to science, than that of terrestrial magnetism. Practically familiar, as we have been, for a long course of years, with many of its phenomena, the theories invented to account for and to explain them were more owing, as has been well remarked, "to the boldness of ignorance than to the just confidence of knowledge;" and the "want of a foundation whereon the advancement of that science, on inductive principles, might be based, was strongly and extensively felt."

The objects of the Magnetic Observatories were, as I understand, to investigate the periodical variations in the terrestrial magnetic force, by suitable instruments and methods ; to separate each from the others, and to seek its period, its epochs of maximum and minimum, the laws of its progression, and its mean numerical value and amount ; that, by a combination of the results attained, a general theory of each, at least of the principal periodical variations, might be derived ; and tests be thus supplied, whereby the truth of physical theories propounded for their explanation might be examined. With the observation of their *periodical variations*, was combined a comparison with meteorological variations of a