guished writers, such as Bryant, Longfellow, Holmes, Sumner, and Ticknor, the issue of whose publications was under his charge. A history of the Library, giving a complete account of its origin and development during the fifty years of its existence, is about to be published.

—The first volume of the 'History of the Collections contained in the Natural History Departments of the British Museum' describes the departments of Botany, Geology, and Mineralogy, as well as the Libraries; a second volume will describe the department of Zoölogy. The collections of Sir Hans Sloane, which the Parliament purchased in 1753, consisted of "coins, ancient and modern antiquities, seals, cameos and intaglios, precious stones, agates, jaspers, vessels of agate and jasper, crystals, mathematical instruments, paintings, and other things." Among the "other things" not particularly mentioned were Sir Hans's extensive collections of natural history specimens, which formed the nucleus of what is now the richest and most important natural-history museum in the world. Soon after the erection of the large circular reading-room in 1857 it became evident that Montague House could not long suffice for the constantly increasing collections, and in 1860 a resolution was carried at a meeting of the Trustees to the effect that it was "expedient that the Natural History Collections should be removed from the British Museum." In 1863, the House of Commons sanctioned the purchase of a site, but it was not until 1873 that the work of erecting a building began, and not until 1880 that this was turned over to the Trustees. The removal of the collections was commenced at once, and in 1881 the new Museum in Cromwell Road was opened to the public. The volume before us is essentially a history of the collections, and describes their growth and development. The description of each department opens with a summary sketch, whereupon follows a chronological account enumerating the principal accessions; lastly comes a list of the most important contributors, from all countries. Each name is followed by a statement of the respective contributions.

—While the bulk of Sir Hans Sloane's library went to make up the Library proper of the British Museum, three works accompanied the natural-history collections, namely, his manuscript catalogue of them, a copy of his own 'Voyage to the Islands Madera, Barbados, and Jamaica,' annotated by himself, with the original drawings of plants from which the accompanying plates were made, and a copy of Ray's 'Historia Plantarum.' Later on, some other volumes belonging to the Sloane collection were turned over to the Department library. Other works were added from time to time, especially manuscripts and drawings, but it was not until 1842 that books were purchased systematically for the Natural History Libraries. At present the library contains considerably over 100,000 volumes. The Botanical department was created in 1827, when Sir Joseph Banks's herbarium, which he had bequeathed to his librarian, Robert Brown, was transferred to the British Museum. To this was then added the Sloane herbarium. At the death of Robert Brown, who was the first Keeper of the department, his herbarium came into the possession of his successor in office, J. J. Bennett, and was kept in the Museum during his lifetime. The collection of Australian plants then became the property of the Museum. The department of Geology includes Palæontology as well, and among the most important accessions of fossils we might mention James Sowerby's collection, containing most of the original British fossils described in his 'Mineral Conchology'; it was acquired in 1860. Very few large collections of minerals have been purchased by the Trustees, on account of the great chances of duplication.

—The severest of all touchstones of mathematical skill is universally acknowledged to be the working out of an exact numerical account of the way our satellite performs its intricate motions—the "theory" of the moon, as the mathematicians still call it, after Ptolemy. Well, inquire, say in Berlin, or in Pulkowa, or Paramatta, or Tacubaya, or in any corner of the earth where high mathematics is cultivated, who in our time has shown the most surpassing mastery of the theory of the moon, and the answer of any competent authority will come unhesitatingly, "It is Mr. G. W. Hill of Nyack Falls, N. Y." Had that village been aware of its renown, it might not have changed its name, alluring as the melody of "West Nyack" no doubt is. But Mr. Hill is the reverse of the kind of man to whom the Sunday *Herald* devotes a page, and it is probable that the villagers know him only as the genial but retiring gentleman who so loves the paternal farm on which he was born and where he still lives. The next most rebarbative problem of celestial mechanics, after the moon's, is perhaps the theory of Jupiter and Saturn (which have to be treated together), and in this Mr. Hill has outdone all other astronomers. But this is as nothing to his achievements in the theory of the moon. For here the method he pursued launched him on an unknown sea, requiring an entirely new chapter to be added to the calculus; and here, by means of the staggering conception of an infinite determinant, he succeeded in the hardy enterprise of virtually solving a differential equation of an infinite order. The boldness of the undertaking consisted in this: that Hill introduced into mathematics a kind of reasoning unrecognized by the mathematicians (albeit they had often unconsciously employed it), namely, the experimental reasoning of physics. For, an infinite determinant being a complete novelty, it was as yet unknown whether the particular type of such a complex series required for Hill's method of solution was convergent or not, or, if it were, whether it possessed the particular kind of convergency that would adapt it to the operations of the calculus. Hill accordingly treated its satisfying this requirement as he would have treated a physical hypothesis, and proceeded to put it to the test of experiment, by calculating, on that theory, the rate of revolution of the axis of the moon's elliptical orbit, which, of all the elements of the solar system, is observationally the one by far the most sensitive to any erroneous assumption about the perturbations. He relied upon the knowledge that if his mathematics were wrong, there was every reason to expect that his calculated motion of the perigee would be sensibly—would be enormously—at variance with observation. It turned out, however, to agree with observation as closely as the results of observation were known. Yet it must be confessed that it is not as clear as the noonday sun that Mr. Hill himself, any more than previous mathematicians, perceived that he was applying Baconian reasoning to mathematics. In any case, the brilliant demonstration of Poincaré was needed to enable future astronomers to apply Hill's method with entire confidence to all problems of three bodies. Nevertheless, when we consider that it would, after all, only be to physical questions that such complicated differential equations would ever be applied, Hill's procedure is seen to be of a piece with all the other reasoning that would go along with it, and therefore logically to be beyond criticism.

—By such means our countryman abridged the labor of certain numerical calculations from months to hours, while vastly increasing their exactitude. Mr. Hill's work upon the Moon, originally published over twenty years ago, has since been perfected in some parts and improved in others by an Englishman, Brown. Still, excellent as Brown's work is said to be, the chief merit of the new method confessedly belongs to our neighbor across the river, eighteen miles above High Bridge. Therefore, with a stately quarto, Volume I. of 'The Collected Mathematical Works of George William Hill,' published by the Carnegie Institution, there came to us a visitor too infrequent of late years—we mean the oldtime glow of exultant American feeling. The volume is prefaced with a long and most interesting account of Mr. Hill and his work from the pen (on the whole the most competent and suitable that could have been selected) of M. Henri Poincaré. It is in French, of course; and we find M. Poincaré writing *collège* with an acute accent, a practice which is redolent of Nancy as it was before the war, the Nancy of old Dr. Poincaré. The volume falls but little short of being a handsome one; paper and type are good. There is a pretty good portrait of the man; but in the pose of the head, though it is at foreign to Mr. Hill, we see more of the photographer than of his subject.

OUR IRELAND IN THE PACIFIC.

Our Philippine Problem: A Study of American Colonial Policy. By Henry Pa[illegible]er Willis, Ph.D. Henry Holt & Co. 1905.

Professor Willis recounts our experience in governing the Philippines, with the design of subordinating his narrative to an elucidation of our pending problem in the islands. His competence for treating the subject is based upon special study of available material in this country, and upon first-hand investigation pursued during several months of travel in the archipelago in 1904. He prefaces his work with a history of our occupancy and conquest, so abridged as to furnish only the necessary clue to an understanding of subsequent happenings. Brief as is this historical introduction, it definitely locates the responsibility for our Philippine problem. Despite Mr. McKinley's ringing avowal that, according to the "American code of morals, forcible annexation is criminal aggression," it was by Mr. McKinley's order to Gen. Otis in December, 1898, before even