

ancient technical arts of the Egyptians ; the new alchemistic precepts of the pseudo-Democritus and the Sophist Synesius ; or even from Chinese sources, through the agency of the Moguls. According to the recent and very careful investigations of a celebrated Oriental scholar, M. Reinaud, the invention of gunpowder,* and its application to the discharge of hollow projectiles, must not be ascribed to the Arabs. Hassan Al-Rammah, who wrote between 1285 and 1295, was not acquainted with this application ; while, even in the twelfth century, and, therefore, nearly two hundred years before Berthold Schwarz, a species of gunpowder was used to blast the rock in the Rammelsberg, in the Harz Mountains. The invention of an air thermometer is also ascribed to Avicenna from a notice by Sanctorius, but this notice is very obscure, and six centuries passed before Galileo, Cornelius Drebbel, and the *Accademia del Cimento*, by the establishment of an exact measurer of heat, created an important means for penetrating into a world of unknown phenomena, and comprehending the cosmical connection of effects in the atmosphere, the superimposed strata of the ocean, and the interior of the earth, thus revealing phenomena whose regularity and periodicity excite our astonishment. Among the advances which science owes to the Arabs, it will be sufficient to mention Alhazen's work on Refraction, partly borrowed, perhaps, from Ptolemy's Optics, and the knowledge and first application of the pendulum as a means of measuring time, due to the great astronomer Ebn-Junis †

process), and forms, according to Wilson, the seventh division of the *dyur-Veda*, the "science of life, or of the prolongation of life." (Royle, *Hindoo Medicine*, p. 39-48.) The Indians have been acquainted from the earliest times (Royle, p. 131) with the application of mordants in calico or cotton printing, an Egyptian art, which is most clearly described in Pliny, lib. xxxv., cap. 11, No. 150. The word "*chemistry*" indicates literally "Egyptian art," the art of the black land ; for Plutarch (*De Iside et Osir.*, cap. 33) knew that the Egyptians called their country *Xημία*, from the black earth. The inscription on the Rosetta stone has *Chmi*. I find this word, as applied to the analytic art, first in the decrees of Diocletian against "the old writings of the Egyptians which treat of the '*χημία*' of gold and silver" (*περι χημίας ἀργύρου καὶ χρυσοῦ*). Compare my *Examen Crit. de l'Hist. de la Géographie et de l'Astronomie Nautique*, t. ii., p. 314.

* Reinaud et Favé, *Du Feu Grégeois, des Feux de Guerre et des Origines de la Poudre à Canon*, t. i., 1845, p. 89, 97, 201, and 211 ; Piobert *Traité d'Artillerie*, 1836, p. 25 ; Beckmann, *Technologie*, s. 342.

† Laplace, *Précis de l'Hist. de l'Astronomie*, 1821, p. 60 ; and Am. Sédillot, *Mémoire sur les Instrumens Astr. des Arabes*, 1841, p. 44. Thomas Young (*Lectures on Natural Philosophy and the Mechanical*