

and manufactures, luxury and art, medicine and engineering, in which there were not going on innumerable processes, which may be termed Experiments; and, in addition to these, the Arabians adopted the pursuit of alchemy, and the love of exotic plants and animals. But so far from their being, as has been maintained,³ a people whose "experimental intellect" fitted them to form sciences which the "abstract intellect" of the Greeks failed in producing, it rather appears, that several of the sciences which the Greeks had founded, were never even comprehended by the Arabians. I do not know any evidence that these pupils ever attained to understand the real principles of Mechanics, Hydrostatics, and Harmonics, which their masters had established. At any rate, when these sciences again became progressive, Europe had to start where Europe had stopped. There is no Arabian name which any one has thought of interposing between Archimedes the ancient, and Stevinus and Galileo the moderns.

4. *Roger Bacon*.—There is one writer of the middle ages, on whom much stress has been laid, and who was certainly a most remarkable person. Roger Bacon's works are not only so far beyond his age in the knowledge which they contain, but so different from the temper of the times, in his assertion of the supremacy of experiment, and in his contemplation of the future progress of knowledge, that it is difficult to conceive how such a character could then exist. That he received much of his knowledge from Arabic writers, there can be no doubt; for they were in his time the repositories of all traditionary knowledge. But that he derived from them his disposition to shake off the authority of Aristotle, to maintain the importance of experiment, and to look upon knowledge as in its infancy, I cannot believe, because I have not myself hit upon, nor seen quoted by others, any passages in which Arabian writers express such a disposition. On the other hand, we do find in European writers, in the authors of Greece and Rome, the solid sense, the bold and hopeful spirit, which suggest such tendencies. We have already seen that Aristotle asserts, as distinctly as words can express, that all knowledge must depend on observation, and that science must be collected from facts by induction. We have seen, too, that the Roman writers, and Seneca in particular, speak with an enthusiastic confidence of the progress which science must make in the course of ages. When Roger Bacon holds similar language in the thirteenth century, the resemblance is probably rather a sympathy of character, than a matter of direct derivation; but I know of nothing

³ *Mahometanism Unveiled*, ii. 271.