

speculations upon which the Schoolmen had wasted their ingenuity. He saw the rock upon which they foundered, and resolved to avoid it. Experiment and observation he proclaimed to be the two grand instruments by which truth was to be discovered, progress made and science advanced. These form the key-stones of the Inductive method,—the pedestals upon which he builds his magnificent structure. Experiments as distinguished from hypothesis, he declared to be the only sure way of arriving at truth. Philosophers of preceding centuries were habitually directing their investigations to objects upon which it was impossible to experiment, and from which, if it were possible, no benefit could be derivable. To illustrate our position, let us take an example.

It was asserted by Aristotle that the velocity of falling bodies was in direct proportion to their weight—that, for instance, if two bodies be taken, the one twice as heavy as the other, the heavy body would reach the ground in half the time occupied by the lighter one. Galileo, who had for some time made this the object of his attention, and subjected it to the severest and surest of all crucibles—experiment—came to a very different conclusion. He had the courage not only to doubt the dictation of Aristotle, but to challenge his opponent to a fair trial. The scene is thus described by a distinguished writer:—"On the appointed day the disputants repaired to the tower of Pisa, each party, perhaps, with equal confidence. It was a crisis in the history of human knowledge. On the one side stood the assembled wisdom of the universities, revered for age and science, venerable, dignified, united and commanding. Around them thronged the multitude, and about them clustered the associations of centuries. On the other, there stood an obscure young man (Galileo), with no retinue of followers, without reputation, or influence, or station; but his courage is equal to the occasion. Confident in the power of truth, his form is erect, and his eye sparkles with excitement. But the hour of trial arrives. The balls to be employed in the experiments are carefully weighed and scrutinized, to detect deception. The parties are satisfied. The one ball is exactly twice the weight of the other. The followers of Aristotle maintain that, when the balls are dropped from the tower, the heavy one will reach the ground in exactly half the time employed by the lighter ball. Galileo asserts that the weights of the balls do not affect their velocities, and that the times of descent will be equal; and here the disputants join issue. The balls are conveyed to the summit of the lofty tower. The crowd assemble round the base; the signal is given; the balls are dropped at the same instant; and swift descending, at the same moment they strike the earth. Again and again the experiment is repeated with uniform results. Galileo's triumph was complete: not a shadow of a doubt remained." Galileo's conclusion was based upon experiment, Aristotle's upon hypothesis. The great work which Bacon did was the giving prominence and expression to this method of arriving at truth, as distinguished from the hypothetical. To the faithful application of the rules which he has laid down for conducting our observations and experiments, are traceable all the