The following is the substance of a lecture delivered last winter before the Mechanics' Institute in this city, by the Rev. J. Hurlburt, M. A. We had the pleasure of hearing the lecture, and believing that some portions of it would be interesting and instructive to many of our readers, we requested the Rev. Gentleman to furnish us with an abstract for publication, which he kindly consented to do.

IMPORTANCE OF SCIENTIFIC KNOWLEDGE TO PRACTICAL MEN, AND OF PRACTICAL KNOWLEDGE TO SCIENTIFIC MEN.

No general impulse could be said to be given to improvement in the practical arts of life, till after the revival of letters in Western Europe. Many ancient nations, as the Egyptians, Grecians, Romans, and some countries of Asia, were distinguished for their learning; but their attention was more particularly turned to philology, morals and government. To modern times alone can be attributed any systematic application of the laws of nature to the practical purposes of life. The few facts connected with natural science, known to the ancients, were regarded as subjects of curiosity rather than of utility. But the happy thought of crowding the illimitable powers of nature into the service of man, has opened a new era in the history of our race. Whatever discoveries the ancients may have made in the laws of mind, the principles of political economy and of government, their attention was rarely given to an investigation of the laws of the natural world, as a source of happiness and improvement to man. This constitutes a great difference between their learning and ours. The powers of steam, electricity and galvanism, were never dreamed of by the sages of antiquity. Chemistry, that illimitable source of modern discovery, was entirely unknown to the ancients, beyond a few isolated facts.

At the revival of letters, after the dark ages, Europe began to experience a change more favourable for improvement in the practical arts of life. The spirit of enquiry into the very foundation of our knowledge, the establishment of seminaries of learning, the art of printing, and especially the works of Lord Bacon, in which the true principles of philosophical investigation—the induction of truth from the observation of fact—were illustrated and enforced, and the discoveries in the physical sciences which immediately followed, gave a vigorous impulse to the human mind, and led to the application of scientific principles to the useful arts of life. Little, however, was accomplished till the middle of the last century. During the last one hundred years, man has learned much of the laws of the material world, their nature and uses. He has fused the solid opaque rock, and from it formed the transparent lens of the telescope—an instrument which reveals to him the wonders of the distant heavens; the microscope—opening up a still more wonderful world in the atom and drop of water. This same transparent glass discloses the secrets of the rainbow, and untwists the delicate rays of the sun. He can compose and decompose the thousand objects of earth around him, scattering the air, the water, the solid rock, the animal and vegetable substances into their original invisible elements, and recomposing them again form their various compounds. He can extract a mysterious agent—galvanism—from inanimate nature, and collecting it to a focus, make it burn fiercer than the concentrated sunbeam or the raging furnace, fusing the most solid metals. This same mysterious agent is made an instrument of transmitting his thoughts with the rapidity of lightning. He casts his broad pathway over rivers and oceans, converting the very element in which he moves into a power to force him against wind and tide. With the same power he traverses hills and valleys, and manufactures many of the comforts of life. He descends into the depths of the earth to bring up its hidden treasures, and with the safety-lamp—more wonderful than Aladdin's—he walks through the perilous deep, with the destructive flame imprisoned in a wire cage, struggling to get free for the work of ruin. Although his abode is upon the surface of the earth, he can estimate the speed of the planets in their orbits through the skies. He can unravel their mystic dances around the great centre of life, and light, and joy.

Turning to the more ordinary avocations of life, his science has led him deeply into their mysteries. He has already learned much of the composition of soils, and the laws of vegetation; the means of resuscitating the exhausted land, and of producing surer and more abundant crops. The arts of manufacture, of dying and calico printing; the uses of the acids and alkalis in bleaching; the processes of brewing and tanning; the manufacture of soap, candles and sugar—of earthenware and porcelain.

But how few of the operators in these arts, have any knowledge of the principles upon which their arts are founded. How then is it possible for them to make any improvement? Scientific men seldom turn their attention to such subjects, and those engaged in them are ignorant of the laws which govern their operations. It is often asserted that many discoveries are the result of chance; this is a mistake—very few discoveries in the arts and sciences are made by those ignorant of the laws of nature, and where chance may have disclosed an important fact, the application and improvement have been made by the hand of science. The application of convex lenses in the construction of telescopes and microscopes, of steam to machinery, of galvanism to the telegraph, the illumination of cities and dwellings, and the analysis of chemical compounds, the pendulum, the spinning jenny, the safety lamp, the refining of sugar, the extracting of metals from their ores, —have been the result of the most elaborate researches, directed by the hand of science.

It may, therefore, be laid down as an axiom, that no important discovery is to be expected, except as the result of a knowledge of the laws of nature and unwearied investigation. How could it be otherwise? The great Architect of the