

have accomplished the first object of the constitution—namely, the purchase of the necessary land.

The site selected for the Zoological Park is about two miles from the centre of Washington. It contains an area of 166 acres, traversed by the stream called Rock Creek, and is stated to possess most attractive features which render it well adapted for the purpose.

There is already a Zoological Garden at Philadelphia in good working order, and there is a smaller establishment at New York, in the Central Park, under the charge of Mr. W. A. Conklin, who is well known to many naturalists on this side of the Atlantic. The new institution at the metropolis of the United States, to be inaugurated and carried on by the Central Government for the "recreation and instruction" of the American people, will evidently be on a much larger scale. It will also have the advantage of the unlimited support always accorded by the Americans to their great national undertakings. If the Commissioners are inclined to take advice from Europe—and we have no reason to suppose the contrary—we should recommend that, before planning and commencing the necessary buildings, they should visit the Gardens of the Zoological Society in London, and the principal institutions of a like nature on the Continent, and take advantage of the experience gained by previous workers in the same field. No amount of plans and estimates, which, we are told, they are now asking for from the older institutions, will give them the advantages to be derived from a personal examination of these establishments and a few weeks' study of the mode in which they are worked.

JAMES NASMYTH.

EVERYONE was sorry to hear of the death of Mr James Nasmyth, the great engineer. His name is familiar to the entire English-speaking world, and there can be no doubt that he stands in the front rank of those who have advanced the material interests of mankind by the application of science to industrial methods.

So far as outward events were concerned, there was nothing very remarkable in his career. The real history of his life is the history of his inventions. He was born at Edinburgh on August 19, 1808, and was the youngest child of a family of eleven. His father was Alexander Nasmyth, who achieved considerable distinction as a painter. In a good summary of the facts of his life, printed in the *Times* of May 8, it is said that the boy gave very early evidence of a decided taste for mechanical pursuits. At school this taste was strengthened by intimacy with the son of an ironfounder, whose works young Nasmyth was never tired of visiting. He displayed so much aptitude for model-making that when he began to attend scientific classes at the University of Edinburgh he was able to pay his own fees by the sale of models of steam-engines, and other mechanical contrivances.

In 1829, Mr. Nasmyth came to London, and the two following years he spent in the service of Mr. Maudslay, the founder of the well-known firm of engineers. He then returned to Edinburgh, where he devoted himself for a short time to the construction of a set of engineering tools. With these tools, and a very small capital, he ventured to begin business on his own account in Manchester; and so many orders for work were received that new premises soon became necessary. He accordingly secured a plot of ground, 12 acres in extent, at Particroft, near Manchester; and this site he covered with the collection of workshops known as the Bridgewater Foundry. It was at this establishment that Mr. Nasmyth invented and perfected the mechanical tools with which his name is associated. The most important of them is the steam-hammer, the power and delicacy of which are universally

known. It was invented in 1839, when he was still a young man. The *Times* says:—"The first idea of the hammer occurred to its inventor when he was asked by the Great Western Railway Company to construct a wrought-iron intermediate paddle shaft for a proposed ship called the *Great Britain*. Other firms had declined to undertake the construction of a shaft with a size and diameter never before attempted. The paddle shaft was never forged, as the screw was invented about this time. But meanwhile Nasmyth had invented a means of raising an enormous block of iron to a sufficient height and of regulating and directing its descent upon the anvil below."

Among Mr. Nasmyth's other inventions we may mention his "reversing direct-acting rolling mill."

In 1857, at the age of 48, he retired from business; and from that time he lived at Peshurst, where he found an outlet for his energies in the enthusiastic study of astronomy—a study which led to the publication of "The Moon considered as a Planet, a World, and a Satellite," written by him in conjunction with Dr. James Carpenter. Mr. Nasmyth wrote also "Remarks on Tools and Machinery," in Baker's "Elements of Mechanism" (1858). An autobiography, edited by Dr. Smiles, was published in 1883. He inherited to some extent his father's artistic faculty, and the exercise of his talent for drawing was a constant source of genuine pleasure.

Mr. Nasmyth used to say that he had never known what it was to be ill. For some time, however, his health was manifestly failing; and several weeks ago he came to town. He stayed at Bailey's Hotel, Gloucester Road; and there, in his eighty-second year, he died, on Wednesday, May 7.

NOTES.

MR. ALFRED GILBERT, A.R.A., has been commissioned to execute the Joule Memorial at Manchester.

PROF. W. K. SULLIVAN, President of the Cork Queen's College, and well known as a chemist, died on Monday at the College. He was 68 years of age, and had held the position of President since 1872, in succession to the late Sir Robert Kane.

IT is announced that Sir Frederick Mappin, M.P., has handed over to his co-trustees of the Sheffield Technical School £1000 for the purpose of founding two scholarships, each of the value of £15 per annum, in perpetuity.

THE Paris Academy of Sciences has offered a prize of 3000 francs for the best essay on the phenomena of fertilization in Phanerogams, especially in reference to the division and translation of the nucleus, and the relation between these phenomena and those which occur in the animal kingdom, to be sent in before June 1, 1891.

PROF. VON NORDENSKIÖLD lately announced to the Stockholm Academy of Sciences that a scientific expedition would start during the summer for Spitzbergen. Among the party will be his son, M. G. Nordenskiöld, and MM. Klinckowström and Bahaman. The expenses of the expedition will be defrayed by Baron Dickson and M. F. Beijer, the publisher.

THE ethnological collections made by Prof. Bastian during his journey through Russian Central Asia, have been brought to Berlin by the Professor's companion, Herr A. Dsirne. Prof. Bastian is at present at Madras.

DR. THORODDSEN, of Reikjavik, to whom the Linné Memorial Medal has been given by the Stockholm Academy of Sciences for his collection of fossil plants, has received 1200 kronen (£65) from Baron Dickson to enable him to investigate the Icelandic peninsula of Sneefieldness. Dr. Thoroddsen hopes soon to conclude his geological researches concerning this ancient Norse settlement.