

The leading particulars of the engine we have described are as follows :

Capacity of the principal reservoir.....	268 cub. ft.
“                    small                    “.....	10.6 “
Maximum pressure in large                    “.....	105 lb.
Mean                    small                    “.....	60 lb.
Length of stroke.....	14.17 in.
Diameter of cylinders.....	8 in.
“                    wheels.....	29½ in.
Weight of engine.....	about 6 tons. 15 cwt.
Width of gauge.....	37.39 in.

All the principal dimensions are shown upon the drawings.—  
From *Engineering*.

### OUR NEW VOLUME.

We have much pleasure in presenting to our Readers, at the commencement of a New Year. The CANADIAN MECHANICS MAGAZINE much improved in *Style, Type* and *Illustrations*. It will now compare very favourably, in the above respects, with any scientific paper or Magazine published in either Great Britain or the United States. The Proprietors have spared no expense in their endeavours to improve this work and to make it, to all Canadians who are interested in Architecture, Civil Engineering, and Mechanical pursuits, a most suitable volume for their requirements, containing more varied information, more illustrations and articles on the most recent and important subjects connected with science and mechanics generally, than is to be found in any other Magazine of its kind.

We therefore naturally expect that every Scientist-Architect, Engineer, Manufacturer, and Mechanic in this Country, will not only become an annual subscriber, but that many of them will afford contributions of their professional knowledge so as to render its columns still more instructive and entertaining, particularly in regard to all matters of a scientific nature appertaining to the Dominion.

To sustain a work of this kind, however, we must have a liberal support; we must not be content until almost every mechanic has enrolled his name on our Subscription List; we trust therefore that our canvassers will meet, everywhere, with encouragement, and that a national spirit will pervade the mechanical community to give a preference to home over foreign literature so as to enable us to maintain the Magazine in its present improved style, and to obtain the best talent in the Country to contribute articles for its columns.

### THE AMERICAN ARTIZAN.

With much regret we have read the Announcement of the Publishers of this valuable Magazine that it will be discontinued at the end of the year 1875. Most sincerely do we hope that when times improve it will be revived. We consider the suspension of this paper as a loss to the scientific world. In point of style of work, particularly in its beautiful wood-cuts, it stood foremost among all the scientific periodicals published in the United States and perhaps elsewhere.

### THE ROYAL AQUARIUM, WESTMINSTER.

On page 4, we give an internal view of the fine buildings of the Royal Aquarium and Winter Gardens, shewing the main hall as it will appear when completed. The internal arrangements will be very tasteful and leave little or nothing to be desired.

### THE 81-TON GUN AND TEMPORARY CARRIAGE.

In a previous number illustration we gave an account of the 81-ton gun, and described the manner in which the gun was mounted. We now give on the present page a perspective view, prepared from a photograph, representing the gun mounted on its temporary carriage, and showing also the arrangements for lifting the projectiles. The gun and carriage together weigh about 122 tons, and our engraving gives a good idea of the size of this enormous weapon.

### THE DUTIES, RESPONSIBILITIES, AND PRIVILEGES OF THE ARCHITECT.

#### ARCHITECTURAL ASSOCIATION.

The first ordinary general meeting of this Association for session 1875-76 was held on Friday, the 5th inst., whom the president (Mr. John S. Quilter, A.R.I.B.A.) delivered an opening address.

In his preliminary remarks, Mr. Quilter said he entered upon his duties as President of the Association with the determination of fulfilling them the utmost of his power. He was thankful, however, that the success of the Association did not depend upon his management, for he was supported by so many earnest and able fellow-workers that he felt every assurance in accepting the responsibilities of his office. He continued as follows:—The duties of the committee and officers of the Architectural Association have become increasingly onerous year by year, owing to its extent, growth, and prospective influence upon the profession. It now numbers nearly 700 members, although only claiming to be the junior society, having for its sole object the education and advancement of the students of the profession. This increasing influence is the natural consequence of the rapid development of the architectural profession. The Association has hitherto supplied the means of instruction which the colleges and schools have done for other professions; and when we consider that the whole of this work has been voluntary, it must be admitted that the success has been very great, especially as the requirements which it has been called upon to meet are of quite modern invention. A century ago scarcely five-and-twenty architects could be found in the United Kingdom; now, London alone contains nearly a thousand, and more than twice that number are spread over the numerous provincial towns. One of the consequences of this enormous increase has been a demand for increased skill, with the consequent division and subdivision of the duties of the architect. In former times the employment of an architect was exceptional; his place was ordinarily supplied by the builder, unless in the case of a building of great importance and considerable expense. The architect was then compelled to embrace within his practice the varied work of an engineer, surveyor, constructor, and decorator; but now the whole of the engineering work is undertaken by several separate professions. Surveying is not only a distinct division but is also subdivided into quantity and measuring surveyors, land surveyors, and valuers, and further divisions of the profession are now rapidly taking place. Constructive, decorative, ecclesiastical domestic, and municipal works have their special architects, who are prepared to meet the demand for special skill in each of the numerous branches. Nor is this result a matter to be wondered at. So great is the competition in every branch of our profession that nothing short of the most persistent application can ensure success in any one of them, and the practice of study, which has hitherto only been submitted to as a necessity, must before long be accepted as a rational and desirable object to be attained. “Know what you have to do, and do it,” was the advice given to the talented author of the “Seven Lamps,” and it well expresses the great principle of success in the practice of architecture as well as of every other art. We are all students, either entering, or about to enter, upon the practice of our profession; and nothing can be more important than that we should have a definite understanding as to what we have to do in order that we may be able to do it. With this view I purpose devoting a short time to the consideration of “the duties, responsibilities, and privileges of the architect.” Before, however, entering upon these three divisions of the subject, it may not be out of place to offer a few remarks upon what is meant by an “architect.” The name, which signifies the “chief workman,” more clearly expresses what he was in former times than what he now is; for the various trades connected with building have become so divided, and have consequently caused a want of general interest on the part of those employed in carrying out the works, that it has taken from the architect his position of chief workman, and he has now become the general director of the whole; he is the mind controlling and giving