

was reached at dusk, and we experienced some difficulty in landing across the mud, which stretches a long way from shore at low water. We reached Warden Point at 6, and found that the fly we expected to meet us had driven home an hour before. The position of two mud-covered and complete strangers on a dark night on a most desolate spot, in drenching rain, eight miles from, and two hours late for dinner was not particularly en- viable; yet a well-arranged excursion from Whitstable to Sheerness, *viâ* the singular shores of Shellness, would under pleasanter circumstances well repay any naturalist.

J. STARKIE GARDNER

### THE CONSERVATOIRE DES ARTS ET MÉTIERS<sup>1</sup>

ONE of the most eminent English men of science said to us one day:—"You have at Paris collections, libraries, museums, observatories, faculties, schools; we have the equivalent of all that. There is only one thing we have not, which I always admire among you, and that is the Conservatoire des Arts et Métiers."

The National Conservatoire des Arts et Métiers<sup>2</sup> is, in fact, an establishment unique of its kind both in its scientific interest and practical utility. No institution is more

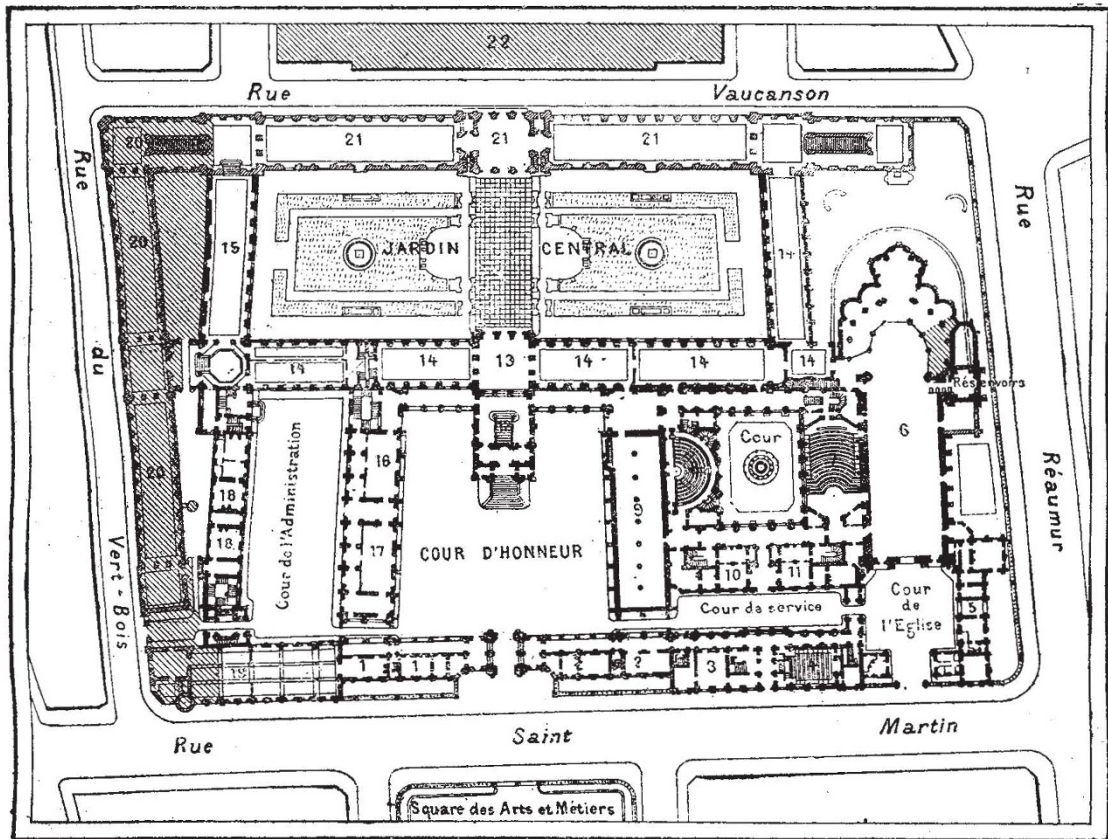


FIG. 1.—Plan of the Conservatoire des Arts et Métiers, and of projected additions.—1, Office for the verification of weights and measures; 2, Laboratory of the Course of Mechanics (Prof. Tresca); 3, Ground-floor: Laboratory of the Course of Dyeing and of Ceramics (Prof. Luyne); First floor: Laboratory of Agricultural Chemistry (Prof. Boussingault); 4, Ground-floor: Amphitheatre; First Floor: Physical Laboratory (Prof. Becquerel); 5, Provisional location of the Agronomic Institute; 6, Great Hall of Machinery in motion; 7, Great Amphitheatre; 8, Old Amphitheatre; 9, Library; 10, Laboratory of Industrial Chemistry (Prof. Girard); 11, Laboratory of General Chemistry (Prof. Peligot); 12, Great staircase; 13, The Echo Hall; 14, Galleries and Collections; 15, Ground-floor: Gallery in construction; First floor: Gallery of Ceramics and Optics; 16, Ground-floor: Weights and measures; First floor: Gallery of Spinning; 17, Exhibition Hall and Gallery of Spinning; 18, Administration and Gallery in construction; 19, Industrial drawings, patents, and trade-marks; 20, Projected construction, gallery of collections; 21, Projected construction; 22, Proposed location for the Central School of Arts and Manufactures.

worthy of the solicitude of the Government, since it has for its object the occupation of the workers and the instruction of the people. The Conservatoire is about to make a fresh start in consequence of the construction of a new block of buildings. There is even reason to hope that these works will only be the prelude of constructions still more important, and that very soon a law will insure the completion of our fine national establishment. The following are some of the improvements which have been recently introduced into the institution.

The service of patents and of the industrial department has been recently installed in the new buildings in the rue St. Martin. Early in November there was placed at the service of the public the old and remarkable collection of Vaucanson's drawings. These drawings, which

form a considerable series, comprised between the years 1775 and 1829, have a great historical interest. We find in them the germ of a considerable number of apparatus or of systems realised in our time, and which the want of processes of execution condemned to remain in the condition of projects. We see there a great number of curious objects, and notably the original drawing of Fulton's first steamer.

Among recent additions we may mention the great gallery of machinery (No. 6 in the accompanying plan, Fig. 1), to which is added the entire apse of the old

<sup>1</sup> From an article in *La Nature*, by M. Gaston Tissandier.

<sup>2</sup> Descartes had the idea of its foundation; Vaucanson formed the first germ of it by his public collection of machines, instruments and utensils, intended for the working classes; and the Convention decided on its definitive creation by a decree of 8 vendémiaire of the year xii.

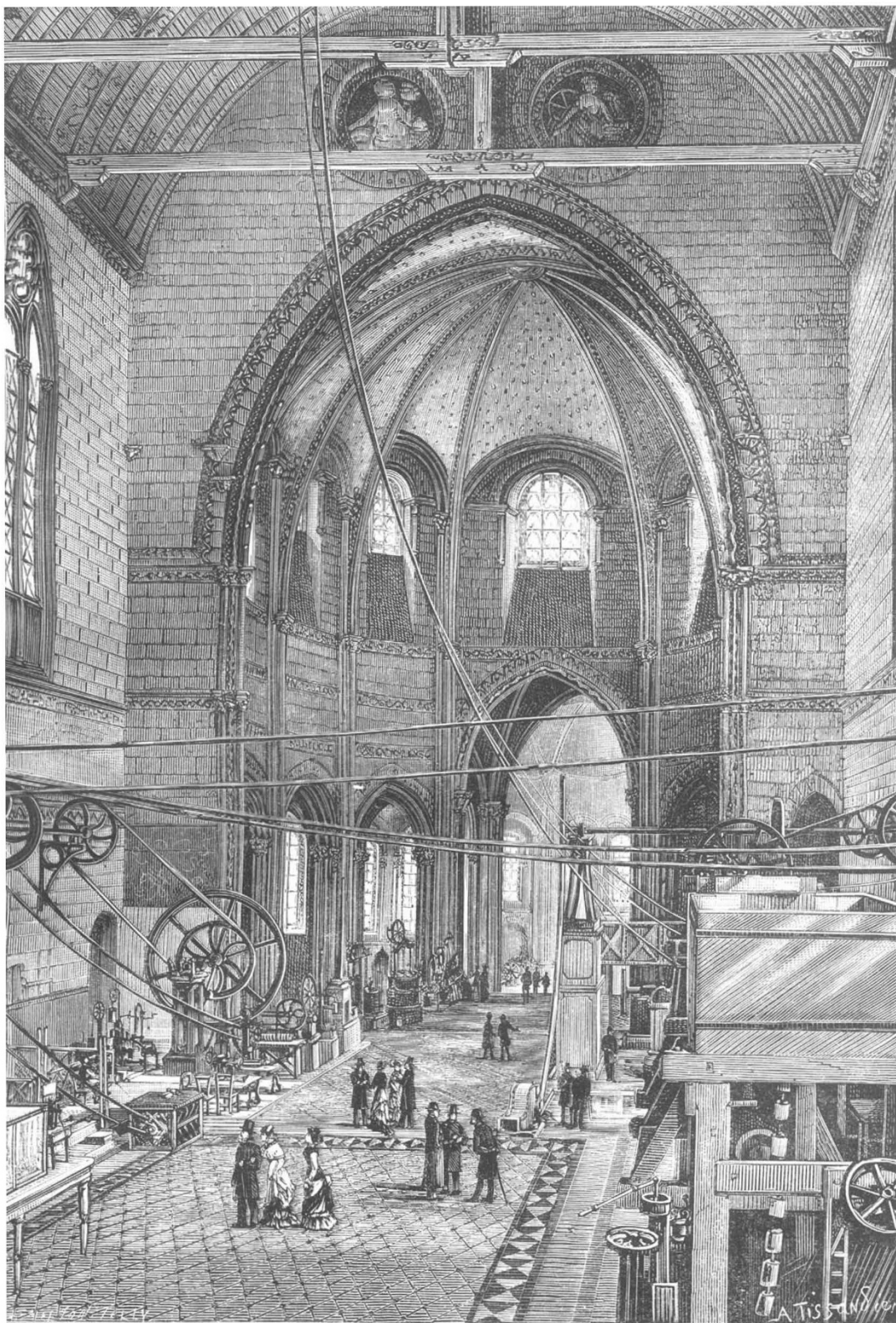


FIG. 2.—The Great Machinery Hall of the Conservatoire.

church of St. Martin's priory. We see here the curious steam-carriage of the mechanic Cugnot, and the fine statue of Denis Papin by M. Aimé Millot, the bronze duplicate of which was inaugurated at Blois some weeks ago. Besides the machinery which has long been at work in this gallery, the new administration of the Conservatoire is endeavouring to show visitors all the new and interesting apparatus used in the great Parisian industries. More than 3000 visitors witness every Sunday these experiments, very beautiful and very instructive for every one. Among the most notable apparatus are those connected with electrical phenomena. The beautiful experiments of M. Gaston Planté have obtained the greatest success, as also those relating to the transmission of power to a distance by electricity. The Conservatoire is thus becoming the museum of machinery in action.

While the machinery is thus at work in the great nave, other experiments are going on in the galleries. The great electrical machine throws off sparks in the physical hall, and projections by means of the oxyhydrogen light are made elsewhere by M. Molteni. Visitors show great interest in the Echo room, the Lavoisier room, in which is a great number of instruments used by the founder of modern chemistry, the Agricultural room, where are exhibited all the newest models of agricultural machinery. It is scarcely necessary to speak of the courses of lectures by eminent professors, many of whom are known beyond France; the gratuitous courses here and at the Sorbonne for 1880-81 comprise almost every branch of pure and applied science. The public library of more than 30,000 special works is freely placed at the disposal of workers.

Among the less known departments is the public service for testing the resistance of materials, very useful to architects, contractors, and builders. Any one may take advantage of it. It is sufficient to send to the Conservatoire specimens of stone, marble, pottery, metals, tubes, &c., which are crushed, broken, or bruised by special machinery, and the results accurately registered. The most powerful of these machines is a hydraulic press of 500,000 kilograms.

Such, in few words, is the Conservatoire des Arts et Métiers. By its collections, its public courses, its library, its eminently practical services, it may be regarded as one of the most valuable institutions of France.

#### NOTES

THE Faraday lecture will be delivered by Prof. Helmholtz in the theatre of the Royal Institution on Tuesday, April 5. The subject will be "The Modern Development of Faraday's Conception of Electricity." The lecture will be delivered in English.

PROF. HOLDEN, of the U.S. Naval Observatory, Washington, has published, through Scribner, a biography of Sir William Herschel. Prof. Holden is also publishing, through the Smithsonian Institute, a subject index and synopsis of the scientific writings of the great astronomer.

THE Kent's Cavern Committee, when presenting their final Report in August last to the British Association stated that, from the first day of the exploration in 1865 to its close in 1880, George Smerdon had been continually engaged on the work, and for nearly thirteen years had been the foreman; that during that period he had always discharged his duties in a most exemplary manner, and without the least misunderstanding with the superintendents; that he was nearly sixty years of age, and so crippled with chronic rheumatism—induced by working for so many years in the damp Cavern—as to be incapable of any ordinary labour, and that it was proposed to raise by subscription a fund sufficient to secure him a small annuity. The proposal was cordially received, and Mr. Pengelly was encouraged to carry it into effect. Several contributions have already been

received from Mr. G. Busk, Prof. W. B. Dawkins, Dr. John Evans, Mr. J. E. Lee, Sir John Lubbock, Bart., M.P., F.R.S., Mr. W. Pengelly, Mr. E. Vivian, M.A., and others. Further contributions to the "Smerdon Testimonial Fund" may be paid directly to Mr. W. Pengelly, Lamorna, Torquay, or to Messrs. Vivian, Kitson, and Co., Bankers, Torquay.

A MARBLE statue of Nicephore Niépce, the inventor of photography, is now being executed by the celebrated sculptor, M. Guillaume of Paris, and will be erected and unveiled in May next at Châlons-sur-Saône.

PROF. MASKA of Neutitschein writes that the excavations now going on in the Schipka Cave, near Stramberg (Moravia), have yielded some interesting results. Among the numerous remains of Post-Tertiary animals (such as mammoth, rhinoceros, urochs, horse, lion, hyæna) the jaw-bone of a supposed diluvial human being has been found. It was imbedded in the immediate vicinity of a place where carbonised animal bones, stone implements, and bone utensils were found. The jaw-bone, described as having belonged to a child of some eight years of age (according to the development of the teeth), is of very large, indeed of colossal dimensions.

THE director of French Lighthouses has sent to the Minister of Public Works a communication recommending the lighting, by electricity, of all the great lighthouses on the French coasts. It will involve an expenditure of several millions of francs, which will end in a large economy and an extension of the range of illumination. A system of steam-trumpets is also to be established in connection with these improved lighthouses.

WITH the January number the *Quarterly Journal of Microscopical Science* enters on the twenty-first volume of its second series. First published in 1853, under the editorship of Dr. Edwin Lankester and Mr. George Busk, it now appears under the editorship of Prof. E. Ray Lankester, assisted by Mr. F. M. Balfour, Mr. W. T. Thiselton Dyer, and Dr. E. Klein. Mr. William Archer has withdrawn from the editorial staff.

THE minutes of the *Proceedings of the Dublin Microscopical Club*, which since 1865 have been published in the *Quarterly Magazine of Microscopical Science*, will for the future, we understand, be published in the *Annals and Magazine of Natural History*.

WE understand that Mr. Richard Anderson, the author of the well-known work on Lightning Conductors, has nearly ready for publication a treatise—based on the "Instruction sur les Paratonnerres adoptée par l'Académie des Sciences" of France—to be entitled "Information about Lightning Conductors."

AT its last session the French Parliament voted a grant of several millions of francs for the completion of an underground system of telegraphic wires connecting the principal cities with Paris.

SEVERAL electric railways are to be tried on the occasion of the forthcoming Electrical Exhibition at Paris. The most important will be built by Siemens Brothers, and will form consequently a prominent part of the British display. At the last sitting of the General Council of the Exhibition M. Georges Berger announced that a steam-engine of 800 horse-power will be arranged for the working of the electric light, and the number of lamps in operation is estimated at 600. A number of these will be in the large hall, but a large proportion in the gardens, in the *annexe*, and in a series of saloons fitted up magnificently with tapestry-work by the Government. The *annexe* is to be the Pavillon de la Ville de Paris, which was one of the wonders of the 1878 Exhibition, and will be transported to the vicinity of the Palais de Champs Elysées.