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A school for inventions

The "Conservatoire National des Arts et Metiers" (CNAM), a school of higher technology for the applications of science to industry, recently paid homage to the memory of its founder, Abbe Gregoire.

In 1794, this friend of Enlightenment proposed that the government of the time, known as the Convention, give the young Republic the means of developing industry by the creation of a school in which the newly-invented machines and tools could be asembled together. Four years later, the new school was set up in the buildings of the former priory of Saint-Martin-des-Champs, in the heart of Paris, where it still lies.

The great idea of the encyclopaedists is applied in the teaching at the CNAM : to start with the object, and go back to the theory of conception and manufacture. This procedure goes the opposite way to that generally followed today when the theory is taught first and the applications come later.

A typical student at the CNAM is aged around 23. He is a technician, a workshop supervisor or in research and development, and he wants to become an engineer. Of the 400 to 450 students who gain this diploma each year, in some thirty specialities, 6 to 8 per cent are former workers.

In the French working population, more than a million people have followed training at the CNAM. In 1988, the CNAM enrolled nearly 90,000 students in its twelve teaching departments and its twenty-one professional institutes. The CNAM does not only provide studies in engineering. One student in two enrols in the economics or human sciences departemnts.

Its motto is "Omnes docet" (it teaches everyone). The school, which is a higher educational establishment in the service of workers and firms, is financed by contributions from employers and depends on the French Ministry of Education (Education Nationale). It aims to be "a place of liberty" and offers everyone the possibility of following training without any selection. The only requirement is to be able to show that one has a professional activity. The student follows his courses according to his capabilities and his availability.

Following its vocation, the CNAM ensures that those who have knowledge and know-how (professionals with a high reputation) transmit it to those who need it. Thanks to decentralisation, students can be trained wherever they are, as the CNAM has fifty regional centres.

Many researchers made a name for themselves in this school. Montgolfier, the inventor of the hot-air balloon, was one of its first administrators. The silk-weaver Jacquard developed a weaving-loom there, which revolutionised the textile industry. Later, Gramme invented the dynamo there and young Pasteur studied the role of nitrogen in plants. J. Becquerel produced the first colour photograph there and Diesel developed his engine. At the time, a student from a modest background worked there assiduously. His name was Gaston Doumergue and he was to become President of the French Republic.

The CNAM has its museum. Visitors of all ages, gaze in amazement at the mechanism of an old clock or at the oscillations of Foucault's pendulum showing the rotation of the Earth, in this sanctuary for the most famous inventions Here one can dream, learn and become imbued with the enthusiasm which drove the great inventors.

In one room lie the retorts and stills used by Lavoisier, the creator of modern chemistry before he perished on the scaffold. Here is the gondola used by Professor Picard to explore the stratosphere in 1932, and the crucible used to make the first standard metre.

The gothic vaulting of the former priory houses the transport department. There, with its enormous boiler looking like a mechanical beetle, stands Cugnot's first steam-powered car, the ancestor of our automobiles. When it was driven for the first time in 1770, at the speed of 4 kilometres an hour, it knocked down a wall, resulting in the first road accident.

A century later, Amedee Bollee's "Obeissante", on show in the museum, carried twelve passengers at a speed of 29 kilometres an hour. Further on, one can see the "Serpolet" which was also driven by steam. Perched high up on its wheels, this roadster reached the prodigious speed of 29 kilometres an hour in 1903, in a Paris-to-Madrid race which had to be stopped as it was too deadly.

Overhead, one can admire the marvellous flying machines frozen in flight, the attainment of Icarus's dream. And especially Ader's plane with its silk bat-like wings and its propellers resembling ostrich-feathers. It was powered by steam and took off in 1897 to fly 900 metres. Further on there is a room devoted to the history of railways.

For two-wheel fans, the retrospective of the bicycle, from the "Celerifere" invented by Sivrac in 1790 to today's bikes, is a feast for the eyes.

One never tires of admiring the 80,000 machines, tools and items exhibited, and there are just as many more in the reserve.

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