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SOME INDUSTRIAL ART SCHOOLS OF EUROPE AND THEIR LESSONS FOR THE UNITED STATES

EXTRACTS FROM THE STUDIES MADE FOR THE FRENCH GOVERNMENT BY

MARIUS VACHON

TRANSLATED BY FLORENCE N. LEVY
SECRETARY INDUSTRIAL ARTS COUNCIL

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INTRODUCTION.

Drawing is the foundation of all manufacture. Whether it is the making of a tiny screw or a public building, a letterhead, or a piece of brocade, the "man behind the pencil" is as important in the industrial struggle as the "man behind the gun" in the military war.

The architects of the New York Public Library state that they furnished for this building about 1,000 finished drawings, for each one of which 8 to 10 sketches were required. The contractors made about 2,500 shop drawings, and in the execution of the work there were required 15,000 to 20,000 blue prints taken from the drawings referred to above. For the construction of an ordinary type of steam engine about 800 drawings are made in the shop, and this does not by any means take into consideration the drawings for the component parts, such as bolts, castings, forgings, etc.

An industrial country, such as the United States, therefore requires a great many skilled designers and craftsmen. Yet in the number of schools for training these experts we are far behind many of the European countries. "To ascertain as accurately as possible the situation existing in the American art industries," an industrial art survey was undertaken in 1919 by the National Society for Vocational Education and the University of the State of New York, with the cooperation of the General Education Board. Toward the close of 1922 the result of the survey, edited by Charles R. Richards, was published under the title of "Art in Industry."

A number of such studies have been made in Europe. Most notable of these is the series of seven volumes published by the French Government between 1881 and 1889, as a result of the investigation made by Marius Vachon. He visited the principal schools, museums, societies, and factories of the artistic industries throughout Europe, and his reports contain much basic information. It was felt that the translation of this material would be of great service in developing a system of industrial art education for the United States. Permission was therefore secured from the French Government to publish extracts from these reports.

It may be claimed that these studies were made so long ago that they can be of very little value to-day. Vachon's knowledge of his subject, however, enabled him to seize the salient points and the underlying principles, and these are as vital and important to the American manufacturer, to the artist, and to the educator at the present moment as when they were written some 35 years ago. His

enthusiasm, the charm of his style, and his sense of humor also make these studies interesting reading.

After consultation with the director of the Industrial Art Survey, it was decided to include in this translation only those countries from which recent reports had not been secured for the survey. The translator has selected those schools whose plans and methods seemed to offer guidance for the organization of a practical system of industrial and artistic education in the United States. To make these plans more clear the organization of the following schools has been tabulated (Appendix E) The Industrial School at Ghent, the Stockholm Technical School, Technical and Artistic Instruction in Hungary. Two other tabulations are the result of careful study of Vachon's reports: (F) A System of Industrial-Artistic Education, combining all schools studied, and (G) Industries Derived from the Classic Arts of Painting, Sculpture, and Architecture.

One of the most useful sections for the guidance of the United States is the way in which the reorganization of artistic industrial education was brought about in Belgium. Through the initiative of the heads of the large factories an Association of Professional Schools was formed. The object was to spread artistic instruction among the workmen and to offer both theoretical and practical education in the artistic industries. To this end they developed a systematic grouping, using all existing schools, modifying where possible, and creating new ones where necessary.

The Academies of Fine Arts of both Brussels and Antwerp were reorganized, so that the making of painters, sculptors, and architects was no longer the exclusive interest of these schools but rather the development of artisans skilled in all branches of the national industries. The account of both these academies has been translated in full in the belief that each contains valuable suggestions for us. The chief characteristics of the changes brought about, according to the report of the general manager of the Antwerp academy, were:

> To open the field of the fine arts only to the young people who show special aptitude; to inculcate in all pupils the general principles of a well-grounded artistic education, both practical and theoretical; to broaden the application of art to industry. * * * The old system blinded many young people regarding their veritable vocations; led astray by pure art without its application to industry they became very bad painters, sculptors, or architects when, without doubt, they would have made excellent cabinetmakers, carpenters, or decorators.

Vachon, when summarizing his finding in Belgium, said:

> It has been proved that these academies each year throw on the streets of the large cities crowds of the ambitious, of failures, of poor devils running after fortune and glory and finding only misery. The annual salons overflow with exhibitors of all ages and both sexes, while the industrial studios lack artists and artisans. This state of things appeared to be a social danger; they decided to cut it short. The method of teaching drawing was changed. Before attempt-

ing "great art" the young people hereafter will receive fundamental instruction which will assure their breadwinning.

When Belgium was changing her method of teaching drawing she asked at the same time that temporary courses be established, with the least possible delay, to prepare instructors for the new system. This preparatory step is important.

Stress is laid upon the value of complete autonomy for each school. The Government in Belgium, as in Germany and most other countries, occupies itself exclusively with results obtained. If these are satisfactory, the government continues its liberal subsidy; if not, it is revoked. The municipality similarly leaves to the committees of the societies the administration of the schools.

The methods followed by Russia in 1888, when that country was just developing independence in her industrial art, hold valuable lessons for us, and therefore the greater part of that report is given. The Russian art schools, museums, and societies were taken over by the Soviet in 1918, and a translation of the decree has been added as Appendix B. It has not been possible to ascertain whether these schools are now in operation.

An interesting development in Denmark is the Federation of Industrial and Professional Schools, which organizes competitions, exchanges exhibitions, and holds an annual congress for interchange of ideas.

In all the schools studied by Vachon, whether called industrial, professional, or art, drawing is the basis of instruction; in many, practical and theoretical training are carried on side by side with the full use of workshops and museums.

Again and again attention is called to the importance of having workshops as part of the equipment for professional schools and schools of decorative art. The line is clearly drawn between the productive workshop for the training of apprentices, which seldom is successful, and the workshops that are maintained with the object of initiating the students into the technical difficulties that must modify their artistic instruction according to each industry. Under certain conditions, approval is given to the system of apprentices in outside trade workshops where the students secure their practical training under the supervision of the school in which theoretical instruction is given.

The difference is strongly emphasized between museums possessing priceless objects of art that are displayed in locked cases and the real industrial art museums whose objects are as likely to be from contemporary factories as from the hand looms of the past; here every piece must be of service in establishing standards, and the objects are passed from hand to hand in studio and workshop. In the "Conclusions" of 1888 much valuable information is given regarding these

industrial art museums and also about the activities of associations for the propaganda of the artistic industries.

The "Conclusions" of 1888 end with the statement:

> The organization of our artistic and industrial education is a work of national defense of the same importance as the organization of our army.

In 1916 we find Vachon still pleading for the French to organize systematically for "the artistic, industrial, and commercial war" which will follow the "victory of the nations allied for the defense of the liberties of the people."

While the war was at its height he published a small book entitled "La Guerre Artistique avec l'Alemagne" (The Artistic War with Germany). The greater part of his introduction has been translated and forms one of the chapters in the present pamphlet. Vachon states the purpose of his book on The Artistic War with Germany as follows:

> To ascertain and make known, with the greatest possible precision, what are the elements of the German organization of instruction and of propaganda (for the artistic industries) in order to discover therein that which may reasonably be utilized by intelligent adaptation to our (French) needs, our customs, our ideas, and our traditions.

The main part of this publication deals chiefly with the associations in Germany that have done and are doing so much to carry on this propaganda. The gist of it is contained in the following paragraph:

> The associations (in Germany) are organized scientifically and systematically by individuals who unite strongly and completely the national, the corporate, and the personal interests; they know what they want and want it intensely, and have firmly decided to employ every available and practical means to attain their end, clearly defining it and announcing it publicly.

Toward the close of the volume Vachon appeals for the aid and cooperation of all artists thus:

> Our great painters and sculptors descended from their towers of ivory during the war to extend a helpful hand to the widows, orphans, and old parents of their comrades out there in the field. Let them not return to their high pinnacles. In the artistic war of to-morrow with Germany we shall need all the devotion and all the energies of to-day to organize for the new victory which will be obtained only through a continuation of the sacred union, intimate and complete, of all the artistic forces in one single association, large, strong, and powerful, proudly conscious and completely mistress of her (France's) destinies.

If this organization for "national defense" is needed in France, the country to which we are accustomed to look for guidance in all matters of art, it is surely equally important that the manufacturers, artists, and educators of the United States of America should promptly undertake a similar campaign of education for the defense of their country.

September 1, 1922.

FLORENCE N. LEVY.

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RUSSIA.

RETROSPECTIVE STUDY OF THE INDUSTRIAL ART OF RUSSIA.

In her art and in her industry Russia sustained, in the eighteenth and the beginning of the nineteenth century, diverse outside influences; one after the other the Italians, the Germans, and the French impressed their tastes, their works, and their models.

The Art School, founded by Elizabeth, had a Frenchman, Le Lorain, as president and many French professors; it was the same with the Académie des Beaux-Arts, founded by Catherine II, etc. The textile industry was taken to Warsaw by Philippe de Girard at the instigation of Alexander I, and all the silk and textile mills that were created at Moscow and at other great industrial centers of Russia during three-quarters of the nineteenth century were the work of men from Lyon and Alsace. From the First Empire until 1870, France held first rank among the nations that exported their products to Russia. Their silks, their furniture, and their novelties (articles de Paris) were sought after for their elegance and good taste, and Russian styles were inspired exclusively by the models and creations of Paris. Since 1870 French influence in art and in industry has been supplanted by German control filtering into Russian society, invading the army, the Government, and industry. To-day (1885) it would be dangerous, or at any rate useless, to deny that Germany has taken France's place and has slowly substituted her influence for that of France. This German invasion has been but one phase of evolution. To-day Germany, as well as France, in the upheaval strikes against a new influence, more powerful and more crushing.

Russia between 1870 and 1885 advanced by giant strides in her artistic and industrial emancipation, and she succeeded in putting herself in a position to compete successfully with foreign countries and even to refuse to import objects for ordinary consumption. What concerns us from the point of view of the artistic industries

is that France only exports to Russia the greatest luxuries, elaborate costumes and flowers, very expensive materials, and artistic printing. Furniture, which was one of the most flourishing branches of its commerce with St. Petersburg and Moscow, has almost disappeared from the Russian market.

SCHOOLS AND MUSEUMS OF ART AND INDUSTRY.

Art training especially adapted to the industries is given in St. Petersburg by two schools: The School of the Imperial Society for the Encouragement of the Arts and the School of the Society founded by Baron Stieglitz.

SCHOOL OF THE SOCIETY FOR ENCOURAGEMENT OF THE ARTS.

As indicated by its name, the first organization, founded in 1820, was intended less as a center for instruction in the arts than to accord protection and encouragement to painters, sculptors, architects and other artists by means of competitions, exhibitions, lotteries, and subsidies. It was not until 1857 that it was called upon, through certain circumstances, radically to modify its organization. The Ministry of Finance had, a few years before, founded a special school of industrial drawing; badly directed, the school did not prove a success. The ministry was inclined to abandon it when the Society for the Encouragement of the Arts offered to take charge of it, providing the Government would furnish a slight annual subsidy. The proposition was accepted. The success has justified the ambition of the society and the confidence of the Government. The society is (in 1885) a private institution under the patronage of the Emperor and Empress; it includes 750 members who pay annual dues of from 10 to 60 rubles. Nine members are chosen every three years as a supervisory council, which administers the funds of the society. The annual budget is about 40,000 rubles ($20,000) of which half is for the school. The court accords a subsidy of 14,000 rubles, the Ministry of Finance 5,000 annually, and the balance comes from members' dues, tuition fees, profits from exhibitions, and rental of space in the vast structure on the Morskaia, which was presented to the society by the Emperor Alexander II. The director of the school is appointed for an unlimited period, as are also the four other officers of the institution—a librarian, an inspector, a bookkeeper, and a cashier. There are about 1,000 students, of whom about 300 are young women.

The system of absolutely free instruction has been rejected in principle, for moral reasons and for the sake of the best functioning of the institution. The men pay 2½ rubles a semester, and the women 5 rubles. On the other hand, the school makes monthly awards from its special funds to poor but talented pupils, to enable

them to live and pay their regular fees. There are 18 professors. The school comprises two main divisions—preliminary instruction and technical instruction. Five classes are devoted to preliminary instruction. The pupils here receive a general artistic training; they can not advance until they are capable of making designs for all sorts and kinds of industries. The technical professional division consists of six departments—ceramics and enameling, modeling for jewelry and silversmithing, wood carving, wood engraving, decorative painting, and cabinet work. Well-paid, special instructors direct these classes; they give two practical lessons each week, but the pupils work every day. The school is open in the evening only from 6 to 11 o'clock and on Sunday morning from 5 to 10 for the men; for women from 10 a. m. to 4 p. m. daily.

The pupils come from all ranks of society. There are sons of peasants (moujicks), workmen, foremen of factories, sons of officers, and children from very wealthy families. The school is very prosperous; the present quarters [1885] have become too cramped.

The instruction given in this school is greatly appreciated, and a large number of students have left the Stieglitz School to work in the Morskaia School of the Society for the Encouragement of the Arts.

The library that forms one of the annexes of the school contains about 2,000 books and 4,000 drawings and prints; it was established chiefly through gifts from the Archduchess Marie and by the late Empress, wife of Alexander II, who was greatly interested in this institution. The museum, which contains about 6,000 objects, of which three-fourths are originals of great artistic value, is a model in its installation and organization. It is classified chronologically and generically. The collections begin with the arts of metal. On the whole, the artistic side is rather weak; the series of originals is completed by casts and galvanoplastic reproductions; among the originals some of the pieces are extremely valuable. The series of furniture, started with the celebrated collection of Narischine, is very complete; it includes pieces of the highest rank and in a marvelous state of preservation. The section of enamels is of special interest; there are, among other works, boxes of an unusual workmanship that would serve as excellent models to Parisian artists. The ceramics are very important both as to numbers and to the artistic value of the pieces. The late Archduchess Marie and Emperor Alexander II presented antique pieces of great value. The oriental section of the museum is being extended, for it is rendering very real service to the Russian industries, which consult it constantly in quest of models for silversmithing, jewelry, mural decorations, and textiles. The national department is also the object of the greatest solicitude by the society, which takes a preponderat-

ing part in the movement for a Russian renaissance. There has been built up a very rich collection of embroideries and textiles, which are greatly appreciated as models by the manufacturers of St. Petersburg and Moscow. The museum organizes annual art exhibitions of various kinds: Of modern paintings, of historical portraits, of ancient paintings, of objects of art, and of curiosities.

The Imperial Society for the Advancement of the Arts does not limit its activities to St. Petersburg; it is in constant relation regarding designs, methods of teaching, recruiting of pupils from provincial schools, with the schools of Kief, of Kharkof, of Odessa, and elsewhere. It has, besides, the administration of a number of legacies and gifts from artists for the benefit of provincial art schools. The influence that it exerts to-day is considerable. Notwithstanding the relative smallness of its budget, by its activities, its services, and its authority in matters of teaching it surpasses the Stieglitz School, the resources of which are much greater, but the direction of the instruction is not serious but seems to be inspired by tendencies and principles that look less toward the renaissance of the national industries than to an artistic eclecticism such as dominates German art. (For the program of studies see Appendix A.)

THE STIEGLITZ SCHOOL.

It is said that this school was the outgrowth of a dissension between one of its founders and the administration of the School of the Imperial Society for the Encouragement of the Arts. The princely liberality of a rich relation permitted him to erect this competing institution to which a legacy of 25,000,000 rubles has recently come to enrich it enormously. The school consists of three main sections: (1) Preparatory school of drawing, open in the evening, three times a week, where everyone can work without fees or examinations, and where one learns to draw ornament and the figure, and where they teach the elements of geometry and perspective. (2) Secondary school of drawing to which there are admitted, after examination, the pupils from the preparatory school or candidates who can qualify by a certificate of four years in a high school. Here a well-rounded course of instruction is given without any limit as to the number of years. (3) The professional school, the pupils of which are recruited solely from the preceding school. The courses are wood engraving, etching, decorative painting, ceramics, wood carving, modeling for jewelry and silversmithing, lace making. They do not teach cabinetry.

The studios are open three hours a day and five times a week; it is the intention to give, as in Vienna, studios to the instructors, so as to enable them to be in constant communication with the pupils. The students execute works that they are permitted to sell to the

public. The preparatory school has about 800 students, of whom 300 are young women; the secondary and professional schools have about 200, of whom 50 are young women. The minimum age is 14 years; there is no maximum. For the preparatory school the fee is 6 rubles a year, and for the advanced schools 12 rubles; many students receive subsidies to cover living expenses. The school has some 20 boarders sent by provincial governments. There are 18 professors, and they receive 3 rubles a lesson, which makes 850 rubles a year for those who give one lesson a day and double for those who give two lessons a day, but these last are in the minority. Contrary to what takes place at the Imperial Society School, where there is a council of teachers that meets twice a month to discuss the program of courses and possible improvements, the director of the Stieglitz School is clothed with absolute authority over the institution, without control or advice. The director is at the same time instructor of the classes in composition, in water color, and in history of ornament; he is, in addition, curator of the museum which is associated with the school. The museum contains collections of a certain artistic value, but the installation and the organization are of no interest. The acquisitions have evidently been made without method and without scientific forethought, the only ambition apparently being to possess rare and expensive pieces of luxurious appearance. No rational system of classification has been adopted for the collection, which tends especially toward the picturesque and fantastic. A few students' drawings were on view, but they were not distinguished by any great merit.

To resume, the Stieglitz School, which it is true has only been in existence four years, seems to be in a painful and critical period of experiments, gropings, and hesitations. Perhaps it is too rich? Its founder, the Baron Stieglitz, before his death had constructed for it a vast palace, Solenoi Pereoulock, near the Summer Garden. The luxury and sumptuousness of a building does not necessarily constitute an improvement of the institution for which it is destined; the societies that possess large funds often run the risk of being tempted to consecrate them to unnecessary enterprises and dangerous ostentation, instead of applying them to serious and practical, though more modest reforms.

SCHOOLS IN MOSCOW AND THE PROVINCES.

It is not St. Petersburg alone which has the benefit of possessing important institutions for the development of the artistic industries. Here is a condensed list:

Moscow—Art Society's school.
Kief—Two private schools where they teach design as applied to the industries, the Mourascho School and the one founded by Mme. Yung.
Odessa—School created by a society which also possesses a museum.

Tiflis—School and museum belonging to a private society.
Warsaw—School founded by a society.
Helsingfors—School founded by a society.
Riga—School placed under the care of the Stieglitz School.
Saratov—School and museum created by a society.
Vilna—State school.
Kazan—Private school especially devoted to instruction in drawing without its industrial application.

To this immense group of people which she is daily conquering, Russia is ambitious to impose not only her military domination, but her moral and social domination. Is not art the most delicate agent and the most powerful in the conquest of the intelligence and the customs? Russian art is the sincere reflection of the temperament and the character of the Muscovite.

Throughout all the invasions of foreign styles, notwithstanding all the imperial official attempts to transform the occidental taste, it has kept intact the strange originality of its forms, the audacious naivety of its decorations, the archaistic secularity of its pictures, its primitive types of construction; just as the Russian people have remained the same, always a little savage in spite of the varnish of European civilization, fanatical and superstitious in spite of the philosophers and scholars that they have welcomed and admired. Art in Russia is religious; religion is one of the forms of national policy. The movement for artistic renaissance that is pursued in Russia will result fatally, because it is the natural corollary of its political and social evolution. And Russian art will exercise its influence, do not let us forget it, upon 100,000,000 inhabitants. (For the Soviet decree of 1918 taking possession of the art schools see Appendix B.)

RHENISH PRUSSIA.

THE WEAVING SCHOOL AT CREFELD.

The first school.—In 1855 the Chamber of Commerce of Crefeld, with the cooperation of the city and the Prussian Government, founded a textile school. The institution had but a small number of students; it was badly handled from every point of view. Up to 1874 the average number of students did not exceed 35. In 1876 this number rose to 60, only to fall back in 1879 to 20.

Radical reorganizations of the school.—This evident decline of the school led to the intervention of the Prussian Government, which reorganized it radically and attached it to the Department of Commerce. The reform was so well done, it responded so exactly to the needs of the commerce and industry of Crefeld, that the number of pupils the first year was 120; the second 180; the third 220; and in 1886, 250, with the administration obliged to refuse many candidates owing to lack of space. In 1884 the chamber of commerce, in its

annual report, declared that the school's buildings had become quite inadequate, to their regret. The success of the institution has surpassed all expectations, for at the same time that the Prussian ministry reorganized the school they erected a monumental building to house it, the construction and equipment of which cost about 2,000,000 francs. The State having given 500,000 marks, the city the same amount, the balance was promptly subscribed by the chamber of commerce and the manufacturers.

Organization of the school.—The scientific organization of the school at Crefeld makes it a model institution, while at the same time its material organization may well serve as an example. It includes, in fact, much more than is indicated by its name of Weaving School. The purpose of the school is to develop, by means of professional instruction in the textile industry, both theoretical and practical, and by serious artistic education, manufacturers, superintendents, silk merchants, and industrial designers. The program of the courses includes the study of drawing and painting; the examination and analysis of all tissues—silk, wool, cotton, linen; the actual exercise and analysis of all the manipulations that they undergo before and after weaving; the theoretical and practical study of all mechanical and other systems used in the trade, of all the methods of manufacture, of all motive power employed in the weaving trade, of the preparation and dyeing of materials; industrial accountancy; and commercial geography. The instruction is given by 14 instructors and embraces two years of study in the lower and advanced divisions. Practical work alternates with artistic instruction and theoretical instruction. For this purpose the school includes weaving rooms with a considerable series of looms both mechanical and hand, accompanied by all the trade accessories required for the manufacture of textiles; chemical laboratories and those for dyeing, dressing, and printing.

A rapid analysis of the plan of study will give a good idea of the character of instruction given at the Crefeld school.

All the pupils must previously have had regular and adequate instruction and must have completed their fourteenth year. In the lower division, the first year, the study includes:

Fourteen hours a week of analysis of original materials, examination of mixed tissues, and preparation of patterns and cartoons in small design; two instructors.

Two hours a week, factory accounting; one instructor.

Two hours a week, net cost (determining the value of manufactured materials from the samples that the pupils have analyzed); one instructor.

Seven hours a week, chemistry both organic and inorganic; one instructor.

Twenty-one hours a week, drawing (outline work from models, from ornament, and flowers in pencil. Chinese ink, and in color); one instructor.

For the practical work in weaving, supervised by two instructors, the pupils in the lower division find the weaving rooms open 39 hours a week. Each pupil is busy here 6, 8, 14 hours or more a week as may be necessary, according to his desire to perfect himself more or less in the practical side of the trade.

The dyeing and dressing laboratories (1 instructor and 1 assistant) are open 47 hours a week; attendance here is also optional, according to the industrial aim of the pupil.

In the second year:

Fourteen hours a week, analysis which turns entirely upon the Jacquard methods.

Twenty hours a week of drawing, chiefly in executing designs for weaving machines and sample designs of all kinds.

Ten hours a week, construction of weaving machines (motors, filatures, and other parts of both mechanical and hand looms).

Eight hours a week, practical dyeing and dressing.

Artistic instruction therefore occupies almost as important a place on the program as professional training. The school at Crefeld in this way obtains a distinctive method which is not found in any other school, either at Vienna, or at Zurich, or at Lyon, and constitutes an innovation of the greatest interest. This artistic instruction is primarily intended to develop textile designers; but the professors who direct it are occupied, very intelligently, in giving the work a broader and more elevated character. They do not confine the students to the narrow limits of industrial application; they try to develop their artistic intelligence, to give them a taste for beautiful conceptions, the desire for new ideas, for masterpieces, to take them out of the old ruts and the beaten tracks. The study of nature, which the routine of the old studios with their cabinets of mounted drawings have so long disdained, has been restored to an honorable place by these professors; and I had an opportunity to admire the excellent results that they have already obtained. The credit for the reform is particularly due to one of the professors, a young Frenchman, of Alsatian origin, who received his artistic eduction at the schools of Lyon and Muhlhausen.

This instruction responds, besides, to the wishes of the manufacturers of Crefeld, who frankly recognize that the cheap and common goods have had their day and that the prosperity of their industry can only be maintained by means of a radical evolution which would substitute artistic and original products. Crefeld at this moment nourishes the ambition to rival, at a not far distant day, Lyon and St. Etienne. It is for this purpose that they have, spon-

taneously and with admirable spirit, completely reorganized the old school; that they have made enormous personal pecuniary sacrifices in order to construct a monumental building the installation of which fulfills all the conditions of a model school; and to create an institution that permits giving the young people a most complete professional and artistic education. The Crefeld school incontestably realizes an ideal institution of this kind.

The building.—The architect who built it was exclusively animated by all the requirements, all the exigencies imposed by the multiplicity of needs for such practical and theoretical instruction; he did not, as so often occurs with us, make sacrifices to exterior appearance and architectural display. On the ground floor, with a façade of about 60 meters, are the halls of the museum, high, spacious, well lighted by large bays opening on a court. Next come, in the two wings surrounded by squares, the schoolrooms, access to which is through wide gallery halls that go entirely around the edifice and give direct communication throughout the ground floor.

On the first floor, the only one, are the drawing studios with marvelous lighting. In a neighboring smaller building, opposite the main building and inclosed in a vast court, are the weaving shops that can accommodate 80 looms, mechanical or hand, with a gas motor of 8 horsepower, the chemical and physical laboratories, the dyeing and dressing laboratories. At the time that I visited the establishment they were installing machines for printing textiles.

Organization of the workshops.—All the shops are installed under the most perfect conditions of convenience, lighting, ventilation, and heating; they are lighted in the evening, as is the entire edifice, by electricity. Absolute order and scrupulous cleanliness reign here. Besides, they were careful everywhere to surround the students with objects in good taste, of simple but elegant form, and fitted to their purpose. The window handles, the fastenings, the lighting fixtures are of artistic design; all the doors of halls and studios are surrounded by frames with very nice moldings and ornaments. Each room is supplied with marble washbasins where the water flows in profusion. When all the shops are in operation and this little world of intelligent, wide-awake, healthy, young people are at work, some steering the rod of the Jacquards, superintending the mechanical spindles, or setting up a new loom; others in the chemical laboratories, with apron on chest, brewing color mixtures, maneuvering heavy pestles in the mortars, dyeing materials, or washing pieces of silk; the instructors superintending the tasks, putting their hand to the trade and in the pie, the sight is very interesting and very picturesque. There is gaiety and extraordinary animation. The variety of studies and practical work is not made, it is

true, to engender ennui, or to fatigue the mind or body of the pupil. Each special lesson does not last more than one hour a day, and during the week the young man travels through the entire series of subjects in the curriculum; he passes from the drawing lesson to that in accounting; he learns chemistry, he works at the loom, studies mechanics, and makes experiments in dyeing.

Specialization.—After two years spent in the school, a studious and intelligent pupil has received a complete professional training and knows his trade thoroughly enough to make a good foreman, a clever superintendent, an experienced designer. But at Crefeld, as in Zurich, as at St. Gall, as everywhere, the parents, urged by necessity, anxious that their children should be in a position to earn money as promptly as possible, interrupt their studies or permit them to take only one year. In consideration of these conditions that happen frequently, the directors of the school have ingeniously organized a plan of study whereby the pupils who desire to devote themselves more especially to practical work, or to receive instruction in certain special parts of weaving, can do so easily without inconvenience to the other students and without creating irregularities in the sequence of courses. In this connection it is to be noted that in all the professional schools of Germany the regulations, while being very severe from the point of view of discipline, are very broadly planned, so as to take into consideration all the social exigencies; they do not tend to hinder or to restrict ever so lightly the admission of students but to encourage it as generously as possible. Neither are the methods of instruction imperious or inflexible; they leave a free field to the initiative and independence of the instructors. Each upon his own responsibility organizes his courses according to his understanding and chooses the models that he prefers. The directors and the supervisory councils judge only by results and the work accomplished. This is the administration by means of liberty and responsibility, so fruitful and so full of dignity, which, besides, exists throughout Germany from the village primary school to the university.

The students at the Crefeld school are of all nationalities; there are Germans, Americans, English, Belgians, Swiss, and several from Lyon, who, in addition to very complete professional instruction, add that of learning German and of receiving valuable commercial information. The cost of tuition is rather high and is payable at the beginning of each semester according to the following tariff: For Prussians, in the lower class 60 marks, upper class 90 marks, and in the shops 50 marks; students from other parts of Germany pay 90, 135, and 75 marks; those from foreign countries 180, 270, and 150 marks. Those who wish to take the course in dyeing and dressing pay an additional fee of 100, 150, or 300 marks, according

as to whether they are Prussian, from other parts of Germany, or foreigners. For single special courses individual arrangements are made.

The samples used for analyses and the materials required for weaving are furnished by the school, in order to obtain uniformity in the work, and they are distributed free. The chemical and physics laboratories and those for dyeing and dressing also furnish basic materials. The merchants and manufacturers of Crefeld have the right to make experiments in the laboratories and workshops gratuitously. The professors, on their side, devote themselves constantly to experiments and research, the results of which they are expected to communicate to the public. This section of the school receives, from all this constant activity, information which is very useful in the development of local industry.

Relation between the school and the industries.—There is close and constant connection between the school and the industries; these last, represented by a special committee, have direct authority in the administration of the institution. Even though the school is a royal foundation and officially connected with the Prussian Ministry of Commerce, it is administered by a council composed as follows: The burgomaster of Crefeld, the first municipal assessor, the president of the chamber of commerce, the commercial adviser, and the vice president of the chamber of commerce of Crefeld.

Character of national intervention.—It is to be noted in this connection that, contrary to the erroneous opinion that we in France have regarding this question, the Prussian State is much decentralized in these matters. It gladly abandons all museums, schools, expositions, competitions to the interested commercial groups or to the societies that have taken the initiative; the Government contents itself in watching carefully, by means of its inspectors, the use that is made of the subsidies accorded and in seeing that the official regulations are followed, but they imperiously exact serious results. Everything must function well and prosper: if not, the Government intervenes and sequestrates, as they did with the Industrial Art Museum of Berlin a year ago.

The museum.—To the school there is annexed a museum of ancient textiles, which includes more than 5,000 pieces and embraces the whole history of textiles from the tenth to the nineteenth centuries.

The exhibition hall is situated on the main floor of the school building and is superbly installed with large bays giving abundant light, high ceilings, and handsome cabinets ingeniously installed. A rich merchant of Crefeld, Mr. Court, has just bequeathed the sum of 100,000 marks to have executed in this museum a series of mural paintings representing the history of the silk industry of Crefeld. Next to the museum of ancient textiles is the museum of modern textiles,

which also includes technological collections, samples of raw materials carried through their divers steps of transformation, types of various looms shown by drawings or small models, etc. This museum is maintained by the merchants and manufacturers of Crefeld.

BELGIUM.

ORGANIZATION OF THE ACADEMIES AND SCHOOLS OF DRAWING.

A Government decree of the Netherlands under date of April 17, 1817, reorganized the academies and schools of drawing founded by Maria Theresa and classified them in three categories: (1) Royal academies of fine arts; (2) academies of design; (3) schools of drawing. The 10th of October, 1829, the Minister of Public Instruction acknowledged in an official document that these schools were not as useful as they might be if they were better organized. The revolution of 1830 did not permit the realization of the proposed reforms. The question came up again in the Government councils on December 29, 1851. In the report presented to the King under this date is the following interesting declaration of principles:

> These establishments have not only as their purpose to develop artists; they should spread in the artisan class that constitutes the major part of the pupils the ideas necessary for them in the industries with which they will some day be associated, the ideas of taste and distinction without which these industries will not be able to compete with those of other countries.

In 1857 certain prominent people in the industrial and artistic world took the initiative in the foundation of an association for the teaching and development of the industrial arts; but their efforts were limited to the organization of three expositions and an attempt to found a special library. The real national movement for the creation of an artistic-industrial education in Belgium dates from the congress for the teaching of the art of drawing which was held in 1868. Previous to this time instruction in drawing had been left to local and private initiative without official Government intervention. In 1869 a royal decree instituted a council to consider improvement for this instruction as part of the Department of the Interior. By 1872 Belgium had created 78 academies and schools of drawing comprising 11,158 pupils, with 315 professors. This council in 1876 was called upon to pass judgment on the adoption of a program for these institutions; it definitely settled the program for the primary schools, the normal schools, the academies, the colleges, and the intermediary schools. They asked at the same time that the Government should institute with the least possible delay temporary courses to prepare for the new system professors of drawing for the normal schools and the intermediary schools. In 1878, following a report

to the King made by the Minister of Public Education, a decree conforming to these plans was signed by Leopold II.

In 1879 the King named a commission to study the organization of a school of decorative arts at Brussels. This commission held numerous meetings, but it was not until eight years later that the school was established. During this time the academies on the outskirts of Brussels—St. Josse-Ten-Noode, Ixelles, Molenbeek St. Jean—had reorganized their artistic teaching in view of the industrial instruction of the workmen and had obtained valuable results by this reform, as proved by the steady increase in the number of their students. The Academy of Fine Arts at Antwerp has similarly been transformed under pressure of the same movement in favor of development of the national industries.

ASSOCIATION OF PROFESSIONAL SCHOOLS.

Private initiative continued its fruitful work. As a sequel to the exposition at Antwerp, the heads of the large factories in Belgium, realizing the necessity for perfecting the industries, formed a committee to consider practical methods for developing professional training for the artisan class. After a serious study of the question, on April 8, 1886, they determined upon the organization of an Association of Professional Schools.

The exact aim of this organization is thus explained in the by-laws:

> There already exist in Belgium, in addition to higher technical instruction, industrial schools, both professional and apprentice, created and maintained by public authority. But in the first of these schools industrial instruction is purely theoretical. Much time and effort are devoted to improving them and to extending them. The professional schools are expensive to maintain, and they do not develop artisans who can successfully make objects required by the current trade. Finally, the apprentice schools maintained by some of our large industrial plants permit only a single specialty. In these schools the master intrusts to the pupil only the secondary tasks of the workshop; he makes of him a mechanic but not an apprentice. We will not touch upon those schools where there is regular and methodical instruction, for it is our purpose to profit by the useful institutions and schools that are already established. To this end, in all localities where a need exists for professional or apprentice schools, as well as schools of household economy or agriculture, the commission will reach an understanding with the heads of factories, with industrial organizations, or with the workers.

The association has begun its propaganda; to it is due the creation of the horological school in Brussels and the school for tailors at Liege. It has already a large number of members; all opinions in politics and religion are represented. The Government is interested in this organization, which is destined to render great service.

ORGANIZATION OF THE ARTISTIC-INDUSTRIAL EDUCATION.

To-day [1888] Belgium is provided with a vast system of artistic industrial education. This instruction is divided into five categories of very distinct schools:

1. The academies of fine arts.
2. The schools of decorative art.
3. The professional schools, which are destined to furnish the young people instruction in art and science with the practical application of art and of science to industry.
4. Industrial schools where the artisans receive, in the evening and on Sunday morning, instruction in the elements of art and science that are applicable to their specific trade.
5. Apprentice schools, that train young men just before they enter the industries as artisans.

APPRENTICE SCHOOLS.

The apprentice schools, which must not be confused with the apprenticeship schools from which art is excluded and which therefore were not included in my inquiry, are intended especially for the young men from the farms throughout Flanders who work in the fields during the summer and who in winter help their parents to weave. There are workshops very simply equipped and directed by a foreman who instructs in the theory and practice of weaving, and where every day the communal instructor for one hour gives some idea of arithmetic and of the Flemish language to the pupils who are admitted at the age of 12 years. There are about 1,000 of these students in some 50 workshops, the maintenance of which costs about 50,000 francs a year.

INDUSTRIAL SCHOOLS.

The industrial schools are organized in all the manufacturing centers of Belgium, large and small. The courses are held in the evening and on Sunday mornings. The instruction placed at the disposal of the workman has for its exclusive purpose to give him the artistic and scientific drawing that he can not acquire in the shop, to develop his intelligence, and to initiate him into the general laws that govern the use of materials, and thus to furnish him the practical means whereby he can augment the economic value of his labor and thus better his social and material position and that of his family.

The program of instruction comprehends, in general, design and its application, geometry, mathematics, bookkeeping, physics, chemistry, mechanics, hygiene, and industrial economics.

This program is necessarily modified according to the requirements of the local industries; in each community the studies are especially

directed toward the various branches of industry that are carried on in that locality. Thus, depending upon the needs, they teach industrial chemistry, metallurgy, theory of stonecutting, mine working, building, weaving, dyeing, application of electricity, management of steam engines, etc.

The industrial schools are essentially communal; the most complete autonomy is left to the local council of burgomasters and aldermen regarding their organization, programs, and regulations. The Government, in accordance with its grant of subsidy, reserves the right of general approval and of inspection by its representatives, whose duty it is to help as much as possible, through their advice, in the development of these institutions. The enrollment in these schools, which number about 40, exceeds 10,000 students. The schools of this kind selected for study [by Vachon] were those of Brussels, Charleroi, Ghent, and Antwerp, which constitute the most complete types.

THE INDUSTRIAL SCHOOL AT GHENT.

The Industrial School at Ghent presents, in the underlying principle of its foundation and organization, a type that differs from the industrial schools of Brussels and Antwerp. The school is no longer merely theoretical; it is practical in some of its parts and professional in others, and even contemplates training foremen and superintendents.

It consists of four large sections.

The first section is specially intended for workmen. The courses are given Sunday morning and Monday after 5 o'clock, the only days and hours throughout the week when the workmen are not busy. The instruction includes arithmetic, elements of algebra, geometry, surveying, leveling, physics, chemistry, mechanics, accounting, care of machinery, mechanical drawing and its application to machinery and to building construction.

The second section is organized for foremen, superintendents, employers, and sons of managers, that is to say for young men who have received an average education, are employed in industry, commerce, administrative positions, the army, etc. Instruction is of a somewhat higher grade. It is given every evening from 6 to 9 o'clock and on Sundays from 11 to 1 o'clock.

The third section is a textile school in which the instruction is both theoretical and practical and lasts two or three years. The classes are held every day from 9 in the morning until 5 in the afternoon.

The fourth section constitutes a special school of art applied to industry, which has as its purpose to train designers for all kinds of textiles, for lace and embroidery, for bronze and jewelry; decorative painters and ornamental sculptors. The pupils in this section

study drawing, painting, and modeling from 9 a. m. to 5 p. m.; in the evening the designers follow an oral course on textiles. A certain number of painters and ornamental sculptors continue their studies at the Fine Arts Academy.

Finally, the school has organized three special courses: Ornamental designs, given from 6 to 8 in the evening for young men who devote themselves to the artistic industries and work during the day; a course in ornamental drawing for young women, which is held in the morning from 9 to 12 every day; and a course in photography, which is held during the summer on Sunday mornings from 10 to 11 o'clock.

The school (in 1888) has 1,285 pupils. (For list of professions of the pupils see Appendix D.) All applicants must be at least 14 years of age, know how to read fluently, write correctly, and know the first four rules of arithmetic as applied to whole numbers and fractions.

In addition it is necessary, in order to be admitted as a pupil to the elementary classes in physics and mechanics and to those for mechanical drawing and construction, to have an elementary knowledge of algebra and geometry; for the courses in chemistry, to know the elements of physics; for the courses in design for textiles, embroidery, etc., to be able to draw simple ornaments.

The conditions for admission to special classes and the conditions of promotion from one class to the next are determined by individual ability; in addition, persons who are not regularly entered as pupils may take certain courses, provided they have the approval of the director and the executive committee.

It has been found useful for the development of the school and for the best interests of the people to leave to the different groups of workmen and artisans the liberty of selecting and following those classes that suit them and to avoid all preliminary examinations that might intimidate or embarrass them.

The textile school is both theoretical and practical. Machinery of all types and for all tissues is at the disposal of the pupils for practical work under the direction of the professor or a foreman. In the design course, which accompanies this professional instruction, the pupils in the textile school receive instruction in the application of the divers kinds of design employed in the mills—treadle looms, Jacquard and others, designs for laces, etc. When they have arrived at the end of their studies, the students execute, for their own benefit, manufacturers' orders for designs, thereby becoming familiar with the technical and commercial requirements of the industry. A score of crafts carried on by hand or with machinery give practical instruction in all forms of the textile industry.

One serious defect in this school, as compared with other textile schools in Europe, is that the pupils are not kept posted regarding

new inventions that have been brought out for the advancement of old trades. Nor does the school possess technical or artistic collections that permit the students constantly to have before their eyes specimens of divers productions in the textile industry.

The school is well installed in a vast building erected for its use a few years ago. The people of Ghent, both manufacturers and workmen, are greatly interested in their industrial school and very proud of it.

PROFESSIONAL SCHOOLS.

The professional schools are few in number and, with the exception of three or four, of little importance; these, however, are of great interest on account of the variety of the systems adopted. They are: In Brussels the professional school for young women and the horological school; at Ghent the textile school; at Antwerp the professional school for young women; and at Tournai the school of woodworking and iron.

PROFESSIONAL SCHOOL FOR WORKERS IN WOOD AND IRON AT TOURNAI.

The professional school at Tournai constitutes a very special type in industrial education; here they have succeeded in the application of the workshop principle to the school. This institution is an old school of arts and trades radically transformed in view of the development of local industries.

The school has two sections—the industrial school proper and the workshops. There are about 150 pupils. There is a dormitory for the students who have no parents and for those whose home is beyond the limits of the district.

The instruction in the industrial school, to which one can be admitted only from the age of 12 years and knowing how to read, write, and calculate, includes French, arithmetic, geometry, mechanics, physics, chemistry, and industrial economy. Drawing is the basis of all instruction. The courses last three years, with an additional year for those who are obliged to enter the preparatory school. The method of teaching drawing is good; they have completely abandoned the copying from prints, and the students work almost exclusively from natural forms, adapting them especially to their individual industries. Six professors give this instruction. During the summer the drawing classes and the scientific courses are held from 6.30 to 7.30 in the morning and in winter from 7 to 9 in the evening.

The organization of the workshops constitutes the distinguishing feature of this school. There are three of these workshops—woodworking (carpentry, joinery, cabinetry), coppersmithing, mechanics (molding, model making, turning, and scaling [enlarging and re-

ducing]). The workshops are installed in the school buildings and possess a complete industrial equipment.

The school administration has made contracts with three superintendents of establishments whereby the students are assured their professional studies in a veritable factory.

Under these conditions the workshops function like real factories. The contractor seeks and executes orders for the regular trade. The work during the past year amounted to 200,000 francs. The mechanical shops produced work worth 150,000 francs, that for woodworking 40,000 francs, and that for coppersmithing 10,000 francs. To-day (1888) in the shop for mechanics, turners, mold makers, etc., there are 45 apprentices, in that for cabinetry 15, and coppersmithing 15.

Thus organized and directed by a master mechanic in a serious and practical manner, the workshops annexed to the school can function usefully. Without being constantly under paternal supervision to protect him against the greed or negligence of a master, the student receives progressive professional instruction, learns the fundamentals of his trade, keeping theory abreast with practice, and little by little arrives through his assiduity and ability to earning a little money which relieves his family of the expenses of his apprenticeship. The school at Tournai, in this connection, is a model. The difficult problem of apprenticeship in a workshop has been clearly and satisfactorily met, but I would not advocate it as an example to be followed. I believe that the conditions that have permitted this solution are quite exceptional, even unique.

Tournai was not an industrial city; the school did not arouse hostility through competition with private industrial undertakings. Moreover, in spite of favorable conditions, the institution is far from producing the results that should be expected from such a complete organization. The school has but a limited number of pupils; the inspector's reports that I [Vachon] have examined prove that few young men complete their apprenticeship in these workshops. The workers are indifferent toward the school and the manufacturers show little interest. The Government has already asked the administrative council to investigate the causes of the light attendance at the establishment and what remedies might be brought to this difficult situation.

The budget amounts to 24,000 francs. Instruction is gratuitous. The welfare bureau gives subsidies to the young men who are entirely without means of existence.

THE ART SCHOOLS.

The art schools or academies that give to young people artistic instruction with special reference to art as applied to industry have

been studied with care, and the analysis of their organization constitutes the major part of this report.

These schools are: At Brussels, the Academy and School of Decorative Arts, and the schools in the suburbs of Ixelles and Molenbeek St. Jean; at Antwerp, the Fine Arts Academy; at Ghent, the St. Luc School.

THE ACADEMY OF FINE ARTS AND THE SCHOOL OF DECORATIVE ARTS AT BRUSSELS.

History of the school.—September 30, 1711, the town council granted to the elder painters, carpet weavers, sculptors, and other art lovers a room in the Town Hall "to carry on the art of drawing." Classes were opened the following October.

The little school responded so well to the interest of the communal administration that, after having given it light and heat, the town council took it under their protection and allotted to it an annual subsidy. Some of the classes sought larger quarters elsewhere.

The services rendered by this city institution were of such value to the arts and to the industries that the Government, following the pressure of public opinion, took the school under its patronage. It received in 1763 the title of Academy of Painting and Sculpture; and Prince Charles, of Lorraine, who declared himself its protector, awarded four medals each year to the pupils who made the greatest progress.

The town council accorded additional facilities to the academy; and the State of Brabant in turn allotted it a subsidy. Then the prominent families of Brussels rivaled each other in gifts of money, presents of objects to serve as models, and in other ways helped to build up the modest school which, in the course of comparatively few years, had developed so greatly. All the classes in 1763 were again united in the Town Hall, where they remained until 1835; they were then transferred to the basement of the Palais de l'Industrie. The school was closed several times, owing to wars, but always reopened with renewed interest whenever conditions permitted.

From the basements of the Palais de l'Industrie, where it was very badly installed, the school was transferred, under the administration of M. Anspach, into large buildings specially constructed for it on the Rue du Midi.

In 1886 the school was radically transformed by the addition of a school of decorative arts. A report presented to the aldermen of the city of Brussels tells clearly the reasons for this transformation and the circumstances under which it was accomplished.

Our Academy of Fine Arts opens its doors annually to about 800 pupils. Are all these young people destined to become painters, architects, sculptors? Evidently not. From statistics prepared in 1879 the academy counted among this number 580 persons who were workmen or artist-artisans. (For list of

occupations of these students, see Appendix C.). It suffices, also, to compare the attendance in the three grades of instruction to see that the majority of the students do not continue their studies beyond the elementary division.

What are the practical consequences to be deduced from these undeniable facts, according to the official figures? It is that, to accomplish its purpose, our academy should become a popular school capable of giving to the artisans the knowledge that will enable them to apply art to their profession. The academy is far from that.

All its instruction is solely organized toward the development of sculptors, painters, and architects. This result it attains perfectly; to be convinced of this it suffices to look through the list of distinguished artists who have been in its classes.

But nothing, or scarcely anything, has been done for the 76 trades that are represented among its students.

Let us endeavor then to employ the lost efforts for the benefit of general prosperity; let us develop and perfect the industries "de Luxe." Let us try to be no longer contributory to Paris for the creation of models, for the manufacture of those thousands of objects to which the perfection of form, good taste, and originality of conception give all their value.

The progress that our carpet weavers, furniture manufacturers, our decorators, have made in the domain of the industrial arts shows to what degree of perfection they might attain if our academy could furnish them good craftsmen, well-trained foremen, and creators of designs. Other industries are threatened with ruin—lace, silversmithing, diamond setting. Let a virgorous impulse be given through instruction in the decorative arts, and it will bring them out of the morass in which they vegetate.

In 1885 the secretary of the academy, Mr. Alexandre Henne, in speaking to the students, said:

When judging the competitions the juries proved their discernment by being severe in making the awards. Many of the young graduates imagine that the prizes that they receive from the academy confer upon them the title of artist. We can not too strongly condemn these pretensions, the results of which are deplorable both for art and for themselves. Let them understand thoroughly, and we can not repeat it too often, that they acquire with us only the working tools, and that each one should have the good sense to use these tools according to his aptitudes.

Academies are often accused of tending only to develop artists. This reproach is not due to their teaching only, but rather to the blind infatuation, to the parents' weakness, and often also to what I may call the culpable adulation of certain artists. They content themselves in discovering artistic aptitudes in childish productions. How many times, when there is registration of applicants to fill the vacant places at the academy, I have seen a mere babe presented by a fond mother, a father proud of his offspring seeing already a successor to Rubens and Raphael, surprised that they were not immediately admitted to the painting courses.

Principles of the school.—The principle that now dominates the instruction at the School of Fine Arts and the School of Decorative Arts is that which manifests itself in every line of the Government report. The numerous professors are no longer occupied exclusively, as in the past, in making painters and sculptors, but artisans skilled in all branches of the national industries. In consequence, all the in-

struction has been revised with the purpose of making evident to the students the importance of considering art as absolutely necessary in every manifestation of the industrial spirit. From the very first lessons, the instructors place before the eyes of the young people models selected almost exclusively from among the masterpieces of industrial art. For the everlasting heads of Jupiter, Apollo, and Minerva they substitute, with intelligence, bronzes, ceramics, panels of decorative sculpture. Said the assistant director:

> We are absolutely convinced that the teaching of industrial art, far from hurting the artistic education of our future painters and sculptors, can only strengthen them vigorously, and it is for this reason that we have made the foundation of all our teaching the application of art to industry.

Consequently the program of the courses has been organized thus: Upon entering the academy, during the first year the pupils receive instruction in drawing and geometry common to all sections. This course is, in a way, a general preparatory course, organized for the purpose of giving all young people uniform elementary artistic instruction, which renders them fit to pursue successfully the following courses. After that the pupils find themselves face to face with the big general divisions—painting, sculpture, architecture. At this time they must make a choice that conforms with the trade that they are following or that they wish to adopt. For their benefit there has been prepared a poster, placed in all parts of the establishment and sent to all the parents, which indicates most ingeniously all the industrial branches derived from each of these general divisions. They have thought, and with reason, that definite specialization was necessary in the second year in order that the student, by means of the application of art to his special industry, should be encouraged to persevere, the utility of the instruction being constantly demonstrated to him.

Experience has proved that if two-thirds of the students heretofore left the academy before having learned anything useful, the reason was that they had the very distinct feeling of the uselessness in their trade of the long and difficult work to which the regulations condemned them; under these conditions they preferred to withdraw. The old system of generalized studies presented, besides, the serious disadvantage of blinding many young people regarding their veritable vocation. Led astray by instruction in pure art, without application to industry, they became very bad painters, sculptors, or architects, when, without doubt, they would have made excellent cabinetmakers, carpenters, or decorators.

Methods of teaching.—There are some especially interesting methods of teaching in this school. From the first hour there is manifested an effort to awaken the intelligence and imagination of the pupils by easily solved problems tending toward the application of

the principles of geometry to familiar objects. Thus, after having explained an elementary figure, the instructor gives the pupil as a task, to bring to the next lesson, reproductions of all the examples that he has been able to find about him of the application of this figure. This system gives most satisfactory results.

The instructors endeavor, so far as it is physically possible, to place before the eyes of the pupils models that are exact reproductions of the originals, in color and in form; the student sees better and the drawing shows the effect, in its quality of observation and precision, of this material verity. Soon the plaster models, crudely white, will be mercilessly excluded from the instruction at the Brussels academy.

Every object, whatever it is, that is placed before the eyes of the students as a model is accompanied by a succinct, but very exact, notice, giving information regarding its composition, its origin, and its author. Every fragment of architecture, sculpture, etc., is placed before a blackboard upon which the instructor has previously drawn the monument to which it belongs, adding to it a concise history. Without doubt the pupil thus receives in a very substantial manner a veritable course in the history of art.

The lessons in theory are followed by problems showing their application. Each pupil, after a lesson on one of the ancient architectural orders, must search out on the buildings in Brussels examples of the application of this order and copy them free-hand. It is easy to see the advantages of such a system of instruction, as simple as ingenious, which develops in all directions the intelligence of the young people and gives them a rigorous artistic education, as well as profound instruction, both practical and theoretical.

The organization of the museum of casts is conceived in the same spirit. Each wall will be covered with paintings reproducing the buildings that contain the original works.

THE ROYAL ACADEMY OF FINE ARTS AT ANTWERP.

The study of the academy at Antwerp would not have figured in this report, if a reorganization that took place last year had not given this institution a new plan of instruction which aims to develop industrial art. In his report for the scholastic year of 1886–87, the general manager of the school thus explained the character of the change:

> Fine art could not alone remain the principal purpose of the academy's instruction; a new need had shown itself, imperious, irresistible. Modern industry again appeals to art for the means whereby it can raise the standards of its products. The preponderant rôle that industry plays in the public wealth imposes the duty henceforth to place within the reach of the artisan opportunity to exercise, with the greatest intelligence and knowledge, the trade that he has

selected. Thence the inevitable obligation to broaden in a rational manner the applications of art to industry.

Too long there has been shown in the academies an almost exclusive propensity to develop only artists. And yet the statistics state each year that more than two-thirds of the total number of students do not intend to devote themselves to the fine arts. To open the field of fine arts only to the young people who show proof of special aptitude; to inculcate in all the pupils the general principles of a well-grounded artistic education, both practical and scientific; to broaden the application of art to industry—these are the three distinct characteristics of the reorganized instruction.

Consequently, the programs have been planned so that with the beginning of the intermediary instruction, which constitutes the second year of study, the division of the students takes place, and they begin to apply the three branches of art—painting, sculpture, and architecture—to the various trades that are derived therefrom.

(For courses see Appendixes G and H.)

The organization of these courses is in reality a veritable artistic reform which will give, without doubt, fruitful results. It fills a logical need.

From conversations with divers persons actively occupied with questions of instruction, it seemed that they cherished the ambition of seeing the Academy of Antwerp, in the near future, provided with an advanced Institute of Decorative Arts side by side with the advanced Institute of Fine Arts, which the new laws have created as the summit of the academy's instruction. This ambition is laudable, and its realization would certainly be very favorable to the development of the artistic industries of Belgium.

THE INSTITUTE OF FINE ARTS.

This advanced Institute of Fine Arts dates only from last year (1887). As in the case of the various universities, the young people will not be admitted to the institute except after having passed very severe examinations, reviewing all the intermediary instruction. They hope thereby to close the artistic career to those who have not the necessary aptitudes to lead to success and thus to avoid increasing the number of failures and misfits. This institute, a Government foundation, is directed by broad-minded professors, who are appointed by the National Government, whereas the academy is purely communal. Oral instruction includes advanced artistic studies and is accompanied by work in the free studios under the direction of a master selected by the student. Eleven instructors teach at the institute, and there are 36 in the two schools.

SUMMARY OF INDUSTRIAL ART EDUCATION IN BELGIUM.

There is at the present time (1888) in Belgium an important national movement for the development of industrial and artistic edu-

cation. The municipalities are at the head of the movement. Either they take the initiative in the creation of schools or they recognize as communal establishments those which were founded by private societies, as soon as they have proved their value to the public.

The National Government intervenes in the movement only by subsidies always liberally accorded. Everywhere it leaves to the institutions, whether municipal or private, their complete autonomy. It occupies itself exclusively with results obtained. If they are satisfactory, the Government continues the subsidy; if not, it is revoked. The nation possesses but one art school, the Institute of Fine Arts at Antwerp, created a year ago (1887).

The municipalities, while recognizing as communal institutions the schools founded by the societies, similarly leave to the committees of the societies the administration of the schools. They appoint the professors as presented, and they approve the budgets without intervention in the course of study or the regulations. The municipality administers directly only the public schools. Even here great independence in the organization and operation is left to the directors of the school. The fact which proves it is this, which is most interesting: At the head of these schools are the artists who organized them many years ago, or those who have reorganized them. In this country they have the wisdom not to yield public offices to political changes and parliamentary influences. Besides, the executive councils always include a certain number of members selected from outside the municipal council—lawyers, manufacturers, artists, etc.

The instruction seems to have in view almost exclusively the training of the workmen. I found in Belgium no institutions of the type of those at Crefeld and Roubaix, having for their aim to give to young people already in a definite industry a complete training looking toward the position of director or head of a firm.

Is this peculiarity the consequence of a special system of organization in Belgium, a deficiency caused by scarcity of financial resources, or by the lack of time? There is, doubtless, a little of all of this. In conversation with many people it appears that they recognize the need of advanced special schools, but the creation of those schools has been subordinated for the present, for political and social reasons, to the more pressing need for schools to instruct the craftsmen. Besides, it is almost exclusively from the working class that the schools of art and of industry are recruiting their pupils; the middle class (bourgeoisie) place their sons in the army, in the so-called liberal careers, and in commercial positions.

Nor did I see any school for the application of art to industry similar to those in Berlin, Vienna, and Naples. The school in Brussels that I thought was of this type on account of its name is a secondary school, without workshops; its pupils are workmen or

apprentices, and the few young people who can take the day courses are all preoccupied in trying to earn their living as rapidly as possible. The conditions are therefore not very favorable for long and patient study or the tax in time and money that are required for complete training, whether theoretical or practical.

The evening schools are remarkable. They place, at small cost, within the reach of the workman the benefits of instruction in drawing not only in its elementary forms but in its application to the divers industries. The results are magnificent. The pupils who have assiduously followed the three years' course—masons, carpenters, stonecutters—can make complete architectural drawings, with layout, estimate, and drawings of all parts for construction and decoration in full size, on wood or stone; locksmiths and cabinetmakers compose ornaments in all styles; they can make free-hand sketches and working drawings of all the products and machines of their industries.

Finally, come the industrial schools. It is in these institutions that the democratization of artistic training and the desire for instruction by the workman are shown in a startling way. Belgium gives us there a great example. The attendance at some of these schools is as high as 5 per cent of the population of the town.

At Charleroi I saw the pupils of the industrial schools—locksmiths, masons, carpenters, miners—come from a radius of 20 miles, in spite of snow and cold, on Sunday morning to study, under severe discipline, drawing, geometry, arithmetic, physics, and chemistry. And they pay. Before entering the school they have to deduct from their meager wages 9 francs. Some intelligent municipalities reimburse this amount, but at the end of their studies and under the express condition that they shall not have been absent more than twice during the period of the three scholastic years.

This question of payment of tuition should be carefully noted. It is very frequent in Belgium. The principle of gratuitous instruction is laid aside upon moral considerations. It is a very practical means of interesting in the schools both pupils and parents, to assure assiduity, and to give a serious character to the courses.

I have shown how the organization of instruction in the industrial schools and the evening schools is of a simple and practical character. It is the work of serious minds having exclusively in view to place at the disposal of the workmen a strong tool for the improvement of their social position, without unclassing them or giving them unhealthy ambitions. The programs are very broad, the regulations very short. All these institutions open their doors wide at the slightest knock from those who wish to learn.

I indicate with care the radical transformation of the academies and schools of drawing which is taking place in Belgium under the influence of new ideas of the social rôle of art. It has been proved that these academies and schools each year throw on the streets of the large cities crowds of the ambitious, of failures, poor devils running after fortune and glory and finding only misery. The annual salons overflow with exhibitors of all ages and of both sexes, while the industrial studios lack artists and artisans. This state of things appeared to be a social danger; they decided to cut it short. The teaching of drawing was changed. Before attempting "great art" the young people hereafter will receive fundamental professional instruction which will assure their breadwinning. Those who wish to go higher will find at the beginning of advanced training a time of probation and examinations so severe that they must have real ability to undertake the work and to keep at it. I recommend therefore careful study of the chapters devoted to the academies of Brussels and Antwerp. You will find there some very good ideas, the application of which to our (French) schools would give excellent results.

Regarding the serious question of apprenticeship. Belgium is opposed to the adoption of the apprenticeship system in the schools. Tournai is the only exception that justifies the maintenance of a very old practice and the possession of workshops long organized at great expense. The system of outside workshops, directed by trade foremen and where the students continue under the direct supervision of the school, seems likely to become general.

In the professional schools for young women the question of apprenticeship is evidently not the same as in the schools for young men. The apprenticeship should be effective, but in this connection modifications have been made in the programs that are of the greatest importance. A few years ago the special professional courses constituted veritable productive shops, leased to contractors; to-day they are merely workshops where the pupils carry out the projects for themselves or for their families. The course in flower making alone follows the ancient system, but its reform is imminent.

Speaking of apprenticeship, I ought to present certain observations to prevent confusion of ideas and terms that are constantly stated when this question is under discussion. At the last congress for professional instruction at Brussels it led to stormy and useless discussions.

Manual instruction that has been introduced into elementary schools has no relation to apprenticeship. The workshops that function abroad in certain industrial art schools are not apprenticeship workshops. Their object is exclusively to initiate young men

in a practical manner into the technical difficulties that must modify their artistic instruction according to each industry.

Neither should the mechanical, dyeing, and weaving shops that function at Crefeld be considered as apprentice workshops; they are merely studios for the advanced training of foremen and heads of establishments.

Consequently, relying upon examples abroad, proved and irrefutable examples, I propose the creation of workshops in our schools of decorative art, the question of apprenticeship being entirely eliminated.

To-day, after my study in Belgium, I repeat, with still more energy, the considerations with which I closed my report on Switzerland and Rhenish Prussia two years ago: Following the example of those countries, we must, at all cost, spread artistic instruction among the workmen. All the industrial centers in France should be provided with industrial schools similar to those I have described, the organization of which is so simple and inexpensive. Their prodigious success is absolute proof of their necessity.

DENMARK AND SWEDEN.

In a country where general education has been so widely extended, instruction in the industrial arts could not be neglected. I need not occupy myself with the Royal Academy, founded in 1738 by Christian VI under the name of School of Drawing, and which under its new title, granted in 1754, has kept its special character of instruction for the training of painters, sculptors, and architects.

The first organization of instruction for artisans and workmen dates from 1800, when the Pastor Mossman founded at Copenhagen the Sunday School of Drawing. This institution rendered great service, and similar schools were created in the Provinces. The year 1838 saw the formation at Copenhagen of a large association, the Industrial Society, the strong vitality of which was evident this year (1888) in the Scandinavian Exposition which it promoted. The purpose of this association was the national development of Denmark's industries. But with rare intelligence regarding the conditions and needs of the industries, the founders from the very beginning considered artistic instruction as the most active agent in this development. When Thorvaldsen made his triumphal entry into Copenhagen, September 15, 1838, on the Danish frigate *Rota*, the Industrial Society sent a deputation to meet him on board the vessel and presented an address in which they said: "We are beginning to understand that all industry and even the lowest trades should be animated by the spirit of art."

TECHNICAL SOCIETY.

But the veritable public and fruitful movement began from the day of the foundation, in 1843, of the Technical Society, which created a large school for apprentices and workmen, and which, changed several times but always enlarged and perfected, has remained the prototype and one might say the mother of the industrial art education of the Kingdom. According to its original constitution, its sole object was to found at Copenhagen and in the Provinces of the Kingdom evening and Sunday schools of drawing for professional instruction to apprentices and workmen. The work succeeded immediately, and was extended despite the smallness of its financial resources. When the laws of 1857 suppressed the corporations in Denmark, the Government and the local authorities were obliged to take up the important question of apprenticeship and professional instruction, which the corporations had heretofore provided through their organization of trade-unions, traveling scholarships, etc. Numerous industrial apprenticeship schools were created, but without any unity of principle or program, and without a personnel capable of giving serious instruction. They did not produce good results, and little by little they were abandoned by the apprentices and workmen, who did not find here what they needed to perfect themselves in their professions. A certain number of artists, manufacturers, and private gentlemen, moved by the realization of this situation, so detrimental to the best interests of the national industries, united to consider means for modifying it. They constituted in 1876 a new association, which combined with the old Technical Society and decided to create a large special school. This institution gave a strong impulse to the national movement for professional instruction, to which the State to-day devotes large sums in its annual budget.

(There are to-day (1888) scattered throughout Denmark 80 public schools of art and industry for artisans, apprentices, and workmen, with a total of about 6,000 students. The most important industrial art school is that of the Technical Society.

THE TECHNICAL SCHOOL AT COPENHAGEN.

The Technical Society is governed by an executive committee, composed of members elected at the general meeting of members by delegates from the Government, the city, the Fine Arts Academy, the Industrial Society, and by the various workmen's associations that contribute to its support. According to its by-laws, its aim is to develop professional instruction in Denmark by creating schools for apprentices and workers in Copenhagen and in the principal cities of the Kingdom. The Technical School in Copenhagen has actually

more than 2,000 pupils of all ages and all trades who attend the day, evening, and Sunday courses.

Judging from the work shown at the Scandinavian Exposition at Copenhagen the instruction at this Technical School is excellent. In this school, as in all others throughout the country, the courses devoted to the trades related to building and to mechanics are much greater in number than those of the decorative arts. They give to the students only so much of art and of drawing as are absolutely necessary for their special trade. However, with great intelligence, they have made it possible for those interested in architecture to take courses that will open for them the doors of the Royal Academy of Fine Arts.

The Technical School at Copenhagen occupies a vast edifice. The installation is excellent in its lighting, ventilation, and hygiene; and by means of its tasteful decorations of ceramics and sculpture the architects have known how to give the buildings an agreeable and picturesque physiognomy.

THE FEDERATION OF INDUSTRIAL AND PROFESSIONAL SCHOOLS.

The Technical School at Copenhagen has created a federation of all the professional schools of Denmark for their material and moral advancement. On January 2, 1879, the director of the school sent to all his colleagues a circular letter in which he fully and precisely explained the aims and purposes of the institution, and asked if it would not be agreeable for them mutually to exchange ideas and plans and to receive from the Copenhagen school competitions at stated times with pecuniary awards, models, advice on questions of instruction, and the creation of normal courses for the advancement of their instructors. The suggestion was received with enthusiasm, and the federation was immediately formed. The following year the Technical School organized an annual congress of all the instructors of professional education and established courses for the improvement of the teachers, to which they devoted 10,000 crowns. The work to-day (1888) is prospering and renders great service.

THE SCHOOL OF ART AND INDUSTRY FOR WOMEN AT COPENHAGEN.

This school was founded in 1875 upon the initiative of a Danish association whose mission is to encourage the intellectual and social emancipation of women; but this society neither directs nor administers it. A special society was formed which raised the funds and obtained State and municipal subsidies.

The school is divided into three sections: Elementary section, art section, and industrial art section. There are 21 courses, distributed as follows:

Elementary section—free-hand drawing, geometrical drawing, perspective.

Art section—perspective, drawing from casts and from nature, full-length figures from casts and from life, anatomical drawing, painting in oil and water color, composition of ornaments.

Industrial art section—painting on earthenware and porcelain, wood carving, etching and engraving, wood engraving, piercing with hammer and saw, modeling, hammered metal work, history of art.

In the art section the various subjects are taught as they are in the Fine Arts Academy; to be admitted, the same kind of examinations must be passed and graduation requirements are the same. In the section of industrial art, the instruction is exclusively in the industries that are directly related to art. Weaving, sewing, making underwear, etc., are not included.

To the theoretical courses are annexed workrooms where the students, in the later years, execute their personal compositions. For this purpose the school buys the materials needed in the shops; the expense of this is covered by the sale of work executed by the pupils, who receive as encouragement the excess of these receipts over the cost of materials. This school is therefore precisely a school of decorative art and a school of art applied to industry, the only logical and fruitful organization. Also it gives excellent results. Its pupils are much sought after in the artistic studios at Copenhagen, notably by the ceramists and jewelers. The exhibition of this school showed wood carving and engraving on wood and metal that was thoroughly professional in execution and in very good taste. Instruction is given by 12 professors, under the direction of a committee of 7 representing the society, the State, and the city. There were 80 pupils; they pay an annual fee of 100 crowns (Danish crown is 1 fr. 0.40, or about 28 cents).

THE TECHNICAL SCHOOL AT STOCKHOLM.

Founded in 1860 by royal decree, it was radically reorganized in 1878 after an inquiry made by a commission sent to the Universal Exposition at Paris in 1878. It is a complete institution of artistic and industrial instruction for all who, to any degree whatever, can be benefited: Young men and young women, workmen, future foremen, designers, and teachers of drawing. It constitutes at the same time both an industrial school and a school of the decorative arts in the exact acceptation of these terms as I have used them in the report of the schools of Belgium and Holland.

Elementary school.—In the lowest grade the Technical School includes evening classes attended by workmen and apprentices and it forms a kind of elementary art school; instruction is given during the two years in classes including spelling, writing, drawing, geom-

etry, arithmetic. Beginning with the third month of the second year, specialized instruction begins according to the trade followed by the apprentice or workman; the instructors direct the students exclusively toward the application of drawing to their special trade and from this moment the instruction becomes individual. The pupil selects his courses and instructors according to his tastes and his ambitions. When I objected to the director that this system seemed rather to endanger the guidance of studies and the moral and material discipline of the school by giving the pupil an opportunity to avoid the difficult and less attractive lessons and to devote himself to more amusing tasks, he replied that they had never had reason to regret the plan because of the practical aspect of the instruction offered and the serious character of the people among whom the pupils of the school were recruited. The young men know very well that they are not there to amuse themselves but to acquire, as rapidly as possible, the scientific and artistic knowledge that will enable them to secure social advancement and useful information in their trade and which will lead to a higher salary. Besides, the discipline is exceptionally severe. After three days' absence without very serious cause, expulsion is irrevocably pronounced. Each instructor keeps a written record of his classes, which is submitted daily to the director, who is thus kept in close touch with the general progress of the studies and the work of the individual students.

The majority of the workmen leave the school after the second year of general studies; only those who wish to perfect themselves or who are ambitious to reach the higher positions continue to attend. But I should add that these latter are few in number. The director and the instructors do not urge the workmen to continue beyond this primary school, deeming that the artistic instruction that they have received is amply sufficient for the ordinary exercise of their trade. The individual initiative and the personal responsibility for the future, left to the students, constitute the essential moral character of the institution. I have been strongly impressed in all the northern countries by the importance accorded, in the organization of public instruction, to the development of the social education of the individual whom they force, from his early years, to think for himself, to be self-reliant, and to exercise his moral energy to the fullest extent. The evening school has an annual enrollment of about 750 pupils, of whom 70 per cent are workmen. The young men are not admitted under 14 years of age; they must previously pass a severe examination proving that they are prepared by their primary instruction to follow advantageously the advanced courses in writing, spelling, and arithmetic. The fee, which is prepaid, is 4 crowns for young men already apprenticed and for workmen; 12 crowns for

those who have no trade. The scholastic year is from October 1 to April 30.

Professional school.—From the beginning of the second year the elementary school becomes a professional school. It is divided into three large groups, corresponding to the principal national industries—building trades, mechanical trades, and decorative arts.

Classes for the building trades.—The purpose of these classes is to provide means for the workers in these industries to perfect themselves during the winter months when work is at a standstill, in order that they may become foremen, superintendents of workshops, directors of work, designers, etc. A rather severe examination has been placed for entrance to these courses to weed out the inefficient and the amateurs. This examination implies thorough knowledge of arithmetic, algebra, and the four rules of calculus; in geometry, the first four books of Euclid, free-hand drawing, and advanced knowledge of the Swedish language. The pupil must be at least 16 years of age. The course lasts three years, from November 19 to April 30. The subjects taught are descriptive geometry, perspective trigonometry, leveling, land surveying, mechanics, physics, building law, stonecutting, estimating, bookkeeping, a knowledge of the classical orders and of architectural drawing. All the courses are obligatory. The tuition fee is 10 crowns.

Classes for mechanics.—Instruction is given in mechanics, theory of handling machinery, engine drafting, technology to young men who desire to become mechanics, shop foremen, master mechanics, etc. The scientific courses are the same as above, with the exception of architecture. These classes are held from November 19 to April 30 and last two years. Tuition is 3 crowns for workmen and apprentices and 5 for other students.

Decorative art classes.—The purpose of these classes is to develop professors for the normal technical schools, professional and artistic, and industrial artists for all branches of industry that are susceptible of being improved by the introduction of art, or that absolutely require thorough artistic knowledge. The class is divided into five sections: (1) Drawing from nature and industrial design; (2) decorative painting; (3) modeling and sculpture; (4) engraving on stone, wood, and metal; (5) instruction in drawing that is required for a teacher's license. The courses begin September 1 and end May 31. They are held during the day, evening, and on Sunday morning. In order that they may be in a position to benefit from these classes students in the first four sections must be well grounded in drawing and science. The preference for admission is granted to candidates who already have a trade or who are preparing for a manual profession. All students must be at least 15 years of age. The conditions for admission to the class for teachers are very ex-

acting. It is necessary to be over 18 years of age and to have taken classical studies corresponding to the fifth college class in Sweden, know free-hand drawing, plan making, and perspectfve. The courses in this section consist chiefly, in the second and third year, in teaching experience secured in a free drawing school for children, which is in session four times a week from September 10 to May 31 during one hour in the afternoon; and in the evening and Sunday morning, courses that constitute the first division of the technical school. The tuition fee in this section is 19 crowns; in the other classes from 5 to 16 crowns. Various special courses, including history of art, embroidery, and theory of styles, are charged separately. The class in decorative art was followed this year by 30 young men; it trains many industrial designers who are greatly appreciated in the Swedish studios and workshops.

School for young women.—To the technical class is annexed a school for young women, which has a register of about 70 students. It is under the direction of a woman, but all the instructors are of the masculine sex. The school presents the peculiarity that, upon entering, each student is obliged to choose a trade. In the course of her studies it is possible to change this selection, but only for very valid reasons, and this is rarely permitted, and then only on condition that it is not frequently repeated. All the work is done with the chosen profession always in sight. In reality the school is much more a professional school than a veritable school of decorative arts, such as we understand it in France. Even though a fairly large number of the young women are not destined to a business career, the aim of the school is to enable the students, as rapidly as possible, to earn their living and to follow a remunerative trade.

The annual budget of the Technical School of Stockholm is 86,000 crowns, of which about half is furnished by the State. The balance consists of 40,000 crowns in donations, 10,000 in subsidies from the Province and the municipality; the school itself brings in about 1,140 crowns. Many of the pupils have their tuition paid by their employers. A certain number receive annual grants from the schools in the Provinces from which they graduated, going thence to Stockholm to secure advanced training.

In the early days the Technical School suffered from the hostility of the small employers, who feared serious competition. To-day this hostility has entirely disappeared, and has even given place to active sympathy. The majority of the pupils are the sons of these small employers, the other half are peasants.

The installation of the school leaves nothing to be desired; it occupies in the center of the city the second, third, and fourth floors of a vast edifice, the first floor and the ground floor of which have been devoted to a special school for boys and to a museum of natural

history. The rooms are well equipped and supplied with excellent lighting and with a perfect ventilation. The school possesses an excellent science and art library, a good collection of casts from the antique, Middle Ages, and Renaissance periods. They are planning to establish a veritable museum of industrial art by developing these collections from the point of view of the decorative arts and adding thereto series of original textiles and ceramics, but the financial resources are lacking. This museum, however, will maintain exclusively the character of a student collection because of the existence of the Northern Museum and the National Museum, which contain valuable and precious industrial art objects of all kinds.

VACHON'S GENERAL CONCLUSIONS.

After the Mission of April, 1888.

The previous missions, those of 1881, 1885, and 1886, dealt almost exclusively with the organization of museums, large industrial art schools, and advanced professional schools. The countries visited—Germany, Italy, Austria-Hungary, Russia, Switzerland, and Rhenish-Prussia—offered useful examples from this point of view. Belgium and Holland, the object of the present mission, offer their chief interest in the organization of their schools for workmen. The complete system of industrial art education abroad can be studied from the following various types:

1. In the first grade, according to the examples in Belgium, Holland, and Germany, are found the schools for apprentices and workmen. This type of school has as its exclusive aim to give to the workman and the apprentice elementary ideas of art and science that will augment the economic value of his manual labor by rendering him more rapid and more intelligent. Consequently, the organization of the instruction is very simple and exclusively practical. The workman will not persevere if from the very first hour he does not recognize the practical utility of that which he is being taught and if he does not see an assured prospect of promptly becoming skilled in his trade. There is here for him a double question, advancement and self-respect. His presence in a school where he appeared to get merely elementary instruction would be humiliating. The secret of the extraordinary success of the Belgian and German schools for workmen is in the intelligent solution of this double question. These schools are popularly and officially considered as special artistic and industrial schools and not as elementary classes for adults.

Every center of population, large or small, should possess an industrial school for workmen and apprentices, open without other condition than the ability to read and write, with an adequate budget

ularly furnished by the municipality, to which the State will accord a subsidy in view of the service rendered and the number of students. Abroad, and principally in the countries cited, these schools are innumerable. To them is attributed a considerable share of the success in the development of their industries.

2. In the second grade are the schools destined to train young men for a predetermined profession. Models of this type are not lacking abroad; among these may be cited the schools at Crefeld, at Iserlohn, at Reimscheide, at Aix-la-Chapelle in Germany, and at St. Gall in Switzerland. The young people already provided with a good elementary education and elementary ideas of art receive here a complete professional instruction, both theoretical and practical.

Here, contrary to the pedagogical organization of the schools for workmen, general education should hold a place. It is no longer workmen and apprentices who frequent these schools, but young men who wish to occupy a higher position in the industrial realm—to become officials, foremen, or heads of establishments. These schools should not, as often happens, be organized as manual training schools preparatory to apprenticeship nor as advanced apprentice schools. The absence of instruction constituting what I may call—perhaps somewhat ambitiously yet it fully expresses the idea—the industrial and commercial humanities would deter the recruitment of an indispensable element of the population, that fraction of the citizens who, in certain social positions, can not content themselves with instruction exclusively professional.

If the schools of this type, already organized in France, are not greatly frequented by the children of the middle class, both commercial and industrial, must one not seek in their actual organization, too manual and even too workmanlike, the origin of this absence, which is very prejudicial to the interests of the country?

In the large centers where one industry dominates the school should be devoted to it, as it is notably at Crefeld. Following the example of this one, an ingenious combination of programs of instruction and of rotation of classes permits the establishment, very economically, side by side with the day school, of an evening school where the workers in this industry can come and perfect themselves very rapidly. In centers that possess several industries the school includes sections corresponding to these industries. Vienna, Naples, and Geneva offer the best types of these schools. To be complete and really fruitful, the theoretic instruction should be supported by practical instruction given by trade teachers in shops attached to the school. But the organization of these workshops is a delicate undertaking. Certain schools, because they did not solve this problem wisely, endangered their prosperity, even their existence; the school at St. Gall is an evidence of this. If from this training shop one

makes an apprentice shop, the institution is lost. It then forms only bastard pupils, neither workmen, nor foremen, nor heads of establishments. The instruction is too complicated for the one, too narrow for the other. Nearly all, moreover, under these conditions, neglect the theoretical instruction which is least agreeable, for the practical instruction which is more attractive, and leave school before the end of the required studies.

I insist strongly upon this question of workshops. None is more serious in the organization of the industrial and artistic schools.

As to the pupils who might manifest exceptional aptitude for certain branches of industry and who were ambitious to become veritable masters, these secondary schools should be followed by special advanced schools. Their creation with us (in France) could be greatly facilitated by the national factories—Sèvres, Beauvais, the Gobelins, and the national print shop. These establishments would become the advanced schools for all branches of the artistic industries that are carried on there. For the industries not followed in the national factories, an appeal might be made to the heads of the large houses in Paris, Lyon, Roubaix, St. Etienne, in order to place therein such students as might thus be given advanced industrial artistic training. No country is in a position to compete with us in this type of school, which I consider indispensable. I repeat with emphasis what I said in my last report regarding Crefeld:

> The reform of professional instruction must not bear exclusively on the apprentice and the workman. It is urgent to consider at the same time a strong body of excellent heads of industries. For the well-informed workmen there are needed capable and trained superintendents and foremen, just as a well-disciplined army needs a staff officer of proved scientific ability.

3. In the third grade are the schools of decorative arts. In the general system for the organization of institutions devoted to the development of the national artistic industries these schools can bear no other name. This alone is logical and expresses exactly the character of instruction given. These schools run parallel to the schools of fine arts; or, better, they constitute one of the branches of bifurcation in the later years of study. In one direction go the young people who desire to become painters, sculptors, architects; in the other those who wish to become decorators, ornamentalists, carvers of stone or wood, designers of furniture or textiles, etc. To the classical studios of painting, sculpture, architecture, and engraving are added studios of decorative painting, ornamental sculpture, industrial design. From this cohabitation there results fruitful emulation amongst the students and an equitable sharing of the same advantages and benefits, material and moral. In no instance are these schools of drawing elementary; it would be to diminish in the eyes of the public and of the students their importance and their

standing. They present clearly and definitely the character of professional schools. The academy at Antwerp (see report) offers the most interesting model of this type of institution; next to it I would class the academies of Brussels (see report), of Ixelles, of Molenbeek St. Jean, and the decorative art schools of Berlin, Dusseldorf, St. Petersburg (see report), Moscow, and Rome.

After having read the analyses of these diverse schools, does it not seem as though we (in France) could quite easily, without too much upsetting the actual organization of our artistic and industrial instruction, construct a more complete and higher body of instruction than exists in foreign countries? As an initial report, the National School of Decorative Arts in Paris should become to those of other cities in France what the National School of Fine Arts (École des Beaux-Arts) is to the academies in the Provinces, an advanced school for higher education. Consequently it would enjoy similar privileges, as large a budget, and not less favorable installation for the development of its instruction and the growth in enrollment of pupils. To-day what is the École Nationale des Arts Decoratifs? An institution that everybody considers as the hallway to the École des Beaux-Arts—popularly it bears the name of Little School—where the recruiting of students is done with difficulty, the city of Paris having created much competition by the establishment of its schools of drawing and of special industries; it lives parsimoniously on a modest budget and is installed in a structure so miserable, so unhealthy, that if it were a private establishment the department of health would have forced it to close years ago. The director and his staff of instructors struggle with heroic energy against many difficulties, yet succeed in getting from this vicious and morbid organization unexpected results. But it is easy to see that if this state of things is maintained, if they do not radically transform it, it will not be long before it succumbs. And yet the School of Decorative Arts in Paris is absolutely indispensable. It should have as its aim to furnish to the national industries that body of expert artists which it needs and which it so often lacks. The reform in question would logically bring the change in the secondary schools, which would become in aim and purpose more exact and more practical than they are to-day.

The three categories of schools that I have just analyzed constitute the complete organization of instruction for the artistic industries. They fill the needs of all the professions in which art intervenes, either as the original source or in the process of making. The workman and the superintendent can acquire all the knowledge which is necessary for them to fill the rôle attributed to each of them in the industrial army of the nation. But these schools will be fruitful only if the professional instruction remains constantly their im-

mediate and exclusive aim at every step of the instruction, and if art is cultivated with care.

Under these conditions, might not the division of administrative authority established with us (in France) between the professional schools, the industrial schools, and the schools of decorative arts be dangerous? In the one and in the other the teaching of drawing should hold a more or less important place but always considerable, artistic instruction always accompanying scientific instruction. But it seems to-day, according to the reports, that they give too great preference to the one or to the other. Abroad, especially in Germany, an equilibrium has been established which is very favorable both to the development of professional studies and to the advancement of the industries. I think it my duty to call attention to this important point.

Instruction in the school should be supplemented by instruction in the museum.

All the countries visited, without exception, recognize the advantages of the last-named institution. To-day, in Europe, there is not a city of any importance which does not possess a museum of industrial art. Special attention is called here to the unanimous opinion of the necessity for making these museums a general preserver of examples of good taste, of elegance, and of originality for the use of the public, the heads of factories, and the workmen. In France, for many years, this matter has been one of the "orders of the day," but its solution has not been advanced one step. I see the causes in the false conception that seems to prevail regarding an institution of this kind and in the inextricable complications from all kinds of elements that might be brought into its organization. No museum that has been created abroad has, at the beginning, seen the introduction of so many elaborate plans, vast programs, eloquent discourses, learned consultations, committees, and directors; but everywhere there has been one man, a single one who, invested with absolute power, the most complete authority and wide responsibility by the governments or by the associations, knowing exactly where he was going, has undertaken the work at his risk and peril, has consecrated to it exclusively all his devotion, all his intelligence, and all his time; and the museum has been created rapidly and successfully.

In Paris they want to see, besides, in a museum of decorative arts a colossal institution, eclipsing by the importance of its collections all the other museums, and installed in an edifice that will strike the imagination by its monumental plan.

The foreign museums of art and industry have, without doubt, given to the authors of these projects false impressions of their real character. The presence of numerous works of ancient art,

derived from princely collections, of extraordinary gifts and acquisitions, made them think that these museums justified the very dangerous theories that are current among them regarding the organization and functioning of these institutions. Side by side with the luxurious galleries there function, hidden under modest appearances, the real and practical museums of art and industry, that the critic has not seen; here the objects come and go from the schools to the workshops, are sent into the Provinces, and feed the entire national industry. In the offices, very simply installed, are information bureaus and agencies for consultation on artistic, industrial, and commercial subjects that render even greater service than the collection of models. What use can there be for our industries, for our workers, for our schools of the artistic industries in creating a museum to compete with those of Cluny, of the Louvre, of Sèvres, of Limoges, and of the national furniture warerooms (Garde-meuble Nationale)? One would thus encourage the development of commerce, of dealers in ancient knickknacks, and the industry of faking. There is better work to be done.

As the organization of an institution that can furnish good models to schools and workshops is urgent, I will permit myself to suggest a method of practical cooperation, not very costly and that can be carried out promptly, immediately even, that would enable us to meet this deficiency in our industrial-art education: Open wide to craftsmen, heads of factories, photographers, and editors the collections at Cluny, the Louvre, the furniture warehouses, the armory, and at Sèvres; to the series of casts at the Fine Arts School (École des Beaux-Arts) and at the Trocadero, already so rich in examples of antiquity, the Middle Ages, the Renaissance, add a series of examples of industrial art through exchanges with the museums of Munich, Nuremburg, and Berlin which have well-organized shops for making reproductions. All these elements for instruction would be mobilized according to the needs of the schools throughout the country—artistic, industrial, and professional—which are generally destitute of this type of equipment. Thus organized, this immense museum of art and industry, really national, need have no fear of any competition throughout the whole world.

Under the impulse of an institution of this kind the provincial museums would not long delay their own reorganization from the point of view of industrial-art education. To their collections of paintings there would be added, rapidly enriched by the central museum and by gifts from local collectors, museums of original objects of art, casts, and copies, where the regional and municipal schools would come to find excellent models, and which would initiate the public into the taste for good things. Abroad, and es-

pecially in Germany, museums of this kind are multiplying rapidly and render great service to the local industries.

The organization of the national defense for the industrial war of the present time will not permit our museums to remain as they have been for the past hundred years, the luxury of the nation, after having been the luxury of royalty.

The Central Society of Art and Industry for the Rhenish Provinces, Westphalia and the neighboring region, endowed with a modest capital of 250,000 francs, in the first five years of its existence (1883–1888) created an important museum, a library, a membership of 700 who assure an annual revenue of 60,000 francs, and united 7,000 workmen and industrial leaders. It furnishes models, designs, books, and advice to all the schools and all the societies of the country over which its good work extends. Its example shows what can be done when there is a definite purpose, a clear-cut program, energetic and single-headed direction, with great devotion and patriotism.

In order to give my studies very practical results, I undertook last year to make known its conclusions to the heads of industries and to the workmen in the principal industrial centers of France by means of a campaign of public lectures. A certain number of chambers of commerce voted traveling expenses. I finally delivered 14 lectures at Lyon, St. Etienne, Rouen, Elbeuf, Limoges, Bordeaux, Grenoble, Besançon, Roubaix, Valenciennes, St. Quentin, and Tours. Everywhere the report of the results obtained by the Central Society of the Rhenish Provinces caused much excitement. I proposed, amidst unanimous applause, to create analogous associations in the diverse regions of France. The seed has been sown. (The Artistic Union of the North was founded at Lille and after four months had 440 members.) It would sprout rapidly if the Government, the only real power in our country, would carry on a propaganda for this purpose through its district supervisors of drawing who are constantly in touch with the municipalities, directors of schools and museums, and the workmen over whom they have such great and legitimate moral influence. I would gladly renew my campaign for this purpose, but it is very difficult for one man, a mere art missionary, dependent upon his personal resources, to carry on a victorious conflict against the indifference and apathy of the public who do not yet perceive that the most cruel, the most violent war that Germany has carried on against us is the industrial war.

Institutions of the kind that I suggest and that I would like to organize in France are necessary. They would complement the work of the schools and the museums; it would carry their benefits into all parts of the country, to the workman and to the peasant. What a magnificent and public-spirited enterprise: To do throughout France what the Central Society has done for the Rhenish country and West-

phalia! To create a traveling museum, a colossal factory for models, an immense library that would endow all the poor museums and schools with the element for study, that would furnish to the craftsmen and the artists in their homes and workshops books, designs, and the works of art that they need; syndicate the regional and local associations to unite their collections, their resources, and their facilities; to promote everywhere, even in the villages, exhibitions of industrial art; organize congresses and public lectures whenever a convention or other meeting offers an opportunity; evangelize artistically the ignorant districts; undertake to restore the industries that have disappeared, encourage those that are being revived; found agencies for information regarding new inventions, important municipal works about to be executed, public competitions, changes in commercial agreements, etc. Would you object that such a program is Utopian, extreme? I answer this is what the Germans have done at Dusseldorf and what they will do everywhere; I have invented nothing, I acknowledge it humbly.

Lacking a society, could not the Government take the initiative in an enterprise of this kind which could not entail very heavy expenses? The national collection would abundantly feed the regional and local expositions. I give examples of what might easily be done in this direction, on the sole condition that they break loose completely from routine methods and old regulations. At this moment the shoe industry is broadening out extensively in the neighborhood of Tours, but the manufacturers can only fight against foreign competition by the use of good taste and the incessant creation of new models. The organization of a special exhibition of shoes would without doubt be of great service to them. It can be done to-morrow. All the elements for this are united at the Cluny Museum in the collection so curiously formed by Jacquemart. At St. Etienne the new School of Industrial Art is following the renaissance of engraving on metal in armor-making. Some results have already been obtained. But the public is scarcely initiated in this interesting attempt, while the foreigner who forms the chief client for this industry is absolutely ignorant of it. Would one wish to have it known and give it a strong impulse? There is a way. Organize an exhibition of ancient armor. The city museum possesses a valuable collection given by the Marshal Oudinot; few people see it; it is local. If to-morrow there is exhibited beside it a collection from the Paris museum of arms and armor, 50,000 people will go to the museum. There will be lectures and articles on the subject in the newspapers; there will result considerable interest which will favor the expansion of the local industry. For all industries and for all the cities of France it is easy to organize, at small cost, similar exhibitions. Bourges, Vierzon, Nevers would have exhibitions of ceramics the elements of which

would be borrowed from the museums of Sèvres, Limoges, and Cluny; for Lyon, Roubaix, Tourcoing exhibitions of furniture from the royal collection, together with Gobelin and Beauvais tapestries and Savonnerie carpets; for St. Claude exhibitions of objects in tortoise-shell, mother-of-pearl, ivory, and ancient toys from Cluny and the Chinese collections at Fontainebleau; for Thiers and Chatellerault exhibitions of knives of all periods and all countries similarly furnished by the Cluny Museum, etc. All these exhibitions would be assured of great success. They would have the irresistible attraction of novelty and of having come from Paris. The example of the exhibition at Limoges in 1886 is there, eloquent and irrefutable.

I would cite one other, also typical, which energetically confirms this theory. Lyon possesses a very beautiful museum of silks, luxuriously installed in the chamber of commerce; it is little visited. To contend against this sad fate the director asked the Department of Fine Arts for the loan of a few tapestries from the national collections; he was convinced, and rightly, that this exhibition would draw the reluctant crowd.

The libraries of the professional, the industrial, and even the artistic schools in the Provinces are very poor, when they exist at all, which is not infrequently the case. They would find in the storerooms of various departments, in the duplicates of the Paris École des Beaux-Arts, in the national libraries, sufficient to satisfy their most pressing needs. Libraries are like economies; they grow incessantly, once they have been started; it is only the first book that costs.

I have insisted strongly upon this question of museums, of art and industry, because I consider it very important. Abroad, and especially in Germany, it is the object of constant preoccupation of the Government and of the municipalities. Successively the cities that lacked these museums are organizing them; I would cite among others Cologne and Strassburg. In France it is the instruction of industrial art that has been most neglected, and wherein we are undeniably in an inferior position to the other countries of Europe. It is not that we lack artistic wealth; we have more of that than any other people in the world; but their systematic exploitation is fettered by traditions and regulations invented by past administrations that were total strangers to all ideas of industrial and commercial progress and that survived all the political, social, and economic revolutions. Through a great mistake, the plan for the museum of art and industry intended for the instruction of the superintendents and the artisans is the same as that for the museums of paintings and "curiosities." In the latter there is needed only erudite curators, faithful guardians of the treasures; in the others, institutions for propaganda and missionary work, the directors have no duty except

to circulate their collections as much as possible, to place them in the calloused hands of the workman, to send them into the workshops, to vary them, to rearrange them, to multiply them. The first are of a contemplative disposition; the second should be men of action, missionaries of art and of industry.

I hesitate less to suggest these foreign institutions as excellent examples of organization and incessant progress, because in being inspired by them we only retake our wealth where we find it. In France we are full of original ideas; but we do not apply them. We waste them idly in lectures, in programs, in discussions. The foreigner who is naturally less fertile gathers them carefully, and when these ideas have been cultivated, have grown, we find them again some fine day, to our great amazement, directed against us by our adversaries. The Germans, especially, are skilled in this rôle of fostering French ideas and, one must acknowledge it with good grace, they cleverly reap honors and profits from this philanthropy. The benefits to be gained from them do not bear simply upon the material installation, the methods. I consider that we should especially imitate them from the moral and social point of view. The dominating qualities of which they have shown proof in this connection are the spirit of decision, the energy, the independence of opinion, and the practice of responsibility.

They have decision because they know what they want; energy, because they have the power; independence and responsibility follow the use of those qualities necessary for success in the creation of a real and serious undertaking. Are not these eminently French qualities?

I have been reproached for giving too much space to foreign schools in this question of industrial art education. I had to go there to find examples of what we might have done long ago, if we had not ignored or misunderstood the work of the real initiators of the modern Renaissance. These prolific ideas that I found everywhere in the organization of the schools and the museums of Germany, of Austria, of Russia, of Belgium are the ideas of Viollet-le-Duc, of de Laborde, of Merimée, of Monge, etc. "The genius of France, what do we make of it?" exclaimed Proudhon one day in an explosion of patriotic anger; "we ourselves are the first to betray it." I have very often had the same kind of anger during the study of the numerous institutions that have rendered foreign industry and commerce so dangerous to our country.

After having studied what I have seen abroad, I declare loudly, with the consciousness of fulfilling a patriotic duty, that to-day the organization of our artistic and industrial education is a work of national defense of the same importance as the organization of our Army.

THE ARTISTIC WAR WITH GERMANY.

By Marius Vachon, published 1916 in Paris.

When the great military war shall actually be terminated by the victory of the nations allied for the defense of the liberty of the people, of civilization, and of humanity against Germanic despotism, a new war will commence, the artistic, industrial, and commercial war, under conditions that will make it equally terrible and implacable. * * *

The expression "The artistic war of to-morrow" is not a simple rhetorical figure employed under the circumstances to strike the imagination by means of a sensational title, it expresses exactly the situation. It is really and truly a war, a war to the death, wherein only those belligerents can hope to carry off a definite and decisive victory who possess the strongest contingents of troops, the most powerful armies, who are best provided with ammunition (one might say an inexhaustible supply), who have the most resolute determination to conquer through their courage, their audacity, their spirit of sacrifice, their endurance, and their tenacity. * * *

This transformation of the traditional competition into a modern war must lead our artists and our artistic industries into a radical change of their mental attitude of yesterday; otherwise it would seem that there is less group solidarity than individual egoism, more of timidity than of boldness in the struggle against the foreigner, and especially a too great confidence, often unlimited, in the protection of the State, upon which they count to smooth all the difficulties, to solve all the problems, and to make life easy, agreeable, sweet, and fruitful of profits, honors, and decorations. * * *

In this new war with Germany, the artistic war, there will also be room and need for everybody; in the front lines, in the trenches, on the second line, and in the rear. Each one will have the patriotic duty to do all that he can, with his whole heart and soul, to help toward the final and decisive victory. Nobody, for whatever reason, except complete disability, mental and physical, would be justified in holding aloof without being charged with desertion before the enemy.

Since the year 1878 I have especially devoted myself to the study of questions concerning the industrial arts. During 18 years I made,

for the Ministry of Public Instruction and the Fine Arts, surveys in France and in all the European countries regarding the divers institutions created for the development and propaganda of these industries—schools, museums, and associations. Following these studies, not satisfied merely with the official publication—often platonic—of the reports of these surveys, I wanted to make known the principal documents and information by means of public conferences, popular meetings, and special lectures before municipal authorities, chambers of commerce, boards of trade, artistic societies, and foundations supporting traveling scholarships in all the large industrial centers. And, at the same time, I attempted to apply here and there, in the schools and in the museums of those same centers, the innovations and the improvements undertaken abroad. * * *

It is not a question here of blissful admiration of special institutions of our enemies, nor stupidly to propose them as examples to be followed in all haste without considering the differences of ideals, of temperament, and of character that exist between two races so dissimilar. The unique objective sought—and attained, I hope—is to ascertain and make known, with the greatest possible precision, what are the elements of this organization of instruction and of propaganda in order to discover therein that which may reasonably be utilized by intelligent adaptation to our needs, to our customs, to our ideas, and to our traditions. * * * *

Equally I have made an impartial statement, to the seriousness of which I am not insensible, of the dangerous situation of inferiority in conflict due to the lack of organized plans, of leaders, of soldiers, and of ammunition, in which we have often found ourselves when face to face with the enemy. This double labor has been painful, but it was necessary—indispensable. Before giving battle one should know as exactly as possible the strength and the weakness of the adversary; know the number of soldiers he can put in line; the quantity of ammunition at his disposal; his financial resources, etc., in order to oppose him with equal if not superior forces.

From the comparison that the reader will instinctively make between the two methods of preparation and organization, and between the two tactics employed in the artistic, industrial, and commercial war declared in 1881 by the Crown Prince, at the time of the inauguration of the Imperial Museum of Decorative Arts in Berlin, and of which the war of to-morrow will be but the formidable continuation, will come the conclusion, natural and logical, of the virile and decisive steps that must be taken to organize safely for victory. * * * *

CONCLUSIONS.

With our whole strength, at all cost, never mind how enormous shall be the public expense and how considerable the private sacrifices, however prodigious is the work to be accomplished—Herculean work in the cleaning of the Augean stables—we must be in a position as soon as possible to combat the German organization, which one can not without culpable ignorance disregard, or contest its perfection and power with a French organization superior or at least equal, an organization which shall be truly, in all its aspects, of a military character from the point of view of the virtues and qualities that this demands, in order that we may vanquish our enemies. * * *

Nothing of what has been written in this book on the lamentable state of this organization, of its inferiority when compared with that which the Germans have carried to a high point of perfection, can be contested or denied, for the irrefutable testimony of the exactness of all the information and all the assertions exists in the confessions of those who invented the system and have directed it for the past 35 years, as well as in the complaints and the incessant protests of the leaders of industry, the artists, and the art workers, expressed with as much frankness as clearness at the time of the official inquiries that this situation provoked.

In the face of this complete failure of the artistic and technical instruction for the artistic industries, glittering and incontestable failure, it is henceforth the duty of the leaders in industry, the artists, and the art workers to take its direction in hand, boldly and firmly, and resolutely to assume the responsibility, as well as all authority.

When all the chambers of commerce, the unions of employers, and workers in the artistic industries, and all the artistic associations of France shall publicly claim from the Parliament and the State the return of the various institutions charged with the furnishing of this instruction, one really can not see upon what serious or valid reason the request could be refused, for this is a matter which concerns the economic life of the country or its artistic, industrial, and commercial conquest by the Germans. * * *

Lacking an industrial and commercial organization equal to that which Germany knew how to create years ago, and due to the inability of official institutions to furnish the artists and workers that they have so long vainly called for, our artistic industries have not been able to progress, to develop, and to expand, and thus to resist the formidable competition of our enemies both in the French markets and abroad. It is therefore simply and only, under the present cir-

cumstances, a matter of giving to these industries a practical organization of schools, museums, and associations where they can recruit the artistic, technical, and commercial personnel which they lack so cruelly, and thus enable them to find the means for world-wide expansion which they have hitherto missed. * * *

The most complete proof has been given that in the domain of art, and especially in that of the artistic industries, the tutelage of the State, hostile by nature to initiative and independence, to daring undertakings, and to constant progress, has always been considered by all other artistic and industrial nations, notably by Germany and also by England, as the most dangerous stumblingblock to be avoided. Association is the only method that can assure protection and development, for no one better than the artist, the manufacturer, and the workman is in a position to know the interests and the requirements that must be satisfied and safeguarded.

The special conclusions that are brought out by the documents and indisputable information that has been published, and that all the artists, all the employers, and all the workers in the artistic industries are in duty bound to demand from the association—that is to say, from themselves united in the closest bond of responsibility, of ideals, of interests, and of aims—is the means for organizing themselves powerfully to overcome our enemies in the artistic war of tomorrow. * * * "In unity there is strength," and strength in the service of right and duty are invincible.

"Nothing is done while there still remains something to be done," says a proverb. The art societies and those of the industrial arts should have the ambition to leave nothing undone in their activities and their propaganda, because upon their complete development depends the national prosperity. * * * Longer to continue a simple program of dilettantism and amateurism would be equivalent, it seems, to a kind of desertion, under circumstances as serious as the very existence of our art and our artistic industries.

It is important, besides, in order that it may be truly fruitful, that the association shall not remain exclusively limited to manufacturing firms and those professionally employed, but it should include all those who are interested in art and in the artistic industries. It is thus, and one can not repeat it with too much insistence or strongly enough, that it was conceived, understood, and realized in Germany, and it was by this means that it developed in such an extraordinary fashion as compared with the embryonic state, not to say almost abortive condition, in which it remained with us, due to quite a different conception of its principles.

The constant application of the principle of the association, the regular practice of professional solidarity, the customary exercise

of initiative, of responsibility, and of authority in incorporated educational institutions, of development and propaganda for the industrial arts, will inspire in the artists, the workers, and the heads of these industries an ideal above that of merely and simply earning a living for one's self and family; of securing a fortune, honors, and public office; the ideal of contributing personally to the prosperity, the grandeur, and the glory of one's country. This would be following the glorious example set in the past by the corporations and trade guilds which made France so rich, so powerful, so proud, so respected, and so admired.

APPENDIXES.

APPENDIX A.—PROGRAM OF STUDIES OF THE IMPERIAL SOCIETY FOR THE ENCOURAGEMENT OF THE ARTS AT ST. PETERSBURG.

I.—The purpose of the school of design is to teach this art to the pupils and, consequently, to establish a solid foundation for the artistic education of the artisan.

II.—This school is divided into two principal sections:

a. Design section (preparatory).

b. Industrial arts section (special studies of the application of art to the different trades).

III.—The design section prepares the students in drawing from the human figure and in all the styles of ornament. It includes the following classes:

a. Preparatory class where the principles of design are taught.

b. Drawing of geometrical forms, still life, elementary principles of ornament, and parts of the human figure from plaster models.

c. Shaded drawings of flowers, fruits, diverse ornaments, heads from plaster models, and [illegible] period styles.

d. Drawing from plaster models of busts, full-length figures, and animals.

e. Drawing of compositions uniting the human figure with ornament, animals, flowers, etc.; also drawing of different objects of an industrial character.

f. Life drawing.

After the pupils have carefully copied the model, this is taken away, as well as his original drawing, and he is made to draw the same thing, this time from memory and without any help.

IV.—The industrial arts section has for its purpose to familiarize the student with the application of art to industry and to teach him the technical processes of each special industry. The section comprises the following classes:

a. Painting in water color, gouach, and in oil of flowers and landscapes direct from nature and from still-life objects. The student is required to reproduce direct from nature to a given scale and under prescribed lighting.

b. Design with special study of styles and period, and their application to objects of industrial art.

c. Clay modeling from the simplest elements of ornament to its full development, including heads and full-length figures.

d. Modeling in wax of ornaments, flowers, fruits, figures, and animals on a scale that will permit their direct application in the decoration of objects of an artistic character.

e. Wood carving from models in plaster or wood or from drawings.

f. Wood engraving.

g. Painting on porcelain, pottery, glass, stucco, etc., as well as enameling.

h. Decorative painting.

When circumstances will permit, other classes will be established. Notwithstanding the special character of the instruction in each of these classes, attention is especially given to the study of ornament and design in all its phases and in its numerous applications, and this because it is the principal basis for the development of good taste and imagination, and in familiarizing the student with the various styles gives him the necessary artistic instruction without which he will eternally remain a mere workman.

In the composition class the following rule is observed. The instructor, as often as possible, takes the students to the museum and assigns to each a certain object to be studied, which upon the return to the classroom must be drawn *from memory*. This examination, which continually exercises the student's faculty of observation, will result in accustoming him promptly to seize the general character of an object and with ease to fix upon paper the impression received, thus training the observation and memory, as well as the faculty of mechanical execution.

In view of the development of the students, in addition to the technical instruction, there are courses in theory at stated hours. The courses embrace:

a. Perspective and the theory of shadows, together with the necessary problems in geometry.

b. The underlying principles of architecture and the study of the orders.

c. The history of the selected art in a popular form, its styles and ornament.

d. The history of the different industries and chiefly that of the industrial arts, such as ceramics, enameling, sculpture, jewelry, foundry practice, furniture, textiles, etc.

e. Chemistry, exclusively in its application to the combinations necessary in the making of enamels, paints, alloys, amalgams, etc.

f. Certain parts of the art of construction, such as the resistance of materials, their properties and defects, principally those of wood and metals, the art of the joinery and cabinetmaking, stucco and plaster modeling, etc.

V.—The management of the school and its dependent workshops is intrusted to the director and to the school council, which, in case of difficulties regarding the application of the regulations will refer the matter to the society's school committee.

VI.—The school council is composed of the professors.[1]

VII.—The position of president of the school council is occupied by the director of the school.

VIII.—The director of the school is appointed by the committee. He watches over the entire interior of the school and the regular advancement of the instruction.

He has the right, in the case of infractions on the part of the students, to forbid them admission to the building for a period of two weeks. He has in his custody all the property of the school, of which he makes an inventory. He submits, for ratification by the committee, the total salary of the instructors as well as the list of the staff of the school.

IX.—The professors and the tutors of the school are selected by the committee of the society.

The professors, the number of whom varies according to the needs, are divided into 2 categories, of which the first receives 3 or 4 rubles for each 2½ hour lesson, and the second group 2 or 3 rubles.

[1] One and the same person may hold several offices in the various institutions of the Society for the Encouragement of the Arts, but only with the full authorisation of the committee in each special case.

Associated with the professors as assistants are some of the students from the advanced classes, who are remunerated for this work, which, however, is not obligatory. In case of the absence of a professor, the assistant may take his place, if the director consents thereto.

X.—The methods of instruction and the discipline within the school are determined by the school council and confirmed by the committee.

XI.—For the purpose of arousing emulation among the students, and in order to aid those who distinguish themselves most, a system of competition with money prizes is established on the following basis:

The professors in the composition class, in addition to the regular lessons, are obliged to have the pupils execute work from a given theme. These compositions are assembled at the end of each month in distinct groups according to the type of work, and in each of these groups the school council selects the best pieces which receive: First prize of 10 rubles, second prize of 8 rubles, and third of 5 rubles. In the case of two works that meet with equal approval, the prize may be equally divided.

The chief aim of the school is to develop artisan designers and craftsmen capable of executing works of art. This system of pecuniary recompenses is adopted especially for the classes where the students are learning to apply the art of design to the execution of objects of industrial art.

Twice a year, May 2 and December 21, all the work of these four classes is again assembled and the school council selects the three best exhibits from each group, to which money prizes are awarded as follows: To the first, 25 rubles; to the second, 20 rubles; and to the third, 15 rubles. These prizes may be augmented in cases where their value seems to warrant it.

The works that have brought prizes to the authors are exhibited every six months in order that the council may decide regarding the students' promotion to higher classes and that they may determine the amount of the prizes to be awarded.

The drawings and all other works done in the school that have received prizes at examination time become the property of the society and are kept in the library. These works may be copied by the artisans, provided they are members of the society; otherwise the persons desiring to make copies pay from 3 to 10 ruble for each object. The price is put on each.

XII. To be admitted to the school the pupil must give his family name and his first name, as well as his rank and his home address.

XIII.—The boys pay for the whole year 5 rubles. The girls pay 5 rubles additional, to cover the necessary expense, in view of their limited number, of an entirely separate organization. Payment for the half year is due in advance. The committee may release from all payment needy students.

XIV.—A pupil having completed the school course is entitled to a diploma testifying his acquirements. If he has not completed the course, he receives a statement of the time that he worked and the studies taken.

The school being an institution principally for the instruction of artisans, and all studies being voluntary, the pupils are not obliged to pass successively through all the preparatory classes in order to be admitted to the special industrial art section. The professional courses in the latter may be followed by anyone who enters the school for the purpose of perfecting himself in the exercise of the particular industry which furnishes his means of existence, on condition, however, that a previous examination proves him to be sufficiently prepared. It may happen that in the very first year the student will perceive that he has made a mistake in entering the advanced section and desire to

take the introductory course. There is no objection to such a change, nor to the simultaneous following of courses in several industries, providing only that the training does not suffer thereby. The normal duration of the industrial-art courses is placed at three years, but, at the request of a pupil, it can be prolonged one or two years, provided that the council finds no objection.

The resources of the school consist of an annual subsidy from the State of 7,000 rubles and the payment of tuition fees by the students amounts annually to about 5,000 rubles, making a total of 12,000 rubles.

WORKSHOPS.

XV.—As an adjunct to the school there are workshops. Their purpose is to furnish the students with practical means for perfecting themselves in the technical part of each industry.

XVI. There have been established the four following workshops: (1) Ceramics and enameling; (2) sculpture; (3) molding and pattern making; (4) engraving. When the need arises and funds will permit, a larger number will be established.

Work in the shops consists of—(*a*) copying examples in the museum; (*b*) execution of objects from designs of students in the composition class that have received first prizes in the examinations; and (*c*) execution of special orders, etc.

XVII.—The management of the workshops is intrusted to the director of the school. He supervises the careful execution of the work and sees that it conforms with the designs approved by the council and to those of the special orders. He renders a bill to the students for the materials employed in their individual work. He presents to the committee each month a record of the materials and the tools confided to his care.

The council engages capable workmen for instruction in the various industries. They are required to see that the students execute only objects approved by the council, as also careful use of the materials delivered. These master workmen have the right to use the workshops for their personal use, but on condition that they do so outside of school time and at their own expense. The students also have the right to work in the shops outside of class hours, but only under the supervision of the master workman and with the consent of the director. At the end of the day each student is required to return to the master workman his piece of work, together with the materials and the tools that he has been using.

APPENDIX B.—EDUCATION AND ART IN SOVIET RUSSIA.

(Extract from report published by the Socialist Publication Society, New York, 1919.)

OFFICIAL DECREES OF 1918 REGARDING ART EDUCATION.

ACADEMY OF ART AT PETROGRAD.

The Academy of Art at Petrograd as a State institution is hereby declared dissolved. The Higher Art School is thus dissociated from the Academy of Art, with all corresponding credits and capital, and reorganized into an independent art school.

The museum of the Academy of Art is placed in the hands of the commissariat of education.

All moneys and the entire property of the Academy of Art are declared the property of the Soviet Republic, to be used as a fund designed to meet special needs of art culture.

(Signed) V. ULIANOV (LENIN),
Chairman of Soviet of People's Commissaries.
A. LUNACHARSKY, STALIN, AND G. CHICHERIN,
People's Commissaries.
V. BONCH-BRUEVITCH,
Chief Clerk of the Soviet of People's Commissaries.
N. P. GORBUNOV,
Secretary of the Soviet.

MOSCOW ART SOCIETY.

Owing to the fact that the school of painting, sculpture, and architecture, under patronage of the Moscow Art Society, has been placed within the jurisdiction of the Commissariat of People's Commissaries, the functioning of the Moscow Art Society is forthwith discontinued.

All the moneys and movable and real estate properties of the society are declared national property and intrusted to the Commissariat of People's Education and to be used to meet the needs of the schools of painting, sculpture, and architecture, as well as for the organization and support of the task of art education in the Russian Soviet Republic.

ART COLLEGIUM.

In each of the capitals there was established an Art Collegium to look after the art interests of the population.

The objects of the Art Collegium of Moscow were:

1. Organization of State art education: (*a*) Establishment of art studios meeting the requirements of the new Russia; (*b*) propaganda of art among large democratic masses.

2. Effect contact with world's artistic centers.

3. Promote the growth of art: (*a*) Organizing State competitive examinations; (*b*) organization of trade unions' mutual aid societies, etc.; (*c*) organization of decorative artists' committees and scenic art workers.

4. Organizing the preservation of arts of the past and present and protection of the future.

APPENDIX C.—OCCUPATION OF PUPILS AT BRUSSELS ACADEMY OF FINE ARTS.

Armourers	2	Ceiling decorators	7
Bookbinders	2	Chasers	6
Cabinetmakers	27	Chromolithographers	2
Carpenters	6	Colorists	2
Carriage makers	3	Confectioners	2

Coppersmith	1
Cutter of underwear	1
Decorator of porcelain	1
Designers of cloth	2
Designer, industrial	1
Designers of laces	5
Designers of machinery	2
Designer of wall paper	1
Embroiders in gold	5
Engravers of crystal	2
Engraver of cylinders	1
Engravers of earthenware	2
Engraver on ivory	1
Engraver of jewelry	1
Engravers on metal	31
Engravers of mirrors	3
Engravers on stone	18
Engravers on wood	6
Flower makers	2
Founders	5
Framers	3
Gardener	1
Gilder of copper	1
Gilders of wood	6
Glaziers	3
Graver	1
Hairdressers	2
Hatter	1
Inlay workers	3
Jewelers and silversmiths	17
Joiners	44
Lacemakers	3
Lithographers	9
Locksmiths and stove makers	14
Machinists	7
Marble cutters	8
Masons	10
Ornamentalists	3
Painters of carriages	3
Painter of coat of arms	1
Painters—decorators	102
Painters on glass	3
Painters on porcelain	3
Painter on tin	1
Painter on window blinds	1
Pastry cook	2
Pewter workers	2
Photographers	3
Plaster molders	4
Plumbers	5
Sculptors of pipes	2
Sculptors, ornamental	3
Sculptors of wood, marble, stone, plaster	50
Shoemakers	3
Stone cutters	19
Stone dressers	2
Stone setter (precious)	1
Surveyors	4
Tailors	4
Tinsmiths	3
Turners of copper	2
Turner of ivory	1
Turners of wood	2
Upholsterers	12
Watchmakers	4
Zink worker	1

APPENDIX D.—OCCUPATION OF PUPILS AT THE GHENT INDUSTRIAL SCHOOL.

Blacksmiths and locksmiths	116
Carpenters, cabinetmakers, etc.	167
Chauffeur-mechanics	60
Clerks in factories	169
Decorative painters and ornamental sculptors	114
Instructors	17
Iron casters	80
Mechanical draftsmen	22
Military	81
No profession	39
Professions, various	105
Repairers and mechanics	71
Stone and marble cutters	13
Students at various schools	247
Typographers	8
Weavers and spinners	42
Workers, chemical industries	20
Young women	14

APPENDIX E.—OUTLINE OF ORGANIZATION OF SCHOOLS STUDIED.

INDUSTRIAL SCHOOL AT GHENT.

1. School for workmen:
   Sunday morning and Monday after 6 p. m. Arithmetic, algebra, geometry, surveying, leveling, physics, chemistry, mechanics, accounting, care of machinery, mechanical drawing, machine drafting, drafting for building trades.
2. School for foremen, superintendents, employers and their sons, etc.:
   Every evening 6 to 9 and Sunday 11 to 1. Advanced instruction in same courses as No. 1.
3. Textile school:
   Daily from 9 a. m. to 5 p. m. for two or three years. Theoretical and practical courses.
4. School of art applied to industry:
   Daily 9 a. m. to 5 p. m. and evening.
   a. To train designers—For textile lace and embroidery, bronze and jewelry, decorative painting, ornamental sculpture. Students in the two last may continue their studies at the Fine Arts Academy.
   b. Ornamental design—Evening course for men working in the artistic industries during the day.
   c. Ornamental drawing—For young women; held daily from 9 a. m. to noon.
   d. Photography—Classes during the summer on Sundays from 10 to 11 a. m.

STOCKHOLM TECHNICAL SCHOOL.

1. General elementary:
   Evening classes for apprentices and workmen. One year.
   Spelling, writing, drawing, geometry, arithmetic.
2. Professional schools:
   Beginning with the third month of the second year students select one of the main divisions.
   a. Building trades—From November 19 to April 30. Descriptive geometry, perspective, trigonometry, leveling, land surveying, mechanics, physics, building law, stone cutting, estimating, bookkeeping, classical orders, architectural drawing.
   b. Mechanical trades—From November 19 to April 30; two-year course for those who wish to become mechanics, master mechanics, shop foremen, etc. Mechanics, theory of handling machines, engine drafting, technology, and scientific course as in building trades, with the exception of architecture.
   c. Decorative arts—day, evening, and Sunday morning classes from September 1 to May 31: (1) Industrial design; (2) decorative painting; (3) modeling and sculpture; (4) engraving on stone, wood, and metal; (5) normal art.
   d. School for young women.

TECHNICAL AND ARTISTIC INSTRUCTION IN HUNGARY.

As planned in 1885.

1. Industrial:
   - *a.* Primary industrial schools—Established in all industrial centers containing 50 apprentices. For young people who have completed their elementary studies and to whom parents or employers wish to give some special instruction.
   - *b.* Industrial courses—Depending upon local industries. Practical application of instruction is made in the workshops. These courses are often part of normal and secondary schools.
   - *c.* Technical schools—Under the direction of the Department of Commerce. Very thorough instruction for young men and young women in theory and practice with use of workshops.
2. Industrial arts:
   - *a.* School of arts and trades—Fixed courses of four years; theoretical and practical with well-equipped workshops.
   - *b.* Specialized trade courses, limited to four students, under personal direction of special instructors to develop foremen and superintendents.
   - *c.* Public courses in industrial drawing.
   - *d.* Separate foundations in various cities for scientific and practical instruction in numerous special schools are related to the central school in Budapest: (1) Wood carving; (2) weaving; (3) carpet (or upholstery); (4) embroidery; (5) cabinetry, etc.
3. Fine arts:
   - *a.* Fine arts school—(1) Painting; (2) sculpture; (3) architecture.
   - *b.* Decorative arts (an annex of the Fine Arts School)—Day and evening classes. (1) Interior decoration; (2) ceramics and glass; (3) jewelry; (4) galvano-plastics; (5) wood and zink engraving; (6) cabinetry.
   - *c.* Normal art.

APPENDIX F.—A SYSTEM OF INDUSTRIAL-ARTISTIC EDUCATION COMBINING ALL SCHOOLS IN THIS STUDY.

1. Industrial schools:

   To give elementary ideas of art and science that will augment the economic value of manual labor by making the workers more intelligent. For young people who have completed their elementary studies and to whom parents or employers wish to give some special instruction.
   - *a.* Apprentice schools.—To train youths just before they enter the industries as artisans and give them an opportunity to know a little about many trades.
   - *b.* Industrial schools.—Where the artisans receive in the evening and on Sunday morning instruction in the elements of art and of science that are applicable to their specific trade. Practical application of instruction is made in the industrial workshops in cooperation with the schools. Established in all industrial centers containing 50 or more apprentices.

2. Professional schools, or schools of arts and trades, or industrial art schools:
To give instruction in art and science, with their practical application to industry. They train young men for a predetermined profession, and upon graduation they are prepared to fill the higher positions. The students, who already have a good elementary education and elementary ideas of art, receive here complete professional instruction, both theoretical and practical. Drawing is the basis of instruction—free-hand, mechanical, geometric, and professional.
   a. Day schools.—Numerous special schools with well-equipped workshops. Two to four year courses; for pupils who evince special aptitudes an additional year or two in very small classes under expert instructors.
      1. Building trades.
      2. Mechanical trades.
      3. Artistic industries.
         a. Ceramics—pottery, porcelain, tiles, glass, etc.
         b. Costume—dressmaking, millinery, tailoring, etc.
         c. Graphics—engraving, lithography, printing, photography.
         d. Horology.
         e. Jewelry, silversmithing, etc.
         f. Metal—bronze, iron, etc.
         g. Textile—weaving, printing, lace, etc.
         h. Wood—cabinetry, carving, etc.
   b. Evening schools.—For foremen, superintendents, and sons of employers. Instruction along lines similar to day courses but with more freedom of choice.
3. Art schools.
Well-equipped buildings with studios, workshops, and museums.
   a. Fine arts—
      1. Painting.
      2. Sculpture.
      3. Architecture.
   b. Decorative arts. These schools are run parallel to the schools of fine arts—
      1. Decorative painting.
      2. Ornamental sculpture.
      3. Industrial design.
   c. Teacher training.

APPENDIX G.—INDUSTRIES DERIVED FROM THE CLASSIC ARTS OF PAINTING, SCULPTURE, AND ARCHITECTURE.

(Suggested by the reference to a poster displayed in the Brussels School of Decorative Arts and sent to all parents.)

1. Painting:
   a. Decorative—
      1. China painting.
      2. Enameling, japanning.
      3. Illuminating—heraldry, lettering.
      4. Novelties—furniture, lamp shades, banners, etc.
      5. Sign painting—indoor and out.
      6. Stained glass, mosaics.

b. Structural—
1. Exterior.
2. Interior—
a. Mural.
b. Decorative.
c. Scenic.

c. Reproductive—design—
1. Graphic (paper and printing).
a. Advertising—posters, lettering, cards, book covers, boxes, etc.
b. Engraving—on wood, stone, metal.
c. Illustration—book, magazine, newspaper, costume.
d. Lithography.
e. Photography.
f. Typography—layout, printing, etc.
2. Industrial—
a. Costume—stage, general.
b. Textile—weaving, printing, and embroidery for silk, cotton, wool, lace, carpets and rugs, linoleum and oil cloth, etc.
c. Wall paper.

2. Sculpture:
a. Modeling—
1. Clay—pottery, porcelain, glass, plaster, cement, brick, etc.
2. Leather—bookbinding, novelties, etc.
3. Metal—silverware, jewelry, horology, die cutting, hammered copper and brass, pattern making, tool making, bronze casting, wrought iron, typography, toys, etc.
4. Shell, ivory, bone, rubber, celluloid, etc.—combs, toys, novelties, etc.
5. Stone—carving, cutting.
6. Textile—artificial flowers, novelties.
7. Wood—carving, wood block cutting, frame, models, baskets, toys, etc.

3. Architecture:
a. Drafting for all trades and sciences.
b. Construction—
1. Metal—machinery, conveyances, architectural hardware, including lighting and heating fixtures and locksmithing, etc.
2. Textile—costume, millinery, tailoring, upholstery.
3. Wood—cabinetry, including furniture and musical instruments, conveyances, joinery, etc.
c. Assembling—
1. Interior decoration.
2. Landscape architecture.
3. Window dressing.

APPENDIX H.—COURSES FOR STUDENTS OF THE DECORATIVE ARTS AT THE ROYAL ACADEMY OF FINE ARTS AT ANTWERP.

(1) Courses applicable to the trades related to painting.

The study of ornament of different styles in their various relations to painting from antiquity until modern times. Compositions either painted or drawn.

Studies of details for designs applied to the trades related to painting, to be executed according to a program, with approximate estimate for the work.

Painting from nature of trophies and accessories, of plants, of flowers, and of animals; still life and from nature.

(2) Courses applicable to the trades related to sculpture.

Study of ornament of different styles in their various relations to sculpture from antiquity until modern times.

Modeling from nature of trophies and accessories, of plants, of flowers, and of animals; still life and from nature.

Compositions and details modeled in clay or in wax, for designs applied to the trades related to sculpture, to be executed according to a program, with approximate estimate for the work.

(3) Courses in construction and courses applicable to the trades related to architecture.

Masonry—foundations, walls, and different kinds of vaults.
Stone cutting.
Carpentry—framework, beams, and rafters.
Joinery—doors, windows, interior trim.
Use of iron in construction.

Scientific instruction includes mechanics, continuation of the study of projections, descriptive geometry, general ideas of the arts of design, and the history of ornament.

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