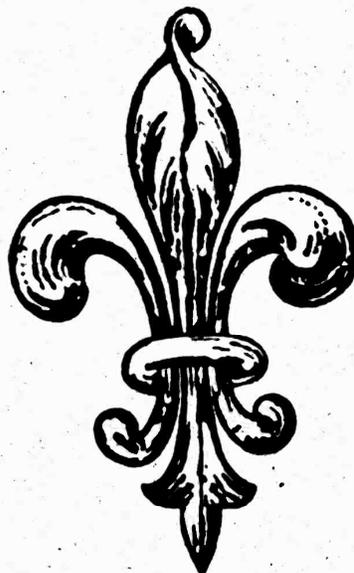


OE-14091
Bulletin 1963
No. 33

Education *in* France

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U.S. DEPARTMENT OF
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Chapter VII

VOCATIONAL EDUCATION

ANY DESCRIPTION of vocational education in France and the related question of the technical manpower of the country must take note of the large number of young people who leave school, at the age of 14 or 15, after 8 or 9 years of education. Not only have they stopped far short of a complete secondary education, but also they have received virtually no training in occupational skills. About half of the youth of France are in this category.

It is true that the trend is for young people to remain in school longer, and as mentioned previously, starting in 1967 the compulsory school age for French youth will extend to the age of 16. Undoubtedly many will then make use of the additional schooling to learn useful occupational skills. As of now (1962), however, children need not continue their schooling after they reach the age of 14. The government does encourage young people in rural areas to continue their schooling on a part-time basis, until the age of 17, by attending short courses in agriculture which may be offered in off-seasons, at night, or on weekends. Attendance is voluntary, however. About 100,000 actually participate in these courses for varying lengths of time during a year.

The majority of those still enrolled in school at the age of 15 are in academic education, and a much smaller group in vocational education. The relatively low vocational enrollments are understandable in the light of the following considerations:

- (a) The large number of students not in school at the secondary school level, many of whom would be likely candidates for vocational education.
- (b) French tradition which has given high prestige to academic education and which has until recently characterized vocational training as not true secondary education.
- (c) The long association of certain types of schools with certain social and economic classes in France. Under this arrangement the academic secondary schools were considered the

- schools of the middle and upper classes while vocational education was left to the lower classes, the very groups least likely to attend school beyond the compulsory school age.
- (d) The stage of economic development. France has industrialized relatively slowly and even today a sizeable portion of the country is agricultural. Moreover, the effects of industrialization have not been widespread, both because industry tends to be centered around a few urban areas and because the prevailing pattern has been one of small industry and family operated business. The expansion of the French economy in the last 10 years is changing the situation.
- (e) French reluctance to turn to schooling as a means of improving agriculture. Enrollments in full-time agriculture schools on the secondary level are extremely small, in the vicinity of 6,000 students. Traditional methods in agriculture are still respected and are passed on by the family.

Historical Background

Vocational education as compared to academic education is regarded in France as a relative newcomer. One can refer, of course, to the Middle Ages when a somewhat formalized system existed for inducting young people into occupations by the route of apprenticeship.¹ Then, there were the Christian schools, established in the 17th century by Jean Baptiste de la Salle, which included some manual work. As part of the background development in the 18th century, there was growing interest in science and its applications among some of the thinkers of France, for example, Diderot. Sometimes cited is La Chalotais' statement in 1761 that education should give young people the scientific knowledge to perform their tasks well.² In the opinion of one observer of French education the advice was not heeded; he contends that from 1750 on there has been a struggle between intellectual culture and technical education as proponents of the latter have pleaded, with relatively little success, for more scientific training, more application of knowledge and the like.³

During the French Revolution, vocational training was given a boost when central schools were planned with a program of study which included drawing and scientific subjects with a technical emphasis. Under Napoleon these schools were replaced by the classical *lycée*, and it has been suggested that France thus lost its chance to

¹ For a brief summary of the early signs of vocational training see *Education in France*, No. 12, December 1960, p. 1-3.

² Quoted in Dobinson, Charles H. "France and Technical Education Today." *Educational Forum*, January 1957, p. 160-161.

³ *Ibid.*, p. 160.

lead Europe in technical education at the secondary school level.⁴ Reportedly, in 1914 France had only 6 schools of arts and crafts, 6 intermediate vocational schools and 86 lower vocational schools, together educating a total of 15,000 boys and girls.⁵ Another source suggests that enrollments may have been as high as 20,000.⁶

At the higher education level a handful of technical institutions were in operation during the first half of the 19th century and two of them trace their beginnings to the 1790's. At the secondary school level very little was done until the 1880's. Among the earlier developments were the establishment of 3 schools of arts and crafts by 1850 and the Duruy Law of 1865, which authorized the establishment of special education programs but "manual training played too small a role in it."⁷

After 1870, vocational education received more attention, particularly apprenticeship training. Reportedly this was partly a repercussion from the defeat by the Prussians in 1871,⁸ and was spurred by the International Exhibition of 1878 which revealed the weakness of French industrial production.⁹

The law of December 11, 1880, followed, and established four apprenticeship schools under the joint authority of the Minister of Commerce and the Minister of Education. The role played by the Ministry of Commerce was related to the growing fear of industrial firms that their future in world markets was in jeopardy unless worker productivity was increased.¹⁰

Under a law of 1892 higher primary schools with a vocational emphasis were placed under the Ministry of Commerce. This has come to be regarded as a serious mistake in that it split vocational education from the regular public school system.¹¹

Although enrollments in the new vocational schools increased steadily, the real growth of vocational education in France dates from the law of 1919 (*Loi Astier*) in much the same way that vocational education in the United States is linked to the Smith-Hughes Act of 1917.

Under the Astier Law of July 25, 1919, young workers in certain industries in France were required to attend part-time schooling dur-

⁴ Hans, Nicholas A. *Comparative Education: A Study of Educational Factors and Traditions*. London: Routledge and Kegan Paul Ltd., 1949. p. 303.

⁵ *Ibid.*

⁶ Thabault, Roger. "Professional Studies in the University and in Special Professional Schools—France." *Yearbook of Education 1959*. Yonkers-on-Hudson, New York: World Book Company, 1959. p. 203.

⁷ *Education in France*, No. 12, December 1960 p. 2.

⁸ Dobinson, *op. cit.*, p. 161.

⁹ Thabault, Roger. *Yearbook of Education, 1959, op. cit.*, p. 203.

¹⁰ Mallinson, Vernon. *An Introduction to the Study of Comparative Education*. Second edition. New York: The MacMillan Company, 1960. p. 225.

¹¹ Thabault, Roger. "Fiscal Management in France." *Yearbook of Education, 1956*. London: Evans Bros. Ltd., 1956, p. 373.

ing working hours until they reached the age of 18. The money to finance such schooling was provided by an apprenticeship tax on industries and wholesale business, and amounted to .4 percent of the salaries paid by an establishment. The money could go directly to the government which would provide the necessary schooling, or the industries could use the money to set up their own apprenticeship programs or give the funds to some educational establishment which would provide the training.¹² In 1920 the various kinds of vocational education were brought under the direction of a new section of technical education in the Ministry of National Education.

Vocational education in various forms became more available after 1920, but it did not attain a status equal to academic secondary education; nor were close ties established between the two kinds of schooling. Since World War II, educational reformers have stepped up their efforts to secure a status of respectability for vocational education, which some see as a healthy antidote to the verbalism and theoretical abstraction of academic secondary education.

Yet in 1950, a French authority asserted that a bias in favor of classical education still caused many people to consider technical and vocational education as inferior. Moreover, he claimed that a prejudice in favor of Latin and contempt for technical education were the chief factors determining selection of a program of study in secondary schools. All this, he claims, has acted as a roadblock in the development of kinds of training which correspond to the aptitudes of many children and has condemned modern, scientific, technical, artistic, and manual training to inferior positions.¹³ A foreign observer of French education a decade later similarly noted the problem of acceptance of vocational education:¹⁴

In spite of the fact that the *écoles nationales professionnelles* and the *centres d'apprentissage* are classed as *du niveau du second degré* [secondary level], most French educationists will not admit for a moment, in conversation, that these schools provide a secondary education. They offer very few courses leading to the *baccalauréat*, their subjects are vocational as opposed to cultural (such opposition is assumed by many French educationists), and they come under the control of the Technical Education Division of the Ministry of Education.

In the last decade vocational education has grown, as have other forms of secondary education, and many different programs of study preparing for a great variety of occupations are available to second-

¹² *Ibid.*

¹³ Gal, Roger. "France." *Yearbook of Education, 1950*. London: Evans Bros., 1950. p. 412, 417.

¹⁴ Wykes, Olive. "Attendance at Secondary Schools in the French Fourth Republic." *The School Review*, Vol. 69, No. 1, 1961. p. 84.

ary school youth. The many occupations for which youth in the age range 13-18 are trained include:¹⁵

Mechanic	Mason
Baker	Painter
Carpenter	Photographer
Hairdresser	Plumber
Cook	Typist
Hotel employee	Leather worker
Dressmaker	Sales clerk
Watch repairer	Shoemaker

Enrollments

On the secondary school level there are four main types of vocational and technical schools, namely (1) apprenticeship centers, (2) technical secondary schools (*collèges techniques*), (3) national vocational schools, (4) trade schools (*écoles de métiers*). In addition, there are technical sections in the academic secondary schools and vocational sections in the lower secondary schools. Largest in enrollments are the apprenticeship centers, with the *collège technique* ranking second and the vocational sections of the *cours complémentaires* ranking third. The other forms of vocational and technical training have enrollments of 30,000 or less.

Listed below in order of size enrollment are the various types of vocational and technical schools on the secondary school level, along with the names by which they have long been known, and the new terminology, as of 1960. For purposes of clarity the old names of the schools will be used in the remainder of the chapter.

1. Apprenticeship center:
(*centre d'apprentissage*)—old name
(*collège d'enseignement technique*)—new name
2. Technical secondary school:
(*collège technique*)—old name
(*lycée technique*)—new name
3. Part-time courses established by municipalities and private agencies.
4. Vocational sections in the lower secondary school:
(*cours complémentaire*)—old name
(*collège d'enseignement général*)—new name
5. Technical sections in the academic secondary schools:
(*lycées, collège*)—old name
(*lycée*)—new name

¹⁵ For a much longer list see: France. Ministère de l'Éducation Nationale. *Annuaire de l'Éducation Nationale, 1960*. Paris: 1960. p. 157-159.

6. (a) National vocational schools (E.N.P.):
 (*école nationale professionnelle*)—old name
 (*lycée technique*)—new name
- (b) National schools for study of technical education
 (E.N.E.T)
 (*école nationale d'étude technique*)—old name
 (*lycée technique*)—new name
7. Trade schools:
 (*école de métier*)—old name
 (*lycée technique*)—new name

Among the public vocational schools in the year 1960-61 there were 906 apprenticeship centers; 306 vocational sections in lower secondary schools; 210 *collèges techniques*; 162 technical sections in academic secondary schools; 39 national vocational schools; and 25 trade schools.¹⁶ For that year there were 14,108 teachers for the public apprenticeship centers, and 11,244 teachers for all those public vocational schools now to be called *lycée technique*.¹⁷

Vocational education for many students begins at age 13 after 7 years of elementary education when they enter the *collège technique* or one of the national vocational schools. Some make their choice 1 or 2 years earlier by entering a preparatory section of one of the vocational schools where they complete grades 6 and 7 before starting the real vocational program in the eighth grade. Similarly, those enrolled in the vocational sections of the lower secondary school have made their choice at the age of 11 after completion of 5 years of

Table 29.—Enrollments in vocational secondary schools, by types of schools, public and private: 1961-62¹

Types of schools	1961-62		
	Public	Private	Total
Apprenticeship centers (full-time).....	225,000	130,000	355,000
National vocational schools, technical secondary schools (<i>collèges techniques</i>).....	170,000	45,000	215,000
Vocational sections in lower secondary schools (<i>cours complémentaires</i>).....	54,607	7,790	62,397
Technical sections of academic secondary schools.....	35,000	14,000	49,000
Apprenticeship centers (part-time).....	23,000	.....	23,000
Study by correspondence.....	18,000	.....	18,000
Total enrollments.....	525,607	196,790	722,397

¹ *Education in France*, No. 16, January 1962, p. 6. Data for public *cours complémentaires* are for 1960-61 and are taken from *Informations Statistiques*, décembre 1960, p. 472; septembre-octobre 1960, p. 282; and mai 1960, p. 257. The figure for *cours complémentaires* in private schools is for the year 1960-60 and is taken from *Informations Statistiques*, No. 34-35, décembre 1961, p. 311.

¹⁶ *Informations Statistiques*, septembre 1961, p. 192.

¹⁷ France. Ministère de l'Éducation Nationale. *The Education Movement in France During the Academic Year 1960-61*. Paris: 1961. p. 10.

schooling. Students have entered the apprenticeship centers typically at the age of 14 after completion of the 8 years of the elementary school. Many of the students in vocational schools are overage indicating previous school failure; for the school year 1959-60, 18 percent of those in the eighth grade were 15 years old and 24 percent in the ninth grade were 16 years old.¹⁸

Students have a choice between public and private vocational education; many of the private facilities are operated by business and industrial concerns. In the latter part of the 1950's the growth of public vocational education far outstripped that of private vocational education. As indicated in the data for 1961-1962, public vocational education has more than doubled the enrollment of private vocational education.

Between 1952-53 and 1958-59 public vocational education increased by 29 percent. A big increase (57 percent) came in the national vocational schools, while other schools increased as follows:¹⁹

- 41.7 percent—technical secondary schools.
- 23.5 percent—technical sections of academic secondary schools.
- 18 percent—apprenticeship centers.

The vocational sections in the lower secondary school almost doubled between 1952 and 1960.

The increase in vocational education has been more than matched by the increase in academic secondary education, so that the balance has not shifted. As of October 5, 1960, vocational education had 27.3

Table 30.—Enrollments in vocational secondary education by types of schools and selected years: 1952-1960¹

Types of schools	School year				
	1952-53	1954-55	1957-58	1959-60	1960-61
National vocational school (E.N.P. and E.N.E.T.).....	13,038	14,501	16,576	20,477	149,791
Technical secondary schools (<i>collèges techniques</i>).....	60,307	79,498	98,606	98,300	
Trade schools (<i>écoles de métiers</i>).....			5,417	6,282	
Technical sections in academic secondary schools (<i>lycées, collèges</i>).....	22,554	23,583	24,987	27,430	32,352
Vocational sections in lower secondary schools (<i>cours complémentaires</i>).....	28,080	28,053	28,883	33,867	54,807
Apprenticeship centers (full-time).....	145,141	151,863	158,800	170,708	202,318
Apprenticeship centers (part-time).....	8,118	11,894	19,784	19,467	21,719
Improvement schools.....	11,290	8,313	2,926	2,777	
Municipal vocational courses.....			60,789	61,775	
Totals.....	297,618	317,705	413,836	441,067	460,787

¹ *Education in France*, No. 12, December 1960. p. 8. Data for October 5, 1960, are given in *Informations Statistiques*, décembre 1960. p. 472.

¹⁸ *Informations Statistiques*, septembre 1961. p. 188.

¹⁹ *Informations Statistiques*, juin-juillet, 1960. p. 279.



percent of the total public secondary school enrollment. In this calculation the vocational sections of the lower secondary school were counted as part of vocational education. Not counted at all were the approximately 170,000 enrolled in part-time studies in agriculture. If this figure is added, vocational education then represents 33.3 percent, or one-third, of all public secondary school enrollments.

On the basis of the increases in 1961 over 1960 for public education, the 64,000 pupil-increase in academic secondary schools compares to an increase of 39,000 in vocational education. Percentage-wise, however, the vocational schools increased more than the academic secondary schools. The balance is tipped back toward academic education when the lower secondary schools (*cours complémentaires*) are included. The 77,000 increase in these lower secondary schools was the largest of all, and proportionately the academic sections of the lower secondary schools increased more than the vocational sections.²⁰

Cours Complémentaire—Vocational Sections

In 1959-60, in the public lower secondary schools, there were 48,489 students in the vocational and 361,784 in the academic sections. Of those in the vocational sections the largest number, 26,219, were in the commercial program, compared to 12,413 in the industrial sections. Far behind were the small enrollments in home economics and agriculture. Moreover, while the industrial sections had an enrollment increase of 7.8 percent over the previous year and the commercial sections 4 percent, the enrollments in agriculture went down 20 percent.²¹

In the 1930's, however, the chief reasons for adding vocational sections to the *cours complémentaire*, a procedure authorized by a law of 1926, were summarized as (a) cost of providing separate vocational schools in rural areas; (b) desire not to draw rural youth away from the farm areas.²² In practice, however, most of the vocational sections were established in urban areas, particularly in the region of Paris.

For the year 1958-59 the Paris region (*académie* of Paris) had 62.7 percent of the total French enrollment in vocational sections in public *cours complémentaires*, and the immediate Paris area (*Département* of the Seine) had 49.9 percent of the total. On the other hand, the Paris region had only 25.9 percent of the enrollment in academic sections of the public *cours complémentaires*.²³ Girls predominate in both the vocational and academic sections of the *cours complémentaires*.

²⁰ *Informations Statistiques*, mai 1960, p. 247 and décembre 1960, p. 448.

²¹ *Ibid.*, mai 1960, p. 247.

²² Ministère de l'Éducation Nationale. *Encyclopédie Pratique de l'Éducation en France*. Paris: 1960. p. 172.

²³ *Informations Statistiques*, mai 1960. p. 248.

The vocational sections accept students at the age of 11 after completion of the first 5 years of elementary schooling. A 4-year program is then offered (grades 6, 7, 8, 9) of which the first 2 years are largely academic education, with some vocational orientation. The third and fourth year of the program (grades 8, 9) are vocational and are similar to the work offered in the same grades of the technical secondary school (*collège technique*). Those who complete the 4-year program of the *cours complémentaire* are supposed to be eligible to enter the 10th grade level (2e in French terminology) of the *collège technique*.

Apprenticeship Centers

In France, many workers in industry and in the various trades and crafts receive their training through the apprenticeship system. This training may be the old-fashioned system of a young person (age 14-17) working in factories or commercial establishments under an artisan and attending a minimum of 150 hours per year of course work, for which the employer must release him during the work day.²⁴ Training may also be taken in one of the many apprenticeship centers which came into being shortly before World War II as an emergency measure for rapid training of young workers as a part of the stepped-up rearmament of the late 1930's. The number of such centers has more than doubled since World War II.

The apprenticeship center has been characterized as a cross between a factory and a school, because the students tend to spend about half of a 40-hour week in formal classroom study and the other half in practical work—in a factory or in a shop maintained by the apprenticeship center. In 1959, 34.2 percent of the apprentice students boarded at the center, and 38 percent of all the students enrolled in that year were girls.²⁵

Some of the apprenticeship centers are public, operated by a municipal government or the national government, while others are privately operated by business and industrial concerns in order to prepare workers for a particular industry. The apprenticeship tax on industrial and business concerns provides the money for apprenticeship centers.

An English authority on French education calls the apprenticeship center the greatest achievement in French postwar education, because it fulfills the ideal of a worker-citizen, stated as long ago as the 1790's by Condorcet but so long neglected; and because it represents a new approach in educational method.²⁶ Since the apprenticeship centers

²⁴ *Encyclopédie Pratique de l'Éducation en France*, 1960, *op. cit.* p. 162.

²⁵ *Informations Statistiques*, septembre 1961. p. 204.

²⁶ Dobinson, Charles H. "The French Centre d'Apprentissage." *Yearbook of Education*, 1958. Yonkers-on-Hudson, New York: World Book Co., 1958. p. 184-190.

were designed for young people not doing well in school, a fresh approach was needed in order to reach them. Hence, the old incentives of academic study were replaced by an appeal to practicality, to vocational interest, to the concrete. The great stress is on ability to think and to use materials, and not on the "cramming" of facts.²⁷

According to the original plan, all 14-year olds who applied, except those obviously unfit, were to be accepted by the apprenticeship centers. Actually, because of lack of sufficient facilities, some students are turned down.²⁸ Each region has its own way of handling this problem, usually by arranging an examination when the number of applicants exceeds the available places.

The apprenticeship centers charge no tuition. Typically a student enters after finishing the eighth year of the elementary school; it is not necessary to have the elementary school certificate, although 71.7 percent of those entering in 1959 did possess this certificate. Of the 1959 enrollment, 83.9 percent came from the 8-year elementary school and 8.1 percent from the *cours complémentaires*; in addition, 4.2 percent transferred from academic secondary schools and 3.8 percent from technical secondary schools.²⁹

A variety of programs in the apprenticeship centers prepare for many different occupations,³⁰ often grouped into 4 or 5 categories, such as automobile repair, woodworking, metal work and electrical work. Many of the apprenticeship centers for girls offer sewing, dressmaking and home economics. In large urban areas, particularly Paris, there are specialized programs, such as zinc work, roofing and tiling, radio, and refrigeration.³¹

Local apprenticeship centers tend to train youth for local industries, and even for a specific industrial concern when the center is operated by that concern, whereas national centers train for jobs in more than one locality. Contact with the needs of industry is maintained through a system of local advisory committees which include representatives of employers and trade unions, along with others nominated by the technical division of the Ministry of National Education.

The general theory behind all vocational education in France is that utilitarian and cultural ends are merged in the interest of forming a technical, yet humane man, keeping in mind the realities of the modern world where technology and culture are inseparable.³² For the ap-

²⁷ Dobinson, Charles H. "France and Technical Education Today." *Educational Forum*, January, 1957. p. 163.

²⁸ *Education in France*, No. 12, December 1960. p. 10.

²⁹ *Informations Statistiques*, septembre 1961. p. 205.

³⁰ For a long list of these occupations see: *Encyclopédie Pratique de l'Éducation en France, 1960, op. cit.*, p. 184-185.

³¹ Dobinson, *op. cit.*, p. 162.

³² *Annuaire de l'Éducation Nationale, 1960, op. cit.*, p. 82.

prenticeship centers specifically, a code to guide teachers characterizes the program as follows:²²

It is necessary not to forget that the majority of them [the students] are young people . . . who, for various reasons, have not been able to contemplate taking up purely intellectual studies. The limited time available for general education, the aptitudes of these young people, and the practical work which they will perform in life, all these prevent us from envisaging, save in exceptional cases, studies which are too abstract or theoretical, too heavy or complicated. Indeed, these would only prove to be futile, and possibly turn away the pupils forever from intellectual activities. It is vital, therefore, in the time which is available for general studies, to go straight to the essential point, and to strive above all to be useful, simple, concrete, living and interesting.

An effort is made to relate the academic studies to the practical orientation of the students; thus, history, for example, becomes a history of labor starting with slavery in ancient Egypt. Similarly, the study of civics includes an analysis of the rights of workers.²⁴ The 40-hour week apparently makes homework out of the question, and written work in a class, such as history, is kept to a minimum.²⁵ The

Table 31.—Curriculum in apprenticeship centers (industrial): by subject, year, and class hours per week¹

Subjects	Hours per week					
	1st year		2d year		3d year	
	Boys	Girls	Boys	Girls	Boys	Girls
ACADEMIC						
Ethical, civic and social education.....	1	1			1	1
French.....	3	3	3	2	2	2
History.....	1	1	1	1	1	1
Geography.....	1	1	1	1	1	1
Arithmetic, geometry.....	3	3	3	3	3	2
Hygiene.....	2	2	2	2	2	2
Total hours.....	11	11	10	9	10	9
NONACADEMIC						
Home economics.....		3		3		3
Vocational drawing.....	2	3	2	2	3	3
Art.....	2		1	1	1	(1) elective
Technology.....		1		1		1
Workshop.....	20	17	22	19	23	19
Physical education.....	4	4	4	4	4	4
Grand total hours.....	39	39	39	39	40	40

¹ France. Ministère de l'Éducation Nationale. *Annuaire de l'Éducation Nationale 1960*. Paris: 1960. p. 85.

²² Quoted in Dobinson, *Educational Forum*, January 1957, op. cit., p. 163.

²⁴ Dobinson, *Yearbook of Education, 1958*, op. cit., p. 184-185.

²⁵ Dobinson, *Educational Forum*, January 1957, op. cit., p. 163.

teachers seek to use the available time to awaken the students to reflection on matters relating to their work and their life as citizens. All girl students, regardless of their specialized trade, are given some home economics training "to prepare them for their future role as homemakers."²⁶

At the end of the 3-year program in an apprenticeship center the students must pass an examination in order to receive a certificate of vocational aptitude (*certificat d'aptitude professionnelle*—C.A.P.). The C.A.P. has been described by French authorities as certifying "merely that the holder is competent to start work in a trade for which he has completed the elementary apprenticeship but which he can learn thoroughly only through practice."²⁷ Some of those with a C.A.P. get a higher certificate, *brevet professionnel*, after working in an occupation for 2 or 3 years and taking a part-time improvement course. A written examination must be passed to obtain the *brevet professionnel*.

The apprenticeship centers vary considerably in quality. Many have well-equipped shops, several mechanical drawing rooms and suitable facilities, while some of the small centers away from urban areas have only a few sewing machines and a few stoves and washing machines to demonstrate the household arts. Some of the centers benefit by being connected with a technical secondary school and sharing some of its facilities. The young boys and girls in a typical center, however, are cut off from others of their age who will grow up to be the doctors, lawyers, teachers, and businessmen of French society. Some parents are suggesting that children enter the apprenticeship centers at a later age, namely 15.²⁸

A foreign observer of French education, in noting that apprenticeship training is still popular in France, asserted that methods of work do not change or improve much under such a system; hence, such trades as woodworking, masonry, and plumbing do not change much from one generation to the next. On the other hand, he suggested that a French youth working under a craftsman receives an excellent training in such hand skills as ceramics, wood carving, jewelry making, and cabinet work.²⁹ The limitations ascribed to apprenticeship training would apply less to those programs which devote a sizeable portion of time to theoretical classroom instruction.

²⁶ *Education in France*, No. 12, December 1960. p. 11.

²⁷ "France." *World Survey of Education, III: Secondary Education*. Paris: UNESCO, 1961. p. 487. Text prepared by French National Commission for UNESCO.

²⁸ Mallinson. *An Introduction to the Study of Comparative Education*. Second edition. *op. cit.*, p. 226.

²⁹ Hollinshead, Byron S. "Some Differences Between American and European Education." *Third Workshop of Educational Organizations (Condensed Report)* April 28-30, 1959. Washington, D.C.: U.S. Office of Education, 1959. p. 4.

Trade Schools (Ecoles de Métiers)

The trade schools are often established by a chamber of commerce or some occupational group in order to provide specialized training for one type of industry or area of work. The most important part of the curriculum is given over to practical work.⁴⁰ Students are accepted at age 13 for a 3-year program to prepare for such occupations as plumbing, masonry, carpentry, painting and photography.

National Vocational Schools

In 1960 there were 33 national vocational schools and 14 in the process of being established. While some admit students at the age of 11 after 5 years of elementary education, the usual procedure is to accept students at the age of 13 after completion of 7 years of schooling. Admission is by a national competitive examination held at several different centers in France. The examination covers the work of the sixth and seventh grades.

Students enroll in one of three sections, either industrial, commercial or hotel work. Some students in the industrial and commercial

Table 32.—Curriculum, industrial section, national vocational secondary schools (écoles nationales² professionnelles), by subjects and class hours per week: grades 8–12¹

French terminology.....	Grades				
	4e 8	3e 9	2e 10	1re 11	Terminale 12
	Hours per week				
Mathematics.....	5	4	5	3	2
Science.....	4	4	2	1	2
Mechanics.....			1	3	2
Electricity.....			1	2	2
French.....	6	4	3	2	1
History, geography.....	3	2	2		
Civics.....	1				
Foreign language.....	4	3	2	2	1
Drawing, art.....	2	2	1		
Legislation and economic problems.....					1
Technology, construction.....		1	1	1	1
Drawing and descriptive geography.....	3	3	4	5	5
Technology, general occupation.....		1	1	2	2
Industrial organization.....					
Technology, speciality.....	1	1	1	1	1
Shop.....	4	10	12	14	16
Physical education.....	4	4	4	4	4
Total hours.....	37	30	40	40	40

¹ France. Ministère de l'Éducation Nationale. *Annuaire de l'Éducation Nationale 1960*. Paris: 1960. p. 101.

² *Annuaire de l'Éducation Nationale, 1960, op. cit., p. 97.*

Table 33.—Curriculum, commercial section, national vocational secondary schools, by subjects and class hours per week: grades 8–12¹

French terminology.....	Grades				
	4e 8	3e 9	2e 10	1re 11	Terminale 12
	Hours per week				
Literary.....	8	8	7	7	8
Modern foreign language.....	5	7	7	7	3
Scientific.....	6	6	6	7	6
Vocational.....	6	8	10	13	23
Home economics.....	3	3	3	3	
Physical education.....	4	4	4	4	3
Total hours.....	33	36	37	41	36

¹ France. Ministère de l'Éducation Nationale. *Annuaire de l'Éducation Nationale 1960*. Paris: 1960. p. 102.

Table 34.—Curriculum, theoretical section, national vocational secondary schools, by subjects and class hours per week: grades 10–12¹

French terminology.....	Grades		
	2e 10	1re 11	Terminale 12
	Hours per week		
Literary.....	9	11	10
Scientific.....	9	16	17
Vocational.....	18	13	13
Art.....	2		
Physical education.....	4	4	4
Total hours.....	42	44	44

¹ France. Ministère de l'Éducation Nationale. *Annuaire de l'Éducation Nationale 1960*. Paris: 1960. p. 102.

sections stay to complete a 5-year program and receive the diploma called *diplôme d'élève breveté*. Others, after sufficient work experience, may become foremen. The hotel course is 4 years in length.

In all the sections vocational specialization becomes pronounced from the third year on. In the third year (10th grade) two additional sections are offered, the academic for those who hope to go on to the technical *baccalauréat*, and a social work section as a subdivision of the commercial section.

Technical Secondary School (Collège Technique)

This school has been characterized as one offering training for "highly skilled manual and non-manual workers who, with age and

Table 33.—Curriculum, vocational secondary schools (commercial), colleges techniques, by subjects, sections, and class hours per week: grades 8–10, ages 12–16¹

Subjects	Grade 8	Grade 9 sections			Grade 10 sections		
		Book-keeping	Stenography	Com-merce	Book-keeping	Stenography	Com-merce
Hours per week							
Literary:							
French.....	6	5	5	5	4	4	4
History.....	1	1	1	1	1	1	1
Geography.....	1	1	1	1	1	1	1
General economics.....					1	1	1
Scientific:							
Mathematics.....	4	3	3	3	4	3	3
Science.....	3	2	2	2	1	1	1
Foreign language:							
Modern foreign language...	3	3	3	3	3	3	3
Vocational:							
Commerces and bookkeep- ing.....	2	3	2	2	3	2	2
Commercial office work.....		3	1	2	3	1	2
Correspondence.....					2	2	2
Civil law.....		2	2	2			
Commercial law.....					2	2	2
Selling.....					1	1	1
Stenography.....	3		3	2		3	2
Typing.....		3	3	3	2	3	3
Writing, drawing.....	2	2	2	2	1	1	1
Other:							
Practical work.....	3	3	3	3	3	3	3
Physical education.....	2	2	2	2	2	2	2
Total hours.....	30	33	33	33	34	34	34

¹ France. Ministère de l'Éducation Nationale. *Annuaire de l'Éducation Nationale 1960*. Paris: 1960. p. 98.

experience, will be capable of becoming foremen and supervisors.”⁴¹ In 1960 it was reported that the number of technical secondary schools was insufficient to meet the needs of France; at that time there were 225 of these schools, located mostly in industrial regions.⁴²

A technical secondary school can be established by a commune or a department. There is a trend toward local governments withdrawing from the field of vocational and technical education, with the result that special occupational and business groups tend to establish narrow vocational schools where economic motives mix with educational criteria.⁴³ The technical secondary schools operated by local governments can be taken over by the national government upon request from the local authorities.

Normally, students enter the *collège technique* at the age of 13 after completion of 7 years of academic schooling. As in the case of other

⁴¹ “France.” *World Survey of Education III, op. cit.*, p. 487.

⁴² *Annuaire de l'Éducation Nationale, 1960, op. cit.*, p. 89.

⁴³ Thabault, *Yearbook of Education, 1956, op. cit.*, p. 373–374.

Table 36.—Curriculum, vocational secondary schools (industrial), by subjects, and class hours per week: grades 8-11, ages 13-17¹

Subjects	Grades			
	8	9	10	11
	Hours per week			
French.....	5	4	2	1
Foreign language.....	4	3		
		(elective)		
Civics.....	1			
History and geography.....	3	2	2	
Mathematics.....	5	4	2	2
Sciences.....	4	4		
Mechanics.....			2	2
Electricity.....			2	2
Occupational technology.....	1	1	1	2
Drawing and art.....	6	6	5	4
Technology of construction.....		1	2	1
Industrial organization.....				1
Legislation and economic problems.....				1
Technology of a specialty.....	1	1	1	1
Shop work.....	5	12	17	19
Physical education.....	4	4	4	4
Total hours.....	30	30+3 electives.	40	40

¹ France. Ministère de l'Éducation Nationale. *Annuaire de l'Éducation Nationale, 1960*. Paris: 1960. p. 94.

types of vocational schools, some enter 1 or 2 years earlier and are placed in a preparatory division until they have completed the 7th grade. At the time of entering the technical secondary school a student takes an aptitude examination, and in instances where the number of candidates exceeds the available places this examination is used to reject some applicants.

Vocational education in the *collège technique* is less narrowly specialized than the apprenticeship centers. The basic program is 3 years in length and includes grades 8, 9, and 10. Some of the students, particularly boys, stay on for a fourth year. In a limited number of the technical secondary schools, an academic section offers 5 years of work leading to the secondary school diploma in the technical line (technical *baccalauréat*). Some of the schools offer a fifth and sixth year of study along vocational and technical lines.

Students usually enroll in one of three programs of study, namely, (a) industrial, (b) commercial, and (c) hotel work. Recently a section preparing people to be aides or secretaries in social work has been added. At the end of the third year the students receive the first certificate of vocational education (*brevet d'enseignement com-*

mercial, industriel, hôtelier, social). The second certificate is given to those who finish the fourth year. For those students in the hotel sections, it is recommended that the fourth year include 6 months' work in a hotel in a foreign country. The nine hotel sections, or hotel schools as they are called, allow students in the third year of the program to specialize in either administrative skills, such as hotel accounting, or in practical skills, such as cooking and waiting on tables. Nearby hotels are used for the practical work.

The industrial sections for girls prepare them for sewing and dress-making and related industrial jobs. The boys' sections train for a variety of jobs, including plumber, automobile mechanic, mason, electrician, cabinet maker, coppersmith, and chemist's assistant. The commercial sections offer work in typing, stenography and book-keeping.

Technical Sections in Academic Secondary Schools

After World War II an attempt was made to raise the status of technical training by creating the technical *baccalauréat*. Thus, a student could secure the prized secondary school diploma by following a program of technical studies rather than the language-oriented programs of the *lycée* and *collège*.

Technical sections were subsequently added in some of the academic secondary schools, particularly in the *collèges*. Reportedly, however, general acceptance of the technical *baccalauréat* was gained only by making the program of study so heavily weighted with mathematics and theory, and so light on technology, as to make it difficult to be recognized as a technical program.⁴⁴

New Certificates

Under a change instituted in 1959 new terminology was introduced into vocational education. Those who complete 11 years of schooling (7 of elementary plus 4 of vocational) receive a certificate called *agent technicien breveté*. Completion of 12 years of schooling (7 of elementary plus 5 of vocational) leads to a certificate called *technicien breveté*, considered the equivalent of completion of the 11th grade of an academic secondary school, i.e., part I of the *baccalauréat*. Some students will go on for a 13th year and receive the *technicien supérieur breveté*, the equivalent of part II of the *baccalauréat*.⁴⁵

Agriculture and Home Economics

Most of the agriculture and home economics courses in France are taken on a part-time basis by boys and girls between the ages of

⁴⁴ Dobinson, *The Educational Forum*, January 1957, op. cit., p. 165.

⁴⁵ *Annuaire de l'Éducation Nationale, 1966*, op. cit., p. 32.

14 and 17 who have finished 8 years of elementary schooling and left school at the age of 14 to work on a farm. In the seventh and eighth grades of the rural elementary school these young people had a course in applied science, which for the boys concentrated on agriculture and for the girls on home economics. A very small number of students complete grades 6 through 9 in a vocational section of a lower secondary school (*cours complémentaire*) where they specialize in agriculture or home economics; in the school year 1958-59, 2,820 were enrolled in agriculture sections and 5,182 in home economics sections of public *cours complémentaires*.⁴⁶

Only a few of the agriculture schools are classified by the French as secondary education. Of the approximately 170,000 students enrolled in agriculture and home economics courses only about 6,000 are in full-time schools on the secondary level. The part-time agriculture courses and schools are classified as post-elementary and include the following:

1. *Cours postcolaires agricoles* which consist of 100 hours of instruction per year in agriculture and home economics

2. *Seasonal schools*, both fixed and moving, which meet 1 or 2 days per week for 4 months in the winter season over a 2-year period. The courses are offered in 88 fixed schools which are annexed to elementary schools, lower secondary schools or academic secondary schools. Some of the schools move from one community to the next giving a series of lessons in each.

3. *Apprenticeship centers* in agriculture offering a 2- or 3-year course, some operating only in the winter months.

4. *Rural home economics schools for girls*.

There are 104 schools, both fixed and moving, which accept girls at the age of 14, and offer either a 4-month or a 9-month course. Enrollments usually are less than 50 girls per school.

Most of the agricultural students are in the *cours postcolaires agricoles* which may be taken over a 3-year period in centers which often serve several communities. Students begin the program at the age of 14 and take the courses on Thursday evenings or on Sunday, while working full-time on farms. The teachers often work full-time in an elementary school during the day and handle the agricultural courses for extra pay. To enable students to get in 100 hours it has been necessary to have the courses available for at least 120 hours per year. These courses are considered to be the lowest level in agricultural education and they enrolled the largest number of students, about 90,000 in the year 1958-59. This total represents only about one third of the rural youth, ages 14 to 17,

⁴⁶ *Informations Statistiques*, mai 1960, p. 257.

who are eligible to take these courses. Among the reasons given for the less than full enrollment are the lack of proper equipment and facilities for the courses, which represent a heavy financial burden on local communities, and a certain amount of doubt among some people as to the value of the courses.⁴⁷ The majority of students enrolled in these courses do not finish the 3-year program required to receive a certificate. In 1960 only 7,695 boys and 3,211 girls, or a total of 10,906, took the examination at the end of the 3-year course; of these 8,172 passed the examination and received the certificate (*certificat d'études postsecondaires agricoles*).⁴⁸

On the full-time secondary school level there are the following:

1. *18 practical schools of agriculture.* Students must have completed 8 years of elementary school and hold the elementary school certificate. The course is 2 years in length and includes agriculture and academic subjects. Most of the schools have workshops for manual training in iron and wood.

2. *18 regional schools of agriculture.* These are at a higher level than the practical schools of agriculture. Students are accepted at the age of 15 after completion of the equivalent of the ninth grade. The course lasts 3 years and is considered the equivalent of completion of the eleventh grade (Part I of the *baccalauréat*) in the academic secondary school.⁴⁹

3. *A few specialized schools of agriculture* somewhat similar to the regional schools, but offering such specialities as horticulture.

The small enrollments in these schools are indicated in the figures for 1957-58.⁵⁰

	<i>Number of students</i>
Regional schools (public)-----	1,400
Private schools-----	350
Practical schools (public)-----	1,000
Private schools-----	500
Rural home economics schools for girls (public)-----	3,700
Seasonal schools (public) :	
fixed -----	2,800
moving -----	1,000
Apprenticeship centers (public)-----	3,955
Private schools-----	3,000

⁴⁷ *Encyclopédie Pratique de l'Éducation en France, op. cit., p. 188.*

⁴⁸ *Informations Statistiques, No. 38, mars 1962, p. 110.*

⁴⁹ Ministère de l'Éducation Nationale, Institut Pédagogique National. *L'Organisation de l'Enseignement en France. Paris: 1957. p. 72.*

⁵⁰ *Encyclopédie Pratique de l'Éducation en France, op. cit., p. 190-193.*

It is now being said in France that the country must improve its agricultural education if it is to keep up with other countries.⁵¹ Specific suggestions include the following:⁵²

1. More control over attendance and actual completion of the course work. Some of the private agricultural courses are cited as being lax in this regard.
2. Raising the quality of the courses, which in some cases has been lowered by misuse of correspondence programs.
3. Bringing some unity out of the present situation, namely, the great variety of courses of different levels and duration.
4. Continued cooperation of the Ministry of Agriculture and the Ministry of National Education, since both offer courses in agriculture.

Also noted are the very small numbers enrolled in the top schools of agriculture on the secondary school level, namely the regional schools and the practical schools. This situation is attributed in part to the fact that these schools are not a clear link between elementary education and higher education; for example, the graduates of these schools are not considered as having reached the level of completion of Part II of the *baccalauréat*, which is the usual requirement for entrance into higher education.⁵³ Some students take additional study, and then are able to enter higher schools of agriculture.

Vocational Guidance

Since 1937 France has had a system of vocational guidance centers outside the school system, but under the general supervision of the Ministry of National Education. They are primarily for children leaving school at the age of 14, and seek to help them to "choose a trade with reference to their tastes, aptitudes and family situation and the needs of the labor market."⁵⁴

A law of March 10, 1937, made vocational guidance tests compulsory in apprenticeship programs in certain occupations. This was followed by a decree of May 24, 1938, which authorized the establishment of vocational guidance centers. These events were closely related to the problem of economic recovery and to a report issued at the time which cited the need for more highly skilled workers.⁵⁵ The goals of vocational guidance as stated in the law included the increasing of national production and the raising of the qualifications of workers.⁵⁶

⁵¹ *Encyclopédie Pratique de l'Éducation en France*, op. cit., p. 196.

⁵² *Ibid.*, p. 188-189, 192, 196.

⁵³ *Ibid.*, p. 192.

⁵⁴ *L'Organisation de l'Enseignement en France*, op. cit., p. 9.

⁵⁵ *Vocational Guidance in France*. Geneva, Switzerland: International Labor Office, 1954. p. 8.

⁵⁶ *Annuaire de l'Éducation Nationale, 1960*, op. cit., p. 172.

The growth of the vocational guidance centers was slow for a long time after 1938 and picked up momentum only after 1951. At the end of 1952 a total of 702 persons were employed in vocational guidance centers. At that time the staff of a center usually included a director, one or more counselors, and two clerks. Few of the centers in 1954 were able to afford a full-time welfare worker or a full-time physician.⁵⁷

The importance of guidance has become more obvious as a result of such factors as:⁵⁸ (1) industrialization of France and the need to train workers to handle different and improved equipment; (2) war and the need to train workers quickly and efficiently for the right jobs. The quality of the guidance offered has improved with the progress of psychology, including research on adaptability of workers to their jobs.⁵⁹

It was reported in 1960 that most of the *départements* of France had a vocational guidance center, and the number of children seen each year had risen to over 200,000.⁶⁰ A report 6 years earlier had noted that because of limited staff the centers were not able to examine all children leaving school at the age of 14. Elementary schools closest to the centers tended to be serviced, urban schools being given preference because their students were the ones most likely to enter the factories. In contrast, rural children rarely were examined.⁶¹

The usual procedure is for a number of elementary schools to be assigned to a center. On a specified day children from a particular school will arrive at the center for a series of tests and interviews. To save time, the schools are supposed to send the school records of each child to the center beforehand. Moreover, schools are urged to supply medical records to the centers so that only the doubtful cases will have to be given physical examinations.

The whole operation is considered a 1-day affair, during which the school record and medical record are consulted, aptitude tests are taken, inquiries made into the social background of the child, and literature is distributed on work opportunities. Ideally, visits to factories and vocational training schools are included when possible.

Each child who visits the center receives a certificate providing information on vocational aptitudes, and specifying any trades likely to be beyond his or her physical capacity. Some occupations will only accept those who have a certificate indicating they were examined by a vocational guidance center.

⁵⁷ *Vocational Guidance in France, op. cit.*, p. 14.

⁵⁸ *Ibid.*, p. 1.

⁵⁹ *Ibid.*

⁶⁰ *Education in France, No. 12, December 1960, p. 9.*

⁶¹ *Vocational Guidance in France, op. cit.*, p. 29.

Job placement is an essential aim of the guidance process, though the centers do not secure jobs for young people except indirectly through their contacts. In some parts of France experiments in coordinating job placement agencies and the vocational guidance centers have been undertaken.⁶²

In the last decade, the services of the centers have expanded and upon request they give examinations to the mentally deficient, the blind, and to other types of children brought to the centers on the initiative of the parents. Some vocational schools have requested help from the centers in the matter of selecting applicants for admission, and some factories have obtained similar help in selecting people for their apprenticeship programs.

Lack of sufficient funds held back the development of vocational guidance centers in France until 1951 when the national government assumed responsibility for paying the salaries of the staff of the centers. Previously, the centers had to appeal for funds to local governments, to occupational groups, and to private associations.

The national government had displayed an interest in vocational guidance as early as 1922, when an official decree specified that vocational guidance was to be administered under the vocational education section of the Ministry of National Education. In 1928, a group of people interested in vocational psychology founded an institute to do research and to train personnel to do counselling. In 1941, it became a public agency and now offers a 2-year course to prepare people for counselor jobs with the vocational guidance centers. Applicants for the training course must be 21 years old and have the equivalent of a diploma from the academic secondary school. About half of those accepted are elementary school teachers.⁶³

Vocational Teachers and Their Training

The training institutions which prepare teachers for vocational schools offer programs for both those who plan to teach academic subjects (i.e. French, mathematics, science) and those who will teach vocational and trade subjects. The highest level of training is offered in the Higher Normal School for Vocational Education, located at Cachan near Paris. Those who plan to teach in *collèges techniques* and in national vocational schools enter the Higher Normal School, the entrance requirement being completion of the *baccalauréat*, or its equivalent, from a secondary school.

The course at Cachan lasts 3 years. Through a concentrated program in the first 2 years, students prepare for certificates in their fields of specialization—i.e. history, mathematics, applied science, and the

⁶² *Ibid.*, p. 31.

⁶³ *Ibid.* p. 24.

like—which are the equivalent of completion of a first university degree (*licence*). The third year at Cachan is devoted to teacher training, including practice teaching. At the end of the year students are awarded the C.A.P.E.T. (*Certificat d'Aptitude au Professorat de l'Enseignement Technique*), which is similar to the C.A.P.E.S. granted to academic secondary school teachers.

Prospective teachers for the apprenticeship centers are trained in one of the five normal schools for apprenticeship, the three for boys being located in Paris, Lyons and Nantes while the two for girls are at Paris and Toulouse. A 1-year course is offered to those who are graduates of an academic or vocational secondary school. Teachers of vocational subjects in apprenticeship centers are required to have had 5 years work experience in the trade which they are teaching.

Changes Since World War II

A committee, known as the Armand-Rueff Committee, was appointed in 1960 by the French Government to study the obstacles in the way of expansion of the French economy. Among the problems mentioned in the report of this committee was "the existence of certain flaws in the present structure of the French system of education."⁶⁴ The committee suggested, among other things, that vocational and agricultural education be combined in a new type vocational secondary school. In addition, the academic secondary schools would add industrial, commercial, and agricultural sections, with all sections having certain courses in common.⁶⁵

The Armand-Rueff Committee also proposed that vocational training centers for adults be developed which would provide courses both to advance them in their work, and to raise the cultural level of the public. Moreover, the committee suggested more encouragement of people seeking to complete their secondary education by part-time vocational courses (*promotion du travail*) while working on a job, with the eventual hope of securing admittance to institutions of higher education.⁶⁶

For the purposes of revitalizing French education, vocational education has a special advantage in that it is relatively new and less tied to tradition. Other advantages of vocational education have been listed as follows:⁶⁷

1. It can absorb some of the numerous pupils who failed academic programs.
2. It has sound appeal to the working people.

⁶⁴ *Education in France*, No. 12, December 1960. p. 5.

⁶⁵ *Ibid.*

⁶⁶ *Ibid.*

⁶⁷ King, Edmund J. *Other Schools and Ours*. New York: Rinehart and Company, 1958. p. 57.

3. It enables boys and girls of different faiths to mingle since even the private vocational schools are not usually affiliated with a church.

In summarizing the changes already introduced in France in vocational education since World War II one would include:

1. Creation of a technical *baccalauréat* equivalent to the diploma from the classical and modern sections of the academic secondary school.
2. An attempt to provide a kind of education which would reach and stimulate those not inclined toward academic education. The apprenticeship center is an outstanding example in this regard.
3. A general attempt to raise the status of vocational education. Included here is the reform of 1959 which gives the vocational schools new names of higher status, namely *lycée* and *collège*.

Problems still to be solved in the field of vocational education in France include the need of more general vocational education and less of the narrow, single trade preparation; and the need of more liaison with the world of work, including actual production.⁶⁸ Greater effort is being called for, also, to provide enough schools and facilities so that large numbers of applicants for vocational education will no longer be turned away.⁶⁹ It has been pointed out that those turned away by vocational schools are not likely to be accepted by other types of schools.⁷⁰ Another complicating factor is the teacher shortage; in 1960 it was reported that one-third of the teaching posts in vocational schools were held by people not fully qualified.⁷¹ Finally, there is the slowly dying tradition that vocational education is not true secondary education. All of the reform proposals have tried to remedy this particular problem.

The reform of 1959 includes a declaration of the equality of vocational education with classical education, and thus seeks to give a new prestige to practical activities in accordance with the nature of modern civilization.⁷²

Under what is entitled the Third Plan (1958-61) for economic development of France, the requests for such services as roads and schools exceeded the available funds. Consequently, in the budget cuts, education received only 80 percent of its total request. Under the Sec-

⁶⁸ Dobinson, *Educational Forum*, January 1957, *op. cit.*, p. 166.

⁶⁹ *Encyclopédie Pratique de l'Éducation en France*, *op. cit.*, p. 130; *Education in France*, No. 7, September 1959. p. 30.

⁷⁰ Wykes, *op. cit.*, p. 90.

⁷¹ *Education in France*, No. 12, December 1960. p. 29.

⁷² Ministère de l'Éducation Nationale. *La Vie Scolaire en France*. Paris: 1961. p. 91-92.

ond Plan (1953-57) education received 65 percent of what had been requested.⁷³ As a result, the expansion of education was slowed down, particularly vocational education. This came at a time when there was a shortage of skilled workers and technicians in France.⁷⁴

Under the Fourth Plan (1962-65) education is to be given priority. While academic secondary education is to have a steady growth, there is to be an acceleration in the expansion of secondary vocational and technical education.

The planning commission of the national government is assembling data on occupation and manpower needs for the next 10-15 years so as "to determine the desirable distribution of the estimated total numbers as between: general, technical and vocational education at secondary level [and] arts, science, law, medicine, engineering and so on at university level."⁷⁵ The commission stresses, however, that there will be no coercing of students into particular fields and no forgetting that "education serves humanistic and democratic ends which are largely distinct from strictly economic needs and which must be the primary consideration."⁷⁶

⁷³ Polgnant, Raymond. *The Planning of Educational Expansion in Relation to Economic Growth: I—France*. Paris: Organisation for European Economic Co-operation, 1961. p. 24.

⁷⁴ *Ibid.*, p. 25.

⁷⁵ *Ibid.*, p. 15.

⁷⁶ *Ibid.*, p. 17.

Chapter VIII

HIGHER EDUCATION IN FRANCE

IN 1950, 2 percent of the youth of France of university age succeeded in securing the first university degree (*licence*) or an equivalent diploma; by 1960, the figure had increased to 3.3 percent. It is predicted that by 1970, 7.2 percent of the eligible age group annually will receive a university degree, or an equivalent diploma.¹

Higher education in France is offered chiefly in the 16 public universities, which are supported and supervised by the national government. A relatively small number of students receive their higher education in small specialized schools, called *grandes écoles*, often attached to departments of the government, which train executives and specialists primarily for those departments. In addition, a very small portion of higher education enrollment is found in private institutions, including those affiliated with religious groups. Enrollments in higher education, public and private, for the academic year 1961-62, equalled 268,500, of which 31,500 were in the national *grandes écoles* and 11,000 in private *grandes écoles* and university faculties.

Most of the 16 public universities have the traditional faculties (similar to colleges within a university in the United States) of law, medicine, humanities (letters), and sciences. One does not get a true picture, however, of the vast array of courses and programs of study available, including many in applied fields, unless account is taken of the numerous institutes attached to the universities. These institutes sponsor both research and course work in specialized and applied fields for which the traditional faculties have not provided. The majority of the students take their work in the universities, and many enrolled in the *grandes écoles*, through a cooperative arrangement, take much of their course work in a faculty of a university.

Most French universities date back to the Renaissance. Two trace their origins to the 13th century; six were established in the 1400's and three more in the 1500's. The last to be established was the University of Lyon, in 1888.

¹ L'Education Nationale, 15 février, 1962. p. 12.

The French universities from the 15th century on, however, did not thrive and sank into mediocrity.³ During the period immediately preceding the French Revolution the universities had decayed to the point that much of the intellectual progress of the country was developing outside of, and at times even in opposition to, the universities.³ Because of this, and for other reasons of a political nature, the universities were suppressed during the Revolution. During the Revolution two institutions were established which have grown into famous *grandes écoles*, namely the *Ecole Polytechnique* and the *Ecole Normale Supérieure*.

Napoleon reorganized higher education by a decree of May 1, 1808. The various university faculties were restored but all were placed under direct control of the national government; even student fees were paid directly to the national government. The various faculties (law, humanities, medicine, etc.) in a given geographic area often did not work closely together and did not think of themselves as constituting a university. The French universities were reconstituted by a law of July 10, 1896, which grouped together the faculties in a given geographic area to constitute the University of Nancy, the University of Bordeaux, and so on.

Although operating under the Ministry of National Education, the universities by the law of 1896 were given a certain amount of autonomy, including the right to handle their own finances. The newly created university councils had disciplinary powers over students and teachers. Professors were appointed by the Ministry of National Education, but on the recommendation of committees and councils of the university. Professors' salaries were paid by the national government.

Each university was authorized to receive gifts and grants, and student fees were paid directly to the university. With this new autonomy it was possible to propose and finance new courses and programs of study and to expand the scope of the universities.

French higher education had been slow to respond to changes brought about by such forces as the industrial revolution. The law of 1896 was intended to revitalize the cultural life of France, particularly in the provinces through the 15 provincial universities. It was hoped that each university would reflect and encourage the cultural interests of its region, and to some extent this is true today. The course work centered around the clock-making industry, offered at the

³ Thabault, Roger. "Professional Studies in the University and in Special Professional Schools—France." *Yearbook of Education, 1959*. New York: World Book Co., 1959. p. 197.

⁴ Kandel, I. L., editor. "The Educational System of France." *Educational Yearbook 1934*. New York: Bureau of Publications of Teachers College, Columbia University, 1934. p. 39.

University of Besançon, is frequently cited as an example. Nevertheless the provincial universities have not been able to operate on a par with the University of Paris, and a decentralization drive is under way again as the nation seeks to avoid concentrating most of its intellectual resources in the Paris area.

Greater flexibility was given to French higher education by a decree of 1920 which authorized the creation of institutes alongside the traditional faculties. By 1961 there were over 150 of these institutes connected with the 16 universities. Each institute offers work in a specific field, such as physical education, sociology, engineering, economics and education. Each is headed by a professor from one of the faculties of the university. He represents the institute on the council of the faculty or on one of the university councils. Some members of the institute devote full time to their work while others may teach part time in one of the faculties of the university.

The connection between an institute and the university may be a very tenuous one, particularly for fields of study which are new or are not fully accepted by traditionalists within the university. As a result, the institutes have been free to offer all kinds of courses and even to offer many of the same courses available in the regular faculties of the university. Thus, some phase of economics may be offered by several different institutes within the same university; moreover, more than one faculty of a university may be offering work in the same field. Along with this system goes a vast array of small libraries and laboratories often serving roughly the same area of knowledge. The reform plan of 1946 (Langevin Plan) proposed better coordination of institutes and faculties in French higher education, but the plan was not adopted.

In addition to the 16 cities which have universities, several other cities have public facilities offering one or more years of higher education, and the trend is to increase the number of cities with such facilities. For example, in the late 1950's certain cities were authorized to offer the first year of higher education in science or in the humanities; such courses are now available in 15 different cities of France. The 1-year programs in science were the first to be offered because of the shortage of university facilities in science. All of the 1-year programs are now seen as a means of meeting the problem of rising enrollments and as a device to effect greater decentralization and democratization in higher education.

The first 3 years of the program in pharmacy can be taken at a national preparatory school of medicine and pharmacy at Amiens and at Rouen. Similarly, the entire program in pharmacy and in medicine is offered at Limoges, at Tours, and at Rouen. Part or all of the course work for a degree in law is available at law institutes

or schools of law at Pau, Nice, Rouen, Le Mans, Tours, Limoges, and Nantes.

Autonomy of the University

Control over all these facilities of higher education, whether it be an institute, a university, or a course offered in connection with a university degree program, is held rather firmly by the national government through the Ministry of National Education.

Official publications stress the autonomy of higher education in France, and there is not the close government supervision which characterizes lower levels of French education. An English observer of French higher education reports that the weight of the Ministry of National Education is felt, though in talking to French professors he found little serious disapproval of the way the Ministry handled higher education. They tended to tell him about the traditional liberty of the universities, frequently giving the example of the freedom allowed to choose a textbook to go with the prescribed syllabus.⁴

A recent report on freedom in French higher education asserts that the government is driven by necessity, because of its concern to meet the country's need for trained personnel, to organize and regulate examinations and courses of study and "to meddle in the affairs of the university."⁵ The report further notes that government intervention is encouraged by the fact that the French universities depend on the national government for most of their money (professors' salaries are paid by the national government) and the government is not inclined to give money without adequate control. Thus, for example, university budgets are submitted in advance to the national government.⁶ Figures for 1954 indicate that of the 17,861 million francs spent on public higher education, only 1,576 million, or approximately 9 percent, was raised by the universities.⁷ While stressing that the Ministry of National Education does not act without prior consultation with the interested faculty or group within the university, a new official publication says that the national government is of necessity becoming more active as higher education expands; increasingly the national government is having to play the role of arbiter in reconciling higher education programs with priorities for the nation determined at the national level.⁸

⁴Jones, P. Mansell. "The National System of Education in France." *Universities Quarterly*, May 1953. p. 279.

⁵Bulletin of the Committee on Science and Freedom. *Science and Freedom*, No. 19. June 1961. p. 17.

⁶*Ibid.*, p. 18.

⁷Thabault, Roger. "Fiscal Management in France." *Yearbook of Education*, 1956. London: Evans Bros. Ltd., n.d. p. 375.

⁸France. Ministère de l'Éducation Nationale. *Encyclopédie Pratique de l'Éducation en France*. Paris: 1960. p. 348.

The Ministry of National Education also appoints the professors to the universities, but it handles these and similar matters, such as promotions of university teachers, largely through two consultative committees which are composed of professors elected by their university and other individuals selected by the Ministry of National Education.

The first of these two committees, the Council on Higher Education (*Conseil de l'Enseignement Supérieur*), has 35 members selected by the teaching staff of the universities, 14 appointed by the Minister of National Education, and 4 members *ex officio*. The second committee, the Committee for Consultation of the Universities (*Comité Consultatif des Universités*), has three-fourths of its members elected by the staffs of the universities and one-fourth appointed by the Minister of National Education. The degree of centralization is indicated by the fact that the Committee for Consultation of the Universities meets in Paris and draws up a list of nominations for the different posts in all the universities of France. Formal appointment to a university post is made by the Minister of National Education.

The head of a university, called the rector, is appointed by the Minister of National Education. The rector is assisted by two university councils; the first of these, the faculty council, is made up only of the professors, and it deals with various administrative matters, including staff problems. The second council, the assembly of the faculty, includes all the regular teaching staff and deals with pedagogical matters, such as revision of curriculums.

The specialized schools of higher education, *grandes écoles*, are under the control of the various government agencies for which they prepare personnel. The system is so tightly knit that there is considerable criticism of inbreeding, and it is claimed that largely because of the priority accorded to persons trained in the *grandes écoles* graduates of universities often have difficulty in securing top level jobs in government. While the *grandes écoles* offer a higher education rather specifically oriented toward preparation for work, their graduates are said to dominate intellectual life in France. In considerable measure they do so by controlling appointments to key jobs in the national government,⁹ an important consideration in a country dedicated to strong central control.

Enrollments

Enrollments in the *grandes écoles* are small relative to total enrollments in higher education. Only 16,500 enrolled in the *grandes écoles* for the school year 1956-57 compared to 165,200 in the public uni-

⁹ Park, Julian. "Education." *The Culture of France in Our Time*. Ithaca, New York: Cornell University Press, 1954. p. 285.

versities. During the same year, 4,500 students enrolled in Catholic seminaries and 8,146 in Catholic institutions of higher education. These Catholic institutions are called faculties rather than universities. There were five such faculties in 1959-60 with the following enrollment:¹⁰

Paris.....	7,320
Lille.....	2,719
Angers.....	1,531
Lyon.....	1,931
Toulouse.....	577
Total.....	14,078

Although the Roman Catholic religion prevails in France, the country in the late 19th and early 20th centuries came to be dedicated to the twin principles of public education and separation of Church and state. Moreover, only the degrees and diplomas issued by the national government have any legal status; hence, students in Catholic faculties find it necessary to take examinations conducted by the state. The Catholic faculties of higher education were founded in 1875 by the Church in anticipation of the drive toward public education which came in the 1880's. The Catholic faculties have continued to serve a very small portion of those enrolled in higher education.

Table 37.—University Enrollments in France: selected years, 1949 to 1961¹

Universities	1949-50	1952-53	1955-56	1956-57	1958-59	1960-61
	Enrollments					
Paris.....	56,829	61,166	64,151	67,806	70,538	77,796
Aix.....	7,186	8,050	9,679	10,724	13,903	15,486
Besancon.....	963	1,037	1,157	1,841	2,165	2,217
Bordeaux.....	7,961	8,802	9,511	9,853	11,281	12,267
Caen.....	3,301	3,371	3,826	4,338	5,319	6,357
Clermont.....	2,043	2,285	2,758	3,106	3,688	4,731
Dijon.....	1,729	2,036	2,426	2,681	3,107	3,706
Grenoble.....	4,244	4,262	4,685	5,446	7,083	10,007
Lille.....	6,162	6,635	7,406	8,483	10,585	11,503
Lyon.....	8,342	9,237	9,258	9,981	10,681	13,315
Montpellier.....	5,330	5,634	7,054	7,440	8,958	10,509
Nancy.....	4,441	4,910	5,281	5,690	6,789	8,294
Poitiers.....	4,017	4,489	4,546	4,892	5,877	6,843
Rennes.....	5,982	6,473	7,161	8,605	9,950	11,092
Strasbourg.....	5,327	5,420	5,843	5,712	6,879	8,479
Toulouse.....	7,722	7,554	8,054	8,571	10,108	12,070
Total enrollments.....	131,569	142,366	152,246	165,169	186,101	214,672

¹ *Informations Statistiques*, No. 42-43, septembre-octobre, 1962. p. 239.

¹⁰ Institut National de la Statistique et des Etudes Economiques pour la Métropole et la France d'Outre-Mer. *Annuaire Statistique de la France, 1958*. Paris: Presses Universitaires de France, 1958. p. 48; *Informations Statistiques*, No. 34-35, décembre 1961. p. 381-382.

Table 38.—Increase in enrollments in selected universities: 1939, 1955, 1959¹

Selected Universities	1939	1955	1959
Aix-Marseille.....	3,634	8,947	13,093
Caen.....	1,563	3,786	5,319
Clermont-Ferrand.....	970	2,631	3,688
Dijon.....	927	2,323	3,107
Lille.....	3,282	7,229	10,585
Montpellier.....	3,016	7,481	8,858
Rennes.....	3,000	7,077	9,960

¹ France. *Documents pour la Classe: Moyens Audiovisuels*, No. 76, 2 juin, 1960, p. 13.

Higher education enrollments in France doubled between 1919 and 1940 and tripled in the 20-year period since 1940. The growth has been particularly rapid in the 1950's and in the 1960's.

Since 1939 there has been a noticeable change in the size of French universities which undoubtedly has affected their character. Some, like the universities of Clermont-Ferrand and Dijon, had less than 1,000 students in 1939 and were hardly different from a small American liberal arts college. In 1959, both Dijon and Clermont-Ferrand had more than 3,000 students. As late as 1956, however, five of the French universities had less than 5,000 students and only two (Paris and Aix) exceeded 10,000 students. As enrollments continue to increase, a number of the French universities have become large institutions, i.e., enrollments exceeding 10,000. The University of Paris continues to have more than one-third of the total university enrollment in France.

Interestingly enough, the rapid growth of French higher education has occurred without the establishment of a single new university; this is in contrast to England where the growth of higher education has been slower, and yet seven new universities have been established since World War II. On the other hand, as was indicated earlier in this chapter, France has a number of cities which, though lacking a university, have one or more university faculties, and there are a number of other cities with "university colleges" offering the first year of university study. In the light of rapidly growing enrollments in higher education, it seems likely that the facilities in some of these cities will expand into full-scale universities. In fact, it was announced at the end of 1961 that a university is being established at Nantes, using as a foundation the faculties of medicine and science already there.

Because students in French higher education tend to specialize rather heavily in one field, even at the undergraduate level (*licence*), it is important to see which fields have absorbed the rising enrollments. Comparing 1949 with 1961 for instance (table 39), it is clear

that the field of law, which had a relatively large enrollment in 1949, has not increased at all. On the other hand, enrollments in science have tripled, while those in the humanities increased considerably, but not to the point of doubling. By 1959 enrollments in science exceeded those of any other faculty.

As late as 1956 almost half of the students in France were receiving their entire higher education in a faculty offering specific preparation for a profession, namely law, medicine, or pharmacy; the exact percentage enrolled in these three faculties was 44.7.

In 1960, 82.5 percent of those who finished the academic secondary school went on to higher education.¹¹ Continued enrollment increases

Table 39.—Higher education enrollments by faculty: selected years, 1937-62¹

Year	Faculty enrollments					Total
	Law	Science	Letters	Medicine	Pharmacy	
1937-38.....	20,400	10,173	16,750	17,930	6,022	71,275
1949-50.....	39,056	25,306	35,279	29,491	7,256	136,388
1957-58.....	35,171	54,337	51,372	31,156	8,309	180,345
1960-61.....	33,980	77,250	59,550	40,305	.....	211,085
1961-62.....	35,870	84,500	67,810	48,465	.....	236,645

¹ *Education in France*, No. 8, December 1960, p. 3, and No. 16, January 1962, p. 8. The data for medicine in the 1960-62 period include pharmacy.

Table 40.—Enrollment in universities by fields of concentration: 1960-61¹

Universities	Total students 1960-61	Fields of concentration					
		Law	Sciences	Letters	Medicine	Pharmacy	Theology
Paris.....	72,440	14,358	19,319	22,825	13,159	2,778	.....
Aix.....	15,247	2,109	5,482	4,802	2,123	721	.....
Besancon.....	2,217	.....	1,081	955	143	88	.....
Bordeaux.....	12,072	2,159	3,628	3,564	2,209	452	.....
Caen.....	6,149	945	2,295	2,298	452	159	.....
Clermont.....	4,731	490	2,034	1,505	359	343	.....
Dijon.....	3,706	838	1,211	1,435	152	70	.....
Grenoble.....	9,175	1,407	4,191	3,123	295	100	.....
Lille.....	11,137	1,845	3,907	3,023	1,677	685	.....
Lyon.....	12,144	1,723	4,528	3,253	2,183	457	.....
Montpellier.....	10,451	1,474	3,509	2,932	1,743	793	.....
Nancy.....	7,428	1,027	2,697	2,165	1,138	401	.....
Poitiers.....	6,731	1,142	2,207	2,484	622	276	.....
Rennes.....	10,736	1,292	4,092	3,211	1,652	490	.....
Strasbourg.....	8,443	1,453	2,735	2,328	1,183	378	366
Toulouse.....	11,693	1,372	5,196	3,261	1,417	447	.....
Total enrollments.....	204,509	33,634	68,062	63,163	30,587	8,697	366

¹ *Association Internationale des Universités Bulletin*, mai 1962, p. 134. The data were supplied by the Bureau Universitaire de Statistique de France.

¹¹ *L'Éducation Nationale*, 29 septembre 1960, p. 3.

are expected for French higher education, particularly with the rapid increases in enrollment in the academic secondary schools. Enrollments in higher education proportionate to the total population are higher in France than in any other Western European country except Austria. The figures are 5 students in higher education per 1,000 population for France, and for Austria, as compared to 4 for Sweden, 3 for Germany, 2 for England, and 17 for the United States.¹³

Democratization of Higher Education

The rapid increase in enrollments in higher education in France portends a subtle though important change in the social structure of the country as sizeable numbers of children from the families of farmers and factory workers for the first time begin to enter higher education. The student body for higher education was long drawn from the middle class and a university degree insured one of a place of importance in the social structure.¹⁴ Reports on French higher education in the 1950's continued to stress the fact that less than 9 percent of the students came from families associated with farming or factory work even though at least half of the French population was engaged in such occupations.

A recent study (published in 1960) of the social origins of students in French universities indicates a very slow trend over the preceding 20 years in the direction of what is called democratization of higher education.¹⁴ The study shows that in 1959, 3 percent of the university students came from families where the father was a factory worker, 1 percent from farm worker families, and 5 percent from farm-proprietor families, or 9 percent in all. During the 1950's other changes were taking place as indicated in the following data on percentage of students whose fathers were in selected occupations:

	Percent	
	1950	1959
Members of liberal professions.....	19	13
Heads of enterprises.....	15	6
Civil or military officials.....	25	28
White-collar employee groups.....	13	17

The influx of new groups of people into higher education is related to several factors operating on the French scene. First of all, it is a reflection of higher level of aspiration among young people, though, of course, the number involved is still only a very small percentage

¹³ Elvin, Lionel. "Reform in West Europe's Post-Primary Education." *Phi Delta Kappan*, November 1961, p. 53. The enrollment data were taken from: UNESCO. *Current School Enrollment Statistics*. Paris: 1960. Population data from U.N. compilations.

¹⁴ Thabaut, *Yearbook of Education, 1959, op. cit.*, p. 202.

¹⁵ *Informations Statistiques*, No. 22, juin-juillet 1960, p. 299.

(less than 8 percent) of the group reaching university age. Then too, the growing complexity of the French economy, and of occupations in France, places a premium on educated manpower.

Moreover, there has been a deliberate attempt on the part of educational reformers to remove the barriers which have prevented talented children of the lower income classes from having the opportunity to develop their talents. For example, a new door to higher education was opened by the decree of 1956 which enables certain people without the *baccalauréat* to enter higher education by passing a special examination. The new door has been called the narrow door (*porte étroite*) because so few gain access to higher education this way. In 1960, 727 people took the examination and 279, or 39 percent, passed. The average age was 26 for the men and 28 for the women. Most of the men had taken vocational or technical programs on the secondary school level, and they came from the lower social groups.¹⁵

The financial barrier to higher education is also under attack. Tuition and fees at a French university would amount to less than \$100 per year, and room and board can often be found at reasonable rates in dormitories and cafeterias subsidized by the national government. Yet, in terms of the standard of living prevailing among the lower classes, the cost of higher education, when coupled with the loss of income which occurs when an 18-year-old goes to a university rather than to work, seems prohibitive to many persons in France. For this reason a system of scholarships from the national government has been developed and extended. The number of scholarship holders increased from 36,000 in 1957-58 to 49,000 in 1960; higher education enrollments during the same period increased from 171,000 to 229,000. An editorial in an official French journal noted this increase in scholarships but went on to comment:

If the social origin of students is considered, the evolution of the last 20 years shows a *slight progress toward democratization*, and as the number of students increases the number of scholarship holders also increases.¹⁶

The democratization of higher education is due primarily to the increased numbers of students from the lower middle class rather than to any sizeable influx of children of workers or farmers. It was reported in 1962 that "the son of a doctor or lawyer today has a 200 times greater chance of entering higher education than the son of a laborer," and "the current democratization of the University, although very real, remains very limited."¹⁷

¹⁵ *La Dépêche du Midi* (Toulouse), 10 mai, 1961. Quoted in *L'Actualité-Pédagogique à l'Étranger*, juin 1961. p. 7.

¹⁶ *Education in France*, No. 12, December 1960. p. 30.

¹⁷ *Education in France*, No. 18, May 1962. p. 28.

It is natural in France that scholarships would come from the national government since all levels of education are under its centralized control and are largely financed and supported by national funds.

Changes in the scholarship system instituted in 1959 provided that those receiving a scholarship grant in a secondary school would have the grant automatically renewed as they entered higher education. The scholarship money for higher education is paid in three installments during the year, in amounts according to three different categories: the first year of university study, the remainder of undergraduate study (the *licence*), or study beyond the *licence*. The amount paid also varies, depending on whether the student lives at home. In 1961 the scholarships ranged in value from \$126 to \$528 per year for undergraduates, and from \$252 to \$720 for graduate level study.

The scholarships are granted by the rectors of the universities after consultation with regional commissions. Each student must indicate the financial condition of his family. The scholarships are to be used only at the university nearest to the student's home, but exemption from this regulation may be arranged in certain cases.¹⁸

Methods and Content

The huge enrollment increases have presented material problems which threaten the quality of French higher education. In the 1950's Professor P. Mansell Jones from England analyzed this problem and reported his findings in a series of articles in the *Universities Quarterly*, an English publication. He quoted from the French review, *Esprit*, March-April 1949, which said that the Sorbonne (University of Paris) faculty of letters (humanities) had seen its student enrollment double in a short period while it had the same premises and same number of professors as in 1914. The faculty of letters in 1949 at the Sorbonne had seven teachers of English for 1,500 students; there were 200 to 300 students in a class. Professor Jones further quoted from articles appearing in *Le Figaro Littéraire*, May 3 and May 4, 1951. Here the notorious story was repeated of the chemistry laboratory with one thermometer for 800 students. In the same vein, the library of the Sorbonne was reported as having 360 seats in 1951, or exactly the same as in 1893, though there were 10 times as many students in 1951.¹⁹

Jones attributed the lack of facilities and staff to insufficient funds. At the same time he took note of the staffing system which traditionally relied on a small number of eminent professors to teach huge numbers

¹⁸ France. Ministère de l'Éducation Nationale. *Annuaire de l'Éducation Nationale*, 1960. Paris: 1960. p. 169-170.

¹⁹ Jones, P. Mansell. *Universities Quarterly*, May 1953, *op. cit.*, p. 278-280.

of students. He did cite the existence of some seminars taught by graduate students. Professors in a French university are required to have a doctorate whereas the rest of the teaching staff in higher education usually consists of people working toward a doctorate.

In reporting efforts to increase facilities and staff in 1959 an official French publication noted that the faculty of science of the University of Paris, in 1958, had one teacher for every 53 students.²⁰ In 1960 the universities of France were reported as having 9,870 teachers; of these 4,420 were assistants and 1,600 were monitors.²¹ A decree of September 27, 1960, created a new teaching post (*maître-assistant*) below the level of assistant professor (*maître de conférence*) but above that of an assistant. People filling these new posts will help teach first-year courses under the supervision of professors and *maîtres de conférences*, and will direct exercises and practical work.²²

As reported in 1961 the staffing problem in higher education remained critical:²³

It is well-known fact that the average number of students in the French faculties in proportion to teaching staff has been for a long time far higher than in many other important countries. There is no doubt that it still remains so.

In 1961, an increase of more than 1,500 teaching posts in higher education was announced; of these, 341 were for full professors and 1,058 for the newly created post of *maître-assistant*.²⁴ At the same time, there was much construction of new facilities of higher education and enlargement of old facilities. In the 1962 budget of the Ministry of National Education, over one quarter of the funds for school construction were reserved for higher education, with first priority going to the science faculties.²⁵

Professor Jones, in his analysis, asserted that the crisis in French higher education was not so much a material one as a matter of the "spirit, content and methods of academic education."²⁶ He quoted from a study published in the April 1952 issue of the Paris review, *Esprit*, which found students very critical of French higher education.²⁷ Professor Jones prefaced his remarks with a comment that much of this seems like the usual tug of war between student and professor, with the students criticizing the dull teaching and the professors speaking of the unprepared students. The study was

²⁰ *Education in France*, No. 8, December 1959. p. 4.

²¹ *Education in France*, No. 12, December 1960. p. 29-30.

²² *Ibid.*, p. 37.

²³ Prenant, M. "The Educational Aspect of the Problem." *Informations Universitaires et Professionnelles Internationales*, septembre 1961. p. 20.

²⁴ *Education in France*, No. 16, January 1962. p. 8.

²⁵ *Ibid.*, p. 17.

²⁶ Jones, P. Mansell. "The National System of Education in France." *Universities Quarterly*, August 1953. p. 387.

²⁷ *Ibid.*, p. 387-393.

based on questionnaires given to students and professors; from these it would seem that few students were satisfied with the courses they had taken. The professors were criticized for pouring out a stream of knowledge without appearing generally to care whether it was assimilated or not. Furthermore, a lack of connection or coordination between subjects was common, and the individual professor seemed little concerned about what was offered by other professors. Most of the subjects were criticized for lacking a "sense of actuality," i.e., for not being related to important concerns of the present-day world.

The students characterized the professors as aloof, and reportedly, contacts between professors and students were poor, though somewhat better in the provinces. The professors, on the other hand, blamed the students: they were accused of using methods learned in the academic secondary school: "servilely copying the lectures dictated" in order to reproduce them on examinations. In the opinion of the professors the average level of the entering student was low, and blame for this was attributed to encyclopedic syllabuses and defective methods.²⁸

A later report (1961) from a professor at the University of Paris is in the same vein:²⁹

Our fellow teachers of mathematics, and physics, much as we naturalists, are of the opinion that the young men who come up to [the] university nowadays are mostly inadequately adapted, mentally and intellectually. Of course, we are speaking of the majority, because now as always, there exists a core of excellent students.

French newspapers and journals in the 1960's continue to reflect criticism of higher education, including the students' claim that the certificates in higher education demand bookish knowledge "where memory plays the chief role rather than intellectual competence"; and the counterclaim of the university professors that students no longer know how to express themselves orally or in writing, thanks to secondary school methods which encourage cramming to the detriment of intellectual work.³⁰

A native-born Frenchman, looking back on his days as a student in French higher education, from the perspective of teaching in American higher education, describes the French professor as wanting the student to regurgitate his lectures on the examinations. Moreover, preparation for these examinations from sources other than the professor's lectures is reportedly not particularly useful. In short, the French

²⁸ *Ibid.*, p. 391.

²⁹ Prenant, M. "The Educational Aspects of the Problem," *op. cit.*, p. 21.

³⁰ For example see: "La Sclérose de l'Enseignement Supérieur." *L'Actualité Pédagogique & l'Étranger*, janvier-février 1962. p. 58-67. (Reprint from *France-Observateur*, Paris, 16 novembre, 1961.)

university student is not encouraged to think so much as to collect a body of facts.²¹

Official publications indicate that a French professor is free to dig deep into an area of his choice and lecture on it, holding students responsible for using course outlines and syllabuses in the library to work on their own to prepare for the examinations.²²

Until recently, attendance at courses in a French university was usually optional. In the last few years, however, there has been an increasing tendency to require attendance for certain courses, particularly for first-year students and for the laboratory or practical classes associated with science courses.

Those who take their first year of higher education in a *classe préparatoire*, offered in a secondary school, take such work not only in a secondary school building but also in a secondary school atmosphere; some of the girl students, for example, continue to wear the smocks and aprons associated with secondary schools. These schools have very small libraries, and the teachers of these classes, while often holders of the *agrégation*, typically do not have a state doctorate.

On the other hand, classes are much smaller in the *classes préparatoires* than in the universities and the system seems to work, perhaps because of the high caliber of the students who enter the *classes préparatoires* and because the French system seems to concentrate on learning the materials from a relatively few books for the purposes of passing examinations.

The wastage of intellectual talent was examined in an editorial of the official French publication, *Education in France*, No. 8, December 1959. Reasons given for the high failure rate were:

1. Traditional severity of French examinations.
2. The increase in students may not mean a proportionate increase in students with ability.
3. Lack of efficiency in teaching methods and outdated teaching procedures.
4. Insufficient number of professors and assistants.

The editorial concludes an enumeration of the large numbers who fail the examinations with the following statement:

Such are the reasons why the problem of the results of university instruction is being raised officially as one of the most serious and urgent problems in French education.

Failure Rate, Examinations, Certificates

Though enrollments in French higher education institutions have increased, a surprisingly small number of students finish their studies

²¹ Yale French Studies. *French Education*. New Haven, Connecticut: Yale University, 1959. p. 101.

²² *Annuaire de l'Éducation Nationale, 1960*. op. cit., p. 118.

and receive degrees. In 1957-58, for example, only 5,675 undergraduate degrees were granted, plus 2,168 degrees in law, which is undergraduate study, though highly specialized. Since 1958, enrollments and the number of degrees granted have risen sharply. In 1960-61, 10,039 undergraduate degrees plus 1,894 degrees in law were awarded, but even that figure is relatively small. One report published in 1961 stated that 65 percent of those who enter French higher education institutions fail to complete their programs. This is in contrast to the record in English universities where the failure rate is relatively low, presumably because only the most fit are selected for higher education. In France, the failure rate remains high despite the rigorous selection exercised at the end of the secondary school.

There is one agency to provide some guidance to French students, namely the University Bureau of Statistics and School and Professional Orientation, or B.U.S. Established as a private body in 1932, it became an autonomous public agency in 1954 under both the Ministry of National Education and the Ministry of Labor and Social

Table 41.—Diplomas granted by university faculties in France by selected years: 1949-1961¹

Faculties and diplomas	Number of diplomas granted			
	1949-50	1956-57	1957-58	1960-61
Law:				
Capacity.....	804	1,072	822	602
Licence.....	2,771	2,952	1,346	1,894
Doctorate (d'Etat).....	340	224	267	.....
Law.....				172
Economics.....				60
Sciences:				
Licence (free).....	1,351	1,057	1,185	3,341
Licence (teaching).....		1,395	1,505	2,660
Doctorate of Third Cycle.....				358
Engineering diploma.....				146
Doctorate (d'Etat).....	129	238	322	237
Letters:				
Licence (teaching).....	1,719	2,486	2,570	3,448
Licence (free).....	636	470	415	427
Licence in psychology, sociology, art.....				163
Doctorate of Third Cycle.....				64
Doctorate (d'Etat).....	68	78	72	42
Medicine:				
Doctorate (d'Etat).....	1,939	2,279	2,278	2,280
University Diploma.....				1,895
Dentistry.....				580
Veterinary Medicine.....				237
Pharmacy:				
University diploma.....				104
State diploma.....	1,124	953	1,002	906
Doctorate (d'Etat).....				27
Total diplomas granted.....	10,871	13,204	11,784	19,543

¹ Institut National de la Statistique et des Etudes Economiques pour la Metropole et la France d'Outre-Mer. *Annuaire Statistique de la France, 1958*. Paris, Presses Universitaires de France, 1958. p. 51. Data for 1958 and 1961 taken from *Informations Statistiques, Supplément au Bulletin Officiel de l'Education Nationale*, juin 1959. p. 291, 294, 297, 301, 305, and mai-juin 1962. p. 229.

Security. The B.U.S. seeks to provide statistics on higher education enrollments, on the rate of failure on examinations and on the personnel needs of various professions. It also sponsors some studies on the relative effectiveness of certain programs in preparing for certain professions. The central purpose of the B.U.S. is to collect and make available information to help young people in choosing their studies and careers.

There are regional branches of the B.U.S. in different parts of France with small staffs to answer inquiries and supply materials. Few are staffed to provide counselling services, nor is the B.U.S. itself well equipped for aptitude testing.³³

French universities begin their academic year in mid-October; there are two semesters, each 12 or 13 weeks. A student enrolls in one of the faculties (science, humanities, law, medicine, pharmacy) and takes most of his course work in one of these fields of knowledge to the exclusion of the others. For example, a student enrolled in humanities (faculty of letters) typically will take no university work in science; similarly, a student concentrating on language study may take no work in the social sciences.

In a French university the work of the first year, which is called the preparatory year (*année propédeutique*), is somewhat similar in purpose to what is called general education in American higher education. In France, however, the range of courses is fairly narrow and centers around one general field of knowledge—for example, the sciences, in the case of those registered in the science faculty. There is a separate program for those registered in the humanities faculty and still another for those in the faculty of medicine. The latter program is made up entirely of science subjects—i.e. chemistry, physics and biology.

The idea of a preparatory year had been discussed in the 1920's and defended by the rector of the University of Paris as necessary on the ground that the secondary schools did not prepare students adequately for university study.³⁴ It was introduced in 1948 to meet the criticism that students entering higher education lacked general culture, were becoming so specialized as to be mere technicians, and were wandering through a maze of courses in the first year without knowing which to choose.³⁵ In addition, some of the professors had in mind the introduction of another hurdle which would limit the number of students.³⁶

An examination must be passed at the end of the first year before students are allowed to enter the second year of study; approximately

³³ International Labor Office. *Vocational Guidance in France*. Geneva, Switzerland: 1954. p. 60.

³⁴ Kandel, Isaac L. *The New Era in Education: A Comparative Study*. Boston: Houghton Mifflin Co., 1955. p. 290.

³⁵ Park, *The Culture of France*, *op. cit.*, p. 204-205.

³⁶ Jones, *Universities Quarterly*, May 1953, *op. cit.*, p. 281.

40 to 50 percent of students fail these examinations. A student can take and fail the examination four times before he must leave the university.

Those who successfully complete the first year of university study go on to take courses which will prepare them for the examinations which must be passed to secure the four or five certificates of higher studies (*certificat d'études supérieures*) needed to qualify for the *licence* degree. The examinations are given twice a year, usually in July and November. A student typically is allowed to take only two of these examinations in one year. The written examinations are graded by a board of examiners, usually three professors. Some oral questions must be answered also before this board.

The examinations for certificates are designed to cover a broad general area rather than specific courses; for example, among the certificates which one may use to secure the *licence* in history is one for ancient history, another for medieval history, and another one for modern and contemporary history. It is worth noting again, however, that students claim the examinations, or parts of the examinations, correspond very closely to courses taken, and in particular to lectures given by the professors who serve on the board of examiners. To the extent that this is true the system differs little from American higher education with its final examinations at the end of a course. The French system, however, does emphasize a unity among courses by having them bear on a single area, such as ancient history, as does the basic pattern of studies which causes a French student to take most of his work in one field of knowledge. There remains, however, the oft-repeated criticism that professors tend to lecture, and perhaps examine, over a rather narrow portion of a field of knowledge of particular interest to that professor.

The system rather effectively limits the French student to taking certain courses which correspond to the certificates he has to secure. It is true that the fourth certificate often is not specified, but rather can be selected from a number of possibilities. Thus, those seeking a *licence* in "living languages" can select their fourth certificate from among several possibilities, which include Scandinavian languages and literature, American literature and civilization, Dutch studies, Latin American literature and civilization, and Celtic grammar and philology.³⁷

Those who choose not to take the pattern of certificates required to qualify for secondary school teaching may take a free *licence* (*licence libre*) which has a larger choice of certificates. In the humanities only a minority of students take the *licence libre* in preference to the so-called teaching *licence* (*licence d'enseignement*).

³⁷ For a listing of the certificates required for each field of concentration see: France. *Annuaire de l'Éducation Nationale, 1960, op. cit.* p. 117-123.

Those who receive their *licence* can go on for graduate study and in one year receive a diploma of higher studies (*diplôme d'études supérieures*), which would be somewhat similar to an American master's degree. During this year of study a brief research paper (*mémoire*) must be prepared. A small number of students go beyond the level of the *diplôme d'études supérieures* to study for *agrégation* examination, the doctorate of the third cycle, or for a state doctorate (*doctorat d'état*). The *agrégation* examination and the doctorate of the third cycle can be passed with 1 year of study beyond the *diplôme d'études supérieures*, whereas the state doctorate takes at least 2 years. The *doctorat d'état* requires completion of a major dissertation and a minor one; the major dissertation, particularly, is to be original research. This state doctorate of France is comparable to a Ph. D. in the United States. In France a student enrolled for doctoral study often works part-time and thus takes several years to finish his doctorate. There is another doctorate in France, namely the Doctorate of the University, which is taken mostly by foreign students and usually represents a level comparable to the American master's degree, in some cases slightly higher than the American degree.

Widening Scope of Offerings

There are certain regional specialties for which certain universities have become known, for example Spanish, at Bordeaux and Toulouse; Provençal at Aix and Toulouse; hydraulics at Grenoble; and mining at Lille. Higher education in general, however, has been under attack in France for remaining aloof from the current social scene. For example, few of the theses in history or political science deal with current issues.³⁸ Only recently have advanced courses been added in the social sciences, physical education, technology, and educational psychology. Moreover, not all of the universities offer certificates in every field, and in fact, some lack certain faculties. The recent expansion of higher education, however, has been followed by a wider range of offerings at all the universities.

Changes are occurring as French educators are asking for more encouragement of creative talent in the social and technical fields. Under the heading of "new philosophy of education" a French publication of 1956³⁹ criticized the French educational system for developing too many literary and legal talents and too little scientific and economic competence, and for showing insufficient concern for the needs of modern society. The new French education being advocated would provide for a wider range of studies and would turn the emphasis from the past and center attention on a better knowledge of the modern world.⁴⁰

³⁸ Park, *The Culture of France*, op. cit., p. 212.

³⁹ *Education in France*. Paris: Editions France Actuelle, 1956.

⁴⁰ *Ibid.*, p. 11, 20.

In 1955, the Berthoin Plan to reform French education also asserted that too many students in the universities were studying law and the humanities, and too few the sciences and technology.⁴¹

A broadening of the offerings of higher education became evident in 1947 through a decree which created a *licence* in psychology. In 1955 it was announced that a doctorate in education (pedagogy) was now available at the universities of Paris and Montpellier and a doctorate in experimental, applied and social psychology at Rennes and Montpellier.⁴²

In 1958 a *licence* was created for the field of sociology and for the history of art and archeology. By a decree of July 23, 1958, the faculty of letters in French universities was henceforth to be called the faculty of letters and human sciences in order to indicate the greater emphasis to be given to such fields as sociology, ethnology, demography, human geography, and the historical study of civilizations.⁴³ Until 1958, a student registered in the faculty of letters majored in one of the following five fields: (a) philosophy, (b) classical languages, (c) history and geography, (d) modern languages, (e) modern literature. It is now possible in the faculty of letters to secure a degree (*licence*) by majoring in psychology or sociology or the study of overseas populations; at the present time (1962), however, there is no advanced degree offered in these three fields.

The aims of French higher education as stated in 1960, were:⁴⁴

1. To contribute to the progress of science, the formation of researchers, and the development of scientific, literary and technical research.
2. To dispense higher scientific, literary and artistic culture.
3. To prepare for occupations demanding an extended culture and profound knowledge and to prepare teachers (for secondary schools) by giving them scientific formation and pedagogical training.
4. To constantly adapt its programs to the demands of scientific progress and to the needs of the nation.

That the last of the four aims is to receive serious attention is now evident, as French higher education, like higher education in England, experiences a decided reorientation toward science and technology.

⁴¹ *Ibid.*, p. 22.

⁴² "France: Educational Progress in 1954-55," *International Yearbook of Education, 1955*. Paris/Geneva: UNESCO/International Bureau of Education, 1956. p. 161. (Publication No. 169).

⁴³ France. Ministère de l'Éducation Nationale. *Encyclopédie Pratique de l'Éducation en France*, op. cit., p. 227.

⁴⁴ *Ibid.*, p. 211.

Science

In the early part of the 1950's science and technology received less emphasis in the French universities than did the study of language and literature. By mid-1950's France began to recognize the growing shortage of scientific and technical manpower, and various steps were taken to increase the supply, including the following: ⁴⁸

1. Directing students into careers in science by giving the families full information on such careers by means of press, radio, movies, and personal talks.
2. Encouraging a larger percentage of those in the last year of the secondary school to enroll in the sections (mathematics, experimental science) which lead to careers in science rather than in the humanities section.
3. Increasing the capacity of educational establishments preparing scientists, engineers, and technicians—a 3 percent increase in the number of students admitted to the *grandes écoles* has occurred but these were small institutions to begin with and the actual increases are small—e.g. 15 more students admitted to the *Ecole Polytechnique*.
4. Reorganization of the National Council of Scientific Research (*Conseil Supérieur de la Recherche Scientifique*) and changing its name by adding *et du Progrès Technique* to indicate the greater attention which will be given to applied science.
5. Creation of a new degree called the doctorate of the third cycle which would be midway between a master's degree and the doctorate—i.e. between the *diplôme d'études supérieures* and the *doctorat d'état*. It was hoped that the new program would train the large number of research workers needed to staff the scientific laboratories of the nation. In 1961, 358 doctorates of the third cycle were awarded in science and 64 in the humanities.
6. New establishments, for example the National Institute of Nuclear Science and Technology at Saclay in 1956 and the National Institute of Applied Science at Lyon in 1957.
7. Considerable expansion of enrollments in science faculties of existing universities was undertaken, though no new universities were planned. By a decree of October 8, 1957, the overcrowding in science faculties in the universities was relieved by establishing "scientific university colleges" in several cities of France to offer the first year of university work in science, beginning in the fall of 1958.

⁴⁸ Organisation for European Economic Co-operation. *The Problem of Scientific and Technical Manpower in Western Europe, Canada and the United States*. Paris: 1958. p. 71; UNESCO/International Bureau of Education. *International Yearbook of Education 1955*, op. cit., p. 157; UNESCO/International Bureau of Education. *Training of Technical and Scientific Staff*. Paris/Geneva, 1959. p. 112-113. (Publication No. 206).

8. More flexibility in accepting students for university level study. For example, the new National Institute of Applied Science at Lyon does not require an entrance examination,
9. Part-time evening study for older students, many of whom lack the normal requirements for entrance into a university, for example, the *promotion supérieure du travail* at Grenoble.

The following analysis of diplomas and degrees granted in scientific fields in France is for the years 1955 and 1961:⁴⁶

	Number granted	
	1955	1961
<i>University faculty of science:</i>		
<i>Licence (d'enseignement)</i>		2, 660
Mathematics.....	252	
Physical sciences.....	328	
Natural sciences.....	282	
<i>Licence (libre)</i>	732	3, 341
Total	1, 594	
Doctor of engineering	80	146
<i>State doctorate:</i>		
Mathematics.....	22	
Physical sciences.....	132	
Natural sciences.....	88	
Total	242	237
<i>Specialized schools (Grandes Ecoles):</i>		
Applied sciences.....	4, 158	
Agricultural sciences.....	444	
Total	4, 602	
<i>Agrégation:</i>		
Mathematics.....	46	
Physical sciences.....	56	
Natural sciences.....	61	
	163	305
Grand totals	6, 681	6, 689

⁴⁶ Organisation for European Economic Co-operation. *The Problem of Scientific and Technical Manpower in Western Europe, Canada, and the United States*. Paris, 1958. p. 73; and *Informations Statistiques*, No. 40-41, mai-juin 1962. p. 229. Data for the specialized schools are not given for 1961 but would be higher than the 1955 figure. Hence the grand total for 1961 would be approximately twice that of 1955.

Table 42.—Scientific and technical manpower: number of personnel, 1955; diplomas and degrees granted, 1950-1957¹

Personnel:	Number 1955	
Engineers.....	120,000	
Technicians.....	340,000	
Scientific research workers.....	22,000	
Teachers of science (secondary school and higher education; about 4,000 are in higher education).....	25,800	
Total.....	507,800	
Diplomas and degrees granted:	1950	1957
Science.....	4,634	6,115 (1956)
Engineering.....		4,530 (1956)
Technical diplomas.....		8,500
Medicine.....	3,215	2,997
Total.....		22,142

¹ UNESCO/International Bureau of Education. *Training of Technical and Scientific Staff*. Paris/Geneva, 1959. p. 117. (Publication No. 206).

In 1959 the number of *licences (d'enseignement)* awarded had increased to 508 for mathematics, 815 for the physical sciences, and 942 for the natural sciences. For the physical sciences this was an increase of 63 percent over the previous year; for the natural sciences, it was a 48 percent increase, and there was speculation that the supply might exceed the demand in this field.⁴⁷

The swing to science and technology was evident in 1958 as the announcement was made of intentions to create in the next 2 years 13 new science faculties, 7 new "scientific university colleges," i.e., institutions offering the first year of university study in the sciences, and 3 new faculties of medicine. On the secondary school level it was estimated that by 1962, facilities would be needed to house 100,000 more students in technical schools.⁴⁸

In spite of the various measures taken, France reported in 1959 that its scientific and technical personnel were insufficient to meet the needs of the nation. More young people needed to be directed into scientific and technical training at all levels, along with more teachers to provide such instruction. This same report noted the appointment of two commissions in 1959—one to study the problem of recruitment and training of scientific and research staff and one to examine, in collaboration with the Ministry of National Education, the problems arising out of the changing French economy. At the same time plans were announced for the opening of three science faculties by 1961 in Rennes, Nantes, and Nice.⁴⁹

In 1960 the government announced the creation of four more university science colleges to be located at Chambéry, Le Mans, Orléans, and St. Etienne. By 1962 a total of 14 university science colleges

⁴⁷ *Education in France*, No. 15, October 1961. p. 30.

⁴⁸ *Ibid.*, No. 7, September 1959. p. 30.

⁴⁹ UNESCO/International Bureau of Education. *Training of Technical and Scientific Staff*, *op. cit.*, p. 112, 116.

were offering the first year of university work, as did 6 other colleges in the humanities. Enrollments in the 12 scientific colleges in existence in the fall of 1960 totaled 2,700; some had less than 60 students while others had over 400.⁵⁰

It is still too early to raise questions about the quality of the new university scientific colleges and there may not be any serious deviation from the traditional French pattern of instruction in science, which is fairly easily transplanted in new locations because of its concentration on mathematics and on study of a relatively small number of textbooks for the purpose of passing examinations. There is some concern in France about upsetting the proper balance between science and the study of the humanities now that science enrolls more university students than any other faculty.⁵¹

An authority on French science in his analysis of the training of French scientists stresses the role played by mathematics in comparison to natural science, which is of secondary importance;⁵² moreover, physics, which has a heavy mathematical emphasis in France, is given more emphasis than chemistry. He notes also that experimental training is meager. The heavy emphasis on mathematics is attributed to the previous control over education by the Church and the dominance of the scholastic tradition—i.e. the study of Latin, Greek, logic and theology, and mathematics.

For centuries, outside of geometry and arithmetic, only astronomy and navigation were considered respectable sciences, and even these were studied by only a small group of men. In the 18th century, in France, the modern sciences began to develop. But with Napoleon came a reorganization of education and again the emphasis was placed on study of languages and mathematics. Even as late as 1954, of the literature and language studied by prospective scientists the authors were selected more for brilliance in style than for their keen observations of human behavior or of the natural world.⁵³

Science Research

Until recently, strong ties did not exist between the science taught in the universities and the applications of science in industrial enterprises. The rigidity of academic institutions dominated by mathematics and theoretical physics, along with the slowness of the state and private industry in supporting scientific research, was given, in 1954, as the reason why certain industries were not more fully developed.⁵⁴ The creation of the intermediate level of study (3rd cycle

⁵⁰ *Education in France*, No. 16, January 1962. p. 10.

⁵¹ *Education in France*, No. 11, September 1960. p. 6.

⁵² Mayer, Jean, "Science" p. 266-336 in *The Culture of France in our Times*, edited by Julian Park, *op. cit.*

⁵³ *Ibid.*, p. 274.

⁵⁴ *Ibid.*, p. 308.

doctorate) short of the state doctorate has been interpreted as an indication of a willingness to change methods and goals toward more practical application of science.⁵⁵

On the other hand, tradition is a strong force and accounts for the continuance of practices in industry and agriculture which are no longer economic or efficient. Moreover, the industries of France have not had a tradition of sponsoring long-range research unrelated to an immediate increase of profits.

There were some industrial laboratories carrying on scientific research but often they were poorly equipped and staffed by modern standards. Since 1958 French industrial production has risen rapidly. The growth has been attributed to several factors, including establishment of research centers in branches of industries where they did not exist previously.⁵⁶

French scientists by 1958 were complaining of lack of coordination of scientific research and suggested the creation of a high commissioner for this field attached to the Office of the President of the Republic; and also the creation of a general secretariat for higher studies and scientific research in the Ministry of National Education.

There was, of course, already in existence the National Center for Scientific Research, which was an autonomous part of the Ministry of National Education. It was, however, just one of an increasing number of bodies devoted to the sponsorship and encouragement of scientific research. The need for more coordination by the national government was increasingly voiced; so in 1958, an inter-ministerial committee was formed from the ministries of education, finance, army, industry and commerce, public health and population, and agriculture. The problems in which this committee has shown an interest include: (a) new means of production of energy; (b) space; (c) development of greater knowledge of genetics and "psycho-pharmacology"; (d) and development of a documentation center to provide up-to-date data to scientific personnel.⁵⁷

Since 1958 the portion of the French national government budget devoted to scientific research has increased dramatically, and now represents between 1 and 2 percent of the gross national product. A program introduced in the French National Assembly in 1960 called for expansion of government support of non-military, scientific research. The actual sum devoted to scientific research in France for 1961 was approximately \$690 million, or more than \$120 million over the figure for 1959. Of the 1961 total, \$104.6 million came from the national government, and a good deal more came indirectly from the

⁵⁵ Thabault, *Yearbook of Education, 1959, op. cit.*, p. 201.

⁵⁶ "French Industry and the Common Market." *Bulletin from the European Community*, No. 51, February 1962. p. 4-6.

⁵⁷ France. Ministère de l'Éducation Nationale. *Encyclopédie Pratique de l'Éducation en France, op. cit.*, p. 32.

same source through grants to universities, the army, and such institutions as the National Center for Scientific Research, which had a budget of \$50,108,938 for 1960 as compared to \$2,694,000 in 1949.⁵⁸ In spite of this effort, a French source declares that "French state research projects still lack hundreds of scientists and technicians, and government credits are still not high enough to offer salaries that attract enough of them."⁵⁹

Engineering

In 1955 France was reported as having 4,158 people graduating from its schools of engineering; proportionately this was one of the lowest outputs in Western Europe.⁶⁰ By 1958 the annual output of engineers was up to 4,729. The estimated need, however, was 12,000 new engineers per year.⁶¹ The shortage of engineers is expected to get worse. Among the reasons given for the shortage are: (a) that the engineering schools do not admit a sufficiently large number of applicants, and (b) that many engineers are actually doing the work of technicians because of a shortage of this latter type of worker.⁶²

The training of engineers occurs chiefly outside the universities in relatively small, specialized schools. There are two types of these schools, namely, those giving a general training in engineering with specialization in the last year of the program and those training for a specific branch of industry or government.

There are roughly three levels of training offered. The highest level of engineering education is given in a small number of *grandes écoles* and in 18 higher schools of engineering (*écoles nationales supérieures d'ingénieurs*); applicants to these schools spend one or two years after graduation from a secondary school preparing for the entrance examination. The second highest level of engineering training is given in the *écoles d'ingénieurs d'arts et métiers*. The lowest level of training is given in *écoles d'ingénieurs*, the majority of which train technicians rather than engineers.⁶³ The *écoles d'ingénieurs* often accept students who fail to secure admittance to the higher types of engineering schools.⁶⁴

⁵⁸ *France Actuelle*, April 15, 1961. p. 8.

⁵⁹ *Ibid.*

⁶⁰ McCrensky, Edward. *Scientific Manpower in Europe—A Comparative Study of Scientific Manpower in the Public Service of Great Britain and Selected European Countries*. New York: Pergamon Press, 1958. p. 117.

⁶¹ *Education in France*, No. 11, September 1960. p. 27-28.

⁶² *Education in France*, No. 15, October 1961. p. 13.

⁶³ The Conference of Engineering Societies of Western Europe and the United States of America (EUSEC). *Report on Education and Training of Professional Engineers*, vol I. New York: 1961. p. 30.

⁶⁴ *Ibid.*

Those who complete an engineering program receive a diploma (*diplôme d'ingénieur*). In 1958, diplomas in engineering were awarded in the following fields:⁶⁵

General	1,223
Electrical	1,005
Chemical	517
Agricultural	404
Public works	309
Mining-geology	303
Motors	148
Aeronautical	113
Radio-communications	109
13 other specialties	598
Total	4,729

A small number of those who receive the engineering diploma go on to spend 2 years of research and study at a university and receive a degree called *ingénieur docteur*. Less than 200 of these degrees are awarded in a typical year. Some candidates for the degree of *ingénieur docteur* do not secure the ordinary engineering diploma first. Instead, they complete 2½ years of university study (*années propédeutiques* plus 3 certificates), and then the 2-year program for the degree of *ingénieur docteur*. Hence the degree of *ingénieur docteur* represents roughly one or 1½ years of study beyond the *licence*, or the approximate equivalent of a master's degree in engineering in the United States.

Engineering training in a university is considered by some people in France as undesirable (a) because of the practice of lecturing to large groups rather than using small groups and first-hand contact with experimentation; (b) because the practical experience offered is insufficient.⁶⁶ A total of 540 engineers graduated from French universities in 1958; by 1965 the number is expected to increase to 1,830 engineers.⁶⁷

Many engineers receive their training in one of the six national schools of arts and crafts. It was reported in 1960 that total enrollments for all 6 schools equaled 1,800 students.⁶⁸ The program is 4 years in length, with the first 3 years taken in one of the five schools located in various parts of France; and all take the final year in the sixth school located in Paris. Previously, these schools drew their

⁶⁵ *Ibid.*, p. 31.

⁶⁶ Thabault. *Yearbook of Education, 1959, op. cit.*, p. 201.

⁶⁷ Organisation for European Economic Co-operation. *Producing Scientists and Engineers*. Paris: 1960. p. 9.

⁶⁸ *Encyclopédie Pratique de l'Éducation en France, op. cit.* p. 175.

pupils chiefly from the lower classes or lower middle class and the entrance examination was relatively easy. Now, the examination is more difficult and is about at the level of graduation from an academic secondary school.⁶⁹ A common entrance examination is offered by all six schools and covers French, industrial drawing, algebra, trigonometry, geometry, physics, chemistry, and a foreign language, plus vocational subjects.

From 1947 on, a number of technical institutes were transformed into engineering schools (*écoles nationales supérieures d'ingénieurs*). There are 18 of these schools, which are directed by university rank teachers. A 3-year program of undergraduate studies in engineering is offered. Some of these schools have a very high reputation, for example, the National School of Chemical Industries at Nancy, the Higher National School of Electro-technology and Hydraulics at Grenoble, and the Higher National School of Agronomy at Toulouse.⁷⁰

Entry into the engineering programs of the *grandes écoles* is much sought after. Facilities exist for only a small number of students and only one out of six applicants is accepted.⁷¹ The most widely known school of engineering, the *Ecole Polytechnique*, will be discussed in the section entitled "Specialized Schools—*Grandes Ecoles*." Almost equally well known are the *Ecole Centrale des Arts et Manufactures*, founded in 1828, and the *Conservatoire National des Arts et Métiers*. The latter offers higher education level courses in applied sciences on a part-time basis, with many courses scheduled in the evening. Not many students proceed far enough to secure the engineer's diploma.

Often the engineering programs include such non-technical courses as law, political economy, and the structure of industry. These courses are included because the aim of the program is to train engineers who will be able to handle administrative positions.

Part-time study for those wishing to become high level technicians, with the possibility of becoming engineers by completing the full program, is now available through technical institutes called *Promotion Supérieure du Travail* (P.S.T.), for example, the one at Grenoble. A preparatory year is offered which is open to those with less than full secondary education, for example, those who completed the program of an apprenticeship center. The students are full-time workers in industrial establishments. By offering part-time study in the evenings to those who may have ability but not the academic creden-

⁶⁹ Thabault, *op. cit.*, p. 204.

⁷⁰ *Ibid.*, p. 200.

⁷¹ The Conference of Engineering Societies of Western Europe and the United States of America (EUSEC). *Report on Education and Training of Professional Engineers*, vol. II. New York: 1961. p. 6.

tials to enter higher education, it is hoped that any lack of opportunity due to social class background will be rectified.

The preparatory year of the P.S.T. at Grenoble is offered with full knowledge that many will fail, either because of lack of ability, or lack of drive to carry on a program of studies after working a full day. In fact, by testing the students at the beginning of the year the potential failures are accurately spotted and warned. If these students insist on trying to complete the year, they are allowed to do so. This represents a significant innovation in French educational practice.

Those who complete the preparatory year are allowed to begin a 5-year program of higher education study; those who have a technical *baccalauréat* do not have to take the preparatory year. The first 3 years of the 5-year program of the P.S.T. are part-time evening studies taught by university rank teachers, including several professors from the nearby University of Grenoble. Those who complete the 3 years receive a diploma of technical studies (*diplôme d'études supérieures techniques*). Many drop out at this point. Those who remain, go on for a fourth and fifth year, at least one year of which is full-time day study. At the end of the 5 years they are qualified engineers with the title of *ingénieur diplômé*.

The vitality of these P.S.T. programs is shown by the enrollment of 20,000 in 1959. There are problems, however, such as the lack of P.S.T. programs in many parts of France; differences of opinion as to the proper balance of cultural and technical studies; and some opposition from the university authorities who say they are fully occupied trying to educate "true students" without trying to educate workers.¹²

Interest in *Promotion Supérieure du Travail* was stimulated by an all-day conference on October 10, 1960, at the higher normal school for technical education at Cachan. Various speakers emphasized the need for "massive increases" in the number of engineers and technicians. It will be a long time, they said, before expansion of engineering schools will reach the point of meeting the need.¹³

On the other hand, there is a huge potential of technical manpower in the workers of the factories. It was suggested that this supply might be tapped by greater use of correspondence courses combined with periods of practical work. Suggested also were new teaching methods since those of traditional education were under criticism within the regular educational system and were "even more poorly adapted to instruction of adults."¹⁴

¹² "La Promotion Supérieure du Travail." *L'Expansion de la Recherche Scientifique*, No. 8, décembre 1960. p. 2.

¹³ *Education in France*, No. 15, October 1961. p. 18.

¹⁴ *Ibid.*, p. 19.

. Another experiment in introducing flexibility into French higher education while increasing the facilities to train engineers and technicians was initiated in 1957 with the establishment of the National Institute of Applied Sciences at Lyon. Originally two programs were offered, a 4-year program to train engineers and a 3-year program for technicians. The program to train technicians has been dropped because of the difficulty of maintaining two programs of different levels of difficulty. Morale was a factor, too, as invidious comparisons were made as failures from the engineering program began to enter the technicians program.

The Institute at Lyon, unlike a typical specialized institution of higher education in France, has no entrance examination. Anyone with a secondary school diploma (*baccalauréat*) is accepted and some have been accepted without such a diploma if they have had sufficient vocational training and work experience. As a result, this institution is recruiting from a broader segment of French life than a typical institution of higher education. The advantages of the entrance system at the National Institute of Applied Sciences have been listed as including (a) economy of time—i.e., 1 or 2 years are not wasted preparing for entrance into an institution of higher education; (b) the linking of secondary education and preparation for a career; and (c) examinations, and all of their side effects, are minimized.¹⁵

The National Institute of Applied Science represents an attempt in France to link the training schools with industry. This is done both by including industrialists on the governing council of the institute and through the period of internship in industrial establishments (1 month at the end of the first year and 6 months during the second year of the program). It is expected that this will speed up French production by cutting down on the time which a new engineer spends in getting acquainted with his new position. The emphasis on practicality may be at the expense of the general culture offered to the prospective engineer. Such general education as they get at the Institute of Applied Sciences is heavily oriented toward their vocation. The hope is that in the future the general culture part of the program will be broadened.¹⁶

The number of engineers graduating from various kinds of schools is expected to increase by 50 percent over the period 1958 to 1965; moreover, the number is expected to rise from 8,980 in 1965 to 14,450 in 1975.¹⁷

¹⁵ "L'Expérience de l'I.N.S.A." *Dossiers Documentaires*, janvier 1961. p. 3.

¹⁶ *Ibid.*, p. 7.

¹⁷ Organisation for European Economic Co-operation. *Producing Scientists and Engineers*, op. cit., p. 5.

Specialized Schools—Grandes Ecoles

France is unique in the way in which a system of small, specialized schools has developed alongside the universities. Some of the engineering schools mentioned in the previous section, particularly the *Ecole Polytechnique*, are included in this group, commonly called the *grandes écoles*. Actually only a handful of the most important of these schools are officially designated by the government as *grandes écoles*. The other 100 or so institutions are called *grandes établissements*, but in practice, all of them are called *grandes écoles*.

The *grandes écoles* offer specialized training in a variety of fields, including agriculture, technology, public administration, and physical education. Most agencies of the government have their own *grande école* to train their personnel. One of the newer schools, the National School of Administration, trains administrators for high level government service. These special schools typically are small institutions, most of them taking less than 100 students each year. Their total enrollment represents only about 10 percent of the total enrollment in French higher education, but the schools enjoy high status, due not only to their high standards of work but also to the fact that their graduates have long been given preference in securing positions with the government. Moreover, the difficulty of getting into a *grande école* has enhanced its appeal. Admission is by competitive examination. The French University Bureau of Statistics estimates that 60 percent of the applicants fail to get in.¹⁶ The rejection rate appears even higher because most candidates register to take examinations to get into several different *grandes écoles*.

Candidates spend 1 or 2 years preparing for the entrance examination, usually in one of the post-secondary classes (*classes préparatoires*) of a *lycée*. The *grandes écoles* do not issue degrees but rather certificates which are often regarded as equal to an undergraduate degree (*licence*) from a university.

Two of the oldest of the *grandes écoles* are the *Ecole Polytechnique*, which trains engineers and army officers, and the *Ecole Normale Supérieure* which offers work in the humanities and the sciences.

In 2 years at the *Ecole Normale Supérieure* a student may complete work for a university degree (*licence*); students follow courses both at the University of Paris and at the *Ecole Normale Supérieure* itself. Some will stay on and in 1 or 2 years will prepare for and pass the *agrégation* examination which will qualify them to secure one of the better teaching posts in a secondary school. A few will go further and by registering in the faculty of a university will secure their state doctorate and eventually a teaching position in a university.

¹⁶ Organization for European Economic Co-operation. *The Problem of Scientific and Technical Manpower in Western Europe*, op. cit., p. 76.

The *Ecole Polytechnique*, founded in 1794, trains engineers and artillerymen; military training is taken along with academic studies. Of those who finish the 2-year program about one half will join a government agency. Others will join the army; many of these will later enter industry as engineers.

Many of the *grandes écoles* are concentrated in the Paris area and for 10 years the government has struggled with the idea of dispersing them throughout France. Through such dispersal it is hoped to stimulate industry in various parts of France, since research and facilities for higher education are now seen as going hand in hand with industrial development. Moreover, youth in outlying parts of France are regarded as lacking educational opportunities to the extent that higher education facilities are concentrated in the Paris area. Finally, some of *grandes écoles*, reportedly, would secure a much needed vitality by starting over again in a new location.⁷⁹ In accordance with a report issued in 1957, there would be no new *grandes écoles* established in the Paris area and the existing ones in the Paris area would be relocated elsewhere. The only ones remaining in the Paris area would be the *Ecole Normale Supérieure*, the *Ecole Normale de Jeunes Filles*, the *Ecole Polytechnique*, the *Ecole Nationale d'Administration*, and the *Ecole National d'Outre-mer*. Alumni of the *grandes écoles*, reportedly, are opposed to such plans for dispersement.⁸⁰

Business Administration and Commerce

The French have recently come to realize that a modern economy needs not only scientific and technical personnel, but also leaders in the field of commerce and industry with executive skills in business administration. Until recently such skills were not taught as such in the universities.

Several studies⁸¹ have shown that leaders in the industrial firms of France, excluding the small family-run firms, tend to be graduates of one of the *grandes écoles*, particularly the following five: School of Mines, School of Higher Commercial Studies, the Centrale, the Institute of Political Science, and the *Ecole Polytechnique*. Leaders in industry tend to have engineering backgrounds, and the top positions are frequently held by graduates of the *Ecole Polytechnique*.

University training has less status among management people in industry, as one author comments:

In industry, the university degree—even the Doctor of Law—is treated with scorn. For a career, it is essential to have attended a *grande école*.⁸²

⁷⁹ *Le Monde*, April 8, 1960. Reprinted in *L'Actualité Pédagogique & l'Étranger*, No. 4, juin 1960. p. 1-2.

⁸⁰ *Le Monde*, April 10-11, 1960. *Ibid.*

⁸¹ These are analysed in Granick, David. *The European Executives*, p. 33-45; 113-115. New York: Doubleday and Company, 1962.

⁸² *Ibid.*, p. 33.

In France, it very hard for a person without the right kind of higher education to become a leader of an industrial firm; and for one with no kind of higher education it would be almost impossible, except in small, family-owned firms.⁸³ A fairly rigid line exists between graduates of the *grandes écoles*, who at least get a chance at the top positions, and those from lesser engineering schools, who, says Granick, are condemned to the middle management level.⁸⁴

Granick analyzed the graduating classes of the *Ecole Polytechnique* and found that the best students went into government service, which has higher status than business, and then after 10 or 15 years entered business at a very high level position. The lowest in the graduating class from the *Ecole Polytechnique* tend to enter business immediately and generally do not rise to the top.⁸⁵

The School of Higher Commercial Studies (*Ecole des Hautes Etudes Commerciales*—H.E.C.) also supplies a number of graduates who enter industry. Though it is one of the *grandes écoles*, the H.E.C. is relatively easy to get into and its graduates usually rise only to the middle management levels. Outside the Paris area, some men "of good family" go to a regional branch of the H.E.C. as an alternative to getting a university degree in law; "neither program is too strenuous."⁸⁶ More impressive, in Granick's opinion, is the program of the Chamber of Commerce of Paris.

Started in the 1930's, the Paris Chamber of Commerce program is for men "recently launched in management," i.e. young men between the ages of 28 and 33 who have management positions with companies. About 75 persons take the course each year. The program, 1 year in length, was in the beginning "consciously based on the Harvard Business School case method." For the first 6 months the participants attend classes five evenings a week and on Saturday afternoon. During the summer vacation a paper is written by each student concerning some aspect of his own company. During the last 2 months of the program classes are held only two or three evenings per week. The courses are taught by practicing business men, not by professors.⁸⁷

In 1952, a group of French businessmen gathered to discuss problems of business, and from their conference resulted a center to provide courses, lectures and information for top-level businessmen. Called the Research and Study Center for Chiefs of Enterprise, the center offers 4-week courses to businessmen with at least 10 years' experience in management.⁸⁸ In 1958 the French government reported the crea-

⁸³ *Ibid.*, p. 28.

⁸⁴ *Ibid.*, p. 40.

⁸⁵ *Ibid.*, p. 72-76.

⁸⁶ *Ibid.*, p. 114.

⁸⁷ *Ibid.*

⁸⁸ *France Actuelle*, October 15, 1960.

tion of business training institutes in several parts of France to train the advisors to heads of businesses.⁸⁹

The need to link up research with management of business led, in 1960, to the creation of a new center for industrial research at Lyon. Under the support of industries of Lyon and the new National Institute of Applied Science the center will analyze problems of small and medium sized industry.⁹⁰

Concern has been expressed in France, also, about the need of bringing higher education and the business world closer together, and a step in this direction was announced in 1959 with the addition of a course in industrial economy and statistics at the National Conservatory of Arts and Crafts.⁹¹ Even earlier, in 1955, the universities began to offer a 1-year program in administration of enterprises to those who had completed 3 years of undergraduate study, usually in law. The 1-year program included (a) social psychology applied to business, (b) industrial relations, (c) general organization of business, (d) scientific organization of production and work, (e) legal problems, (f) financial management.⁹² After interviewing leaders in industry in France, Granick concluded that the 1-year course in the universities had less status than the 1-year program of the Paris Chamber of Commerce. He attributed this in part to the type of students who attend. Those in the Chamber of Commerce course are mostly engineers, plus a much smaller group having law degrees from a university, whereas the ratio was almost the reverse in the 1-year university programs.⁹³

In addition to the newly created institutions and programs of study there are 16 older schools of commerce (*écoles supérieures de commerce*), which offer a 3-year program to students who have completed a full secondary education.

Agriculture

Agriculture has not played a prominent role in higher education in France, even though a sizeable section of the population is engaged in agriculture. In fact, the 1960 *Annuaire de l'Éducation Nationale* does not list agricultural schools under higher education but rather has a separate section for them. Higher education enrollments in agriculture for the year 1955-56 totalled 2,638.⁹⁴ The number of university degrees awarded in agriculture declined from 339 in 1954

⁸⁹ UNESCO/International Bureau of Education *International Yearbook of Education, 1958*. Paris/Geneva: 1959. p. 186. (Publication No. 202.)

⁹⁰ *Education in France*, No. 12, December 1960, p. 38.

⁹¹ UNESCO/International Bureau of Education. *International Yearbook of Education, 1959*. Paris/Geneva: 1960. p. 188 (Publication No. 212).

⁹² *Annuaire de L'Éducation Nationale, 1960, op. cit.*, p. 115.

⁹³ Granick, *op. cit.*, p. 115.

⁹⁴ *Education in France*, No. 1, October-December 1957. p. 11.

to 332 in 1957.⁶⁶ In 1955, the specialized schools (*grandes écoles*) awarded 444 diplomas in agricultural sciences.⁶⁶

Study of agriculture is offered in (a) four national schools of agriculture with 3-year programs leading to the diploma of agricultural engineer; (b) the National Institute of Agronomy and its four branches; (c) four other specialized schools offering instruction in horticulture, forestry, agricultural industries, and training of teachers for schools of home economics on the secondary school level.

In addition, some of the university faculties of science offer certificates in such fields as agricultural chemistry and biological agriculture. A decree of June 20, 1961, opens up a possibility of agricultural study at a more advanced level, namely the so-called third cycle.

Law

Law studies in France can be taken at both undergraduate and graduate levels. The *licence* in law represents 4 years of undergraduate studies and the student enters this program directly from a secondary school. With 1 additional year of study the diploma of higher studies can be earned, and 2 additional years beyond the *licence* lead to a doctorate in law.

Medicine

In medicine, also, students enter directly from a secondary school to begin work on a 6-year program of study, with a seventh year devoted to internship. The student of medicine does not take any university study in history, mathematics, economics, political science, French, or foreign languages. In other words, the program is devoted entirely to sciences and medicine. Prior to 1960 the student of medicine devoted his first year (*année propédeutique*) to the study of physics, chemistry and biology. A decree of 1960 introduced the new system whereby both medicine and sciences are studied in the first year of university study. Beginning with the middle of the second year the student spends his entire time at a hospital where he does his practical work and takes course work in medical subjects and biology. Reportedly in the past the basic sciences taught in the medical program in France have suffered because all the professors had to hold a degree in medicine; moreover, in the universities of France outside of Paris, the faculty of medicine was reported as doing relatively little research.⁶⁷

⁶⁶ Organisation for European Economic Co-operation. *Producing Scientists and Engineers*, op. cit., p. 9.

⁶⁶ Organisation for European Economic Co-operation. *The Problem of Scientific and Technical Manpower in Western Europe, Canada, and the United States*, op. cit., p. 73.

⁶⁷ Park, Julian. *The Culture of France in Our Time*, op. cit., p. 281.

Developments in Higher Education

The director-general of higher education in France stated at the end of 1958 that the aim of French higher education should be to develop creativity and that the university must keep in close touch with life. Moreover, where new forms of education were needed they must be established.⁹⁹ He noted that relations with industry were becoming closer as the universities were now turning out psychologists and sociologists for private enterprise.

Shortly afterwards, in January 1959, a decree of the French government stated official policy for higher education as follows:¹⁰⁰

The structure and curricula of higher education must be constantly adapted to the requirements of scientific progress and of the needs of the nation.

The Rueff-Armand Committee had something to say about higher education, namely, that "instruction should be more oriented toward the current needs of society, employing scientific disciplines and the practice of research."¹⁰⁰ Fewer lectures and more seminars were also suggested.

That higher education is responding is indicated in the growing diversity of offerings within its regular faculties and particularly in the various institutes attached to universities. Among the recent additions are: an institute of political science at Aix-en-Provence; an institute of advanced commercial studies at Strasbourg along with an international institute of journalism and an institute of applied economics; an institute of prehistoric art at Toulouse; an institute of industrial medicine at Bordeaux; and at the University of Paris, institutes for the study of population and social development.

Under a government decree of May 5, 1961, a committee is created within the universities to propose measures whereby the institutions will further develop their offerings of technical education. Another decree of the same date creates a *licence* in applied science and a doctorate in applied sciences. An increase in the next few years of the numbers trained for technical careers is seen.¹⁰¹

A huge increase in higher education enrollments is predicted during the next decade. The effects of a rising birth rate hit the secondary schools in 1957 and are expected to "burst upon higher education from 1964 onwards."¹⁰² The present higher education enrollment of slightly more than 200,000 is expected to reach 500,000 by 1970.¹⁰³

⁹⁹ *Education in France*, No. 4, December 1958. p. 6.

¹⁰⁰ *Ibid.*, No. 5, February 1959. p. 25.

¹⁰¹ The Rueff-Armand Report is summarized in *France Actuelle*, January 15, 1961. p. 1-7.

¹⁰² *Education in France*, No. 15, October 1961. p. 20-23.

¹⁰³ Polignant, Raymond. *The Planning of Educational Expansion in Relation to Economic Growth: I—France*. Paris: Organisation for European Economic Co-operation, 1961. p. 11.

¹⁰⁴ *Ibid.*, p. 24.

Table 43.—Percent of total university enrollment by faculty: 1949, 1959, predicted for 1970¹

Faculties	1949	1959	Predicted for 1970
	Percent		
Law and economics.....	30	18	16
Humanities.....	28	28	25½
Sciences and technology.....	18	34	43
Medicine and pharmacy.....	28	20	15½
	100	100	100

¹ *L'Education Nationale*, 15 février, 1962. p. 9.

By 1972, France hopes to have 15.6 percent of the 19-year olds in school,¹⁰⁴ most of whom presumably would be in higher education.

The planning commission of the French National government has made a provisional allocation of future students to different fields of knowledge based on presently known needs of various sectors of the economy. A long-range study of man-power needs is underway also. The allocation gives increased attention to science and technology.

A growth of technical and vocational education, similar to that in higher education, is expected at the secondary school level. Some doubt has been expressed however, that this expansion will occur as fast as desired, hence throwing off balance the higher education estimate for 1970.¹⁰⁵

The planning commission says that there is nothing compulsory about this distribution of students in secondary and higher education, but that experience has shown it can be accomplished by the

Table 44.—Total university enrollments by faculties: 1959-61, and predicted for 1963-64, 1970-71¹

Faculties	Enrollments		Prediction for—	
	1959-60	1960-61	1963-64	1970-71
Sciences and Technology.....	65,500	77,200	107,300	210,300
Humanities.....	57,100	56,500	78,800	130,300
Law, Economics, Political Science.....	32,500	34,000	45,800	83,000
Medicine.....	31,300	31,800	43,000	61,200
Pharmacy.....	8,100	8,500	11,300	20,600
Total enrollments.....	192,500	211,000	285,300	506,900

¹ *Education in France*, No. 16, January 1962. p. 3.

¹⁰⁴ *Targets for Education in Europe: A Study of Policy Considerations Related to Economic Growth*, by Ingvar Svennilson, Friedrich Edding and Lionel Elvin. Paris: Organization for European Economic Co-operation, 1961. p. 59.

¹⁰⁵ Polgnant, *op. cit.*, p. 21.

establishment of new schools and by provision of adequate information to families. This channeling of people "in a direction consistent with trends in employment (as far as they can be ascertained)" is expected to be more successful at the secondary school level.¹⁰⁶

There still remains the problem of building up the provincial universities and nearby areas so as to spread culture more widely throughout France. As of now, there continues the over-concentration of intellectual and cultural resources in the Paris area. Some of the *grandes écoles* have been removed from Paris, and others still in the city logically need not be there: for example, schools for fishery and agriculture, including the school of tropical agriculture. According to the latest indications, enrollments in the provincial universities are increasing slightly faster than those of Paris.¹⁰⁷

¹⁰⁶ *Ibid.*, p. 28.

¹⁰⁷ *Education in France*, No. 16, January 1962, p. 10.

Chapter IX

OTHER FORMS OF EDUCATION

New Media of Instruction

In France, the available resources for teaching are being supplemented by the use of radio, television, and other audiovisual aids. Since elementary schools are equipped and maintained by local authorities, the amount and quality of audiovisual aids varies. Reportedly, a majority of French educators feel that such aids should play a minor role in the teaching process, but interest in them is growing. Also, many school administrators are becoming more favorably inclined toward such equipment, though there is still some opposition to its use.¹

Audiovisual equipment in French schools was estimated in 1960 as including 100,000 filmstrips and slide projectors, 50,000 record players, and 10,000 television sets; the amount of such equipment was deemed insufficient.²

Each year about 50 educational films are produced. Four educational television programs are presented weekly—two for the elementary schools, one for secondary, and one for vocational schools. There are nine educational programs each week on radio, six of these for the elementary schools. In 1960-61, more than 7,000 schools had television sets, and about 40 percent (over 30,000) of the elementary schools tuned in to the school radio broadcasts.³

The elementary schools tend to make greater use of audiovisual aids than do secondary schools, probably because such use is more feasible when a single teacher is with the same students all day, and also because the elementary school teachers are more sympathetic to the possible value of these aids.

¹ LeFranc, Robert. "The Organization and Use of New Media in French Education." *Yearbook of Education, 1960*. Tarrytown-on-Hudson, New York: World Book Company, 1960. p. 368.

² *Ibid.*, p. 367.

³ France. Ministère de l'Éducation Nationale. *The Educational Movement in France During the Academic Year 1960-61*. Paris: 1961. p. 25.

Some introduction to the use of visual aids is given prospective elementary school teachers in the normal schools but in many cases the training, reportedly, is superficial.⁴

Audiovisual aids actually have been available to French teachers for a long time. From 1910 on, the Ministry of National Education encouraged the production of educational films, and radio programs for schools appeared in the 1920's. Television programs for schools have been organized on a national scale for the last 10 years.

More recently the production and distribution of audiovisual aids has speeded up. In this regard the centralization of the French educational system is cited by the French as an asset since authorities can depend on all schools being at approximately the same place in a syllabus at a given time and thus can design an appropriate television or radio program. The French also say, however, that much depends on the initiative shown at the top of the administrative structure.⁵

Among the factors responsible for the increased use of audiovisual aids in France are: (a) the campaign waged by some educators; (b) experiments which have indicated good results from the use of such aids; (c) a tendency for younger teachers to be more willing to try new procedures; (d) the acute shortage of qualified teachers and the decline in quality of teaching, necessitating reliance on mechanical aids to strengthen teachers, and in some cases to replace them.⁶

There are two main agencies which coordinate the work being done with audiovisual aids, the National Institute of Pedagogy of the Ministry of National Education and the Audio-Visual Center of the Higher Normal School at St. Cloud, which conducts research on the use of audiovisual aids. Within the National Institute of Pedagogy there is the Department of Audio-Visual Teaching Aids and the Ministerial Commission on Means of Instruction. The former maintains a film library and a central record library whereas the latter has subsections for each school subject and advises on the production of films and other teaching aids. Private companies tend also to consult with this ministerial commission because nothing is used in French public schools which does not have the approval of the Ministry of National Education.

The distribution of films to schools is facilitated by 13 regional centers of educational documentation which act as branches of the Ministry of National Education for the purpose of distributing teaching materials. There are also 28 *département* centers with audiovisual sections to service schools.

⁴ LeFranc, *op. cit.*, p. 367-368.

⁵ *Ibid.*, p. 361.

⁶ *Ibid.*, p. 372-73.

In 1959 a new organization, the National Center for Teaching by Correspondence, Radio and Television, was created. It is part of the National Institute of Pedagogy for budgetary purposes.

Correspondence Courses

The regular program of the elementary school, lower secondary school, and the academic secondary school, along with some vocational programs, can be taken by means of correspondence courses, which in 1960 reportedly enrolled close to 11,000 children and adults.⁷ Some of these at the end of a course would take and pass examinations to receive such certificates as the elementary school certificate, the *baccalauréat*, and several different kinds of vocational certificates. An increasing number of adults, either through correspondence courses or by studying on their own, reach a level where they can pass the examination and receive the certificate indicating completion of the 8 years of elementary school; in 1960 a total of 25,856 adults took the examination and 14,147 passed and received the *certificat d'études primaires*.⁸

Instruction by correspondence is free except for a small fee to help cover the administrative costs of such courses. In addition, students must buy their own books and materials.

Adult Education

Adult education in France is carried on in conventional school buildings and through the use of the newer media of teaching. For example, in 1952, France volunteered to conduct a UNESCO sponsored experiment in the use of television for adult education. The experiment utilized "tele-clubs" which had developed in certain villages as a means whereby many people could share a television set and enjoy each other's company.

The experiment consisted of a program on country life broadcast one evening per week. Most of the club members were from the working classes and the program sought to fill a need for leisure and for self-improvement. The experiment has been evaluated as helpful in bringing the rural population of France into contact with modern civilization.⁹

The old view of adult education primarily was one of salvaging people who, for one reason or another, had failed to get a complete education from the regular educational system. While such a need still exists in France it will be less important after 1967 when the compulsory school age is raised to 16.

⁷ France. Ministère de l'Éducation Nationale. *Encyclopédie Pratique de l'Éducation en France*. Paris 1960. p. 182.

⁸ *Informations Statistiques*, No. 38, mars 1962. p. 110.

⁹ Dumazedier, Joffre. "Television and Popular Education—A French Experiment." *Yearbook of Education, 1960*. Tarrytown-on-Hudson, New York: World Book Co., 1960. p. 540-546.

The new view of adult education in France sees it ideally as a necessity for everyone in order to keep up with new developments, which come along so rapidly in the modern world. That this view is not yet fully appreciated was shown by a recent study made of the cultural interests of adults in a certain community in France. The survey found that adults were largely indifferent to cultural matters; where interest was shown, it was directed largely toward practical and technical matters.¹⁰

Traditionally, adult education in France has been left largely to private and special interest groups. Now, however, adult education is being linked to the problem of technical manpower. It is pointed out, for example, that the need to adapt to new developments is particularly important for technicians and workers. Hence the suggestion that if economic development is to proceed, all enterprises should provide their employees with technical training. Also, since many factories may have to be reequipped and directed toward new endeavors, workers will have to be reeducated.¹¹

One proposal envisages mass reeducation through a system whereby a few outstanding workers are given an intensive course which prepares them to teach new skills to groups of their fellow workers. The existing system of courses to upgrade workers is considered insufficient in that only a relatively small number are able to reach a high level of training. Particularly needed is the development of a general intelligence which enables an individual to quickly learn new tasks and adapt to new situations.¹²

As was indicated in the chapter on higher education, a system of part-time schooling for high level technical competence (*promotion supérieure du travail*) is developing, and is being integrated into regular higher education by means of cooperative arrangements with universities. Close to 20,000 people are participating in such programs. In addition, there are a few other institutions dispensing a high level type of adult education but reaching only a small number of people. Particularly well known for such work is the National Conservatory of Arts and Crafts.

In France, as in the United States, the culture is being shaped not only by the traditional forms of schooling, but also by the new media of communication and by subtle changes in the social and economic structure of the country. Though hard to measure, the impact of television, urbanization, industrialization and the like are real and must be taken into account by all those who would understand modern-day France.

¹⁰ Dumasedier, J. and Hassenforder, J. "L'Instruction et les Masses." *International Review of Education*, vol. vii, No. 1, 1961. p. 37.

¹¹ *Education in France*, No. 15, October 1961. p. 18.

¹² *Ibid.*, p. 18-17.

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