action of known laws and forces. Until within very recent times, however, it has not been imagined that the phenomena of life could be brought under the same laws which regulate the inorganic world. Life seems so different from all that is not living that it has been regarded as standing by itself. It is, withal, so mysterious that it has at all times been regarded as a direct instance of almighty power, and living things have been looked upon as miracles concerning which it was almost sacrilege to question.

Modern dynamical biology owes its existence to the attempt to apply to the organic world the same course of investigation which has been successful elsewhere; nay, indeed, to apply to life the same chemical and physical laws which govern the inorganic world. The first great step was taken in this direction by Darwin when he tried to show that species were not to be considered as special creations, but as having had a natural origin. Zoölogy and botany, as they had been studied before, were simply statical sciences, merely studying and classifying facts as they were found. Modern biology is a dynamical science, in that it attempts to explain the facts of life. All vital phenomena have been attacked with this purpose in view, and biologists are now strenuously trying to come to some explanation of the fundamental fact of life itself by the application of chemical and physical laws.

It is plain enough that such study and such conclusions are of great significance to the thoughts and beliefs of every one. It is not strange that these conclusions, removing as they do so many miracles from nature, should be regarded by many as conflicting with all theistic belief, for we are all inclined to think a fact is understood when it is comprised under any law. But it is equally evident that more careful thought shows that, even accepting these conclusions of biology, we are by no means able to say we have fathomed life, for we do not understand the reason for the existence of any single chemical or physical law. But whatever be the conclusion which may be reached as to the ability of biologists to explain life-principles, or as to the significance of the explanation when reached, it is certainly a necessity for any one who wishes to comprehend the thought of the times to get acquainted more or less intimately with these attempts of the *new* science. The students who go out from our higher schools are to take a stand among the foremost thinkers. Indeed, they are, it is hoped, to advance the thought of the world. Whether they be theologians, philosophers, scientists, or teachers, it is necessary for them to realize the meaning of the application of dynamics to life: they should understand the positions held by advanced biologists, and know at least the sort of arguments used to support these positions. In this fact, then, lies the essential reason for the growing importance of this study. As a branch for special study, biology has its own fascination and defence. But as fast as it becomes freed from the burden of detail, and becomes a study of life-principles, just so fast will it become recognized as a necessary part of the education of the general student

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THE FRENCH LYCÉE.

WHILE much of the educational inspiration of the day is drawn from Germany, it must be borne in mind that France is actively engaged in thinking out the great problems which are of common interest to all nations. We hear much of the 'gymnasium' and 'realschule,' but not so much of the 'lycée.' This word should call to our minds as definite and accurate an idea as the word 'gymnasium' does. The material for such an idea is contained in a short account of the curriculum of a French lycée recently published by Mr. W. H. Fraser of Upper Canada college.

The word 'lycée' itself, in its present application to the secondary colleges of France, dates back to Napoleon Bonaparte, and was given by him to them when he re-organized the university system. The name was afterwards changed to 'collége royal' at the restoration and under Louis Phillippe, but was changed again to lycée in 1848. 'Lycée' is the French form of λύκειον, the gymnasium near Athens, where Aristotle assembled the members of his school of philosophy. By extension it was applied to certain schools in Paris devoted to science and literature. Almost every considerable city and town in France has now its lycée, whilst in Paris there are several of them, for example, Lycée Henri IV., Louis-le-Grand, St. Louis, and others, — enormous establishments affording accommodation to many hundreds of students, both *internes* and *externes*, as the students in residence and the outsiders are respectively called. Until recently, only boys enjoyed the privileges of these colleges, but now provision has been made in several places, including Paris, for the education of girls also. Their colleges are entirely distinct, and the programme of those for girls is, in the main, a modified form of that prepared for their brothers.

The whole course of the lycée should be completed, and generally is completed, by the pupil before he has reached his twenty-first year. It may be finished, however, by the eighteenth year. This is not astonishing, when we reflect that

the pupil enters at an early age, that the sessions are long, and that he moves forward without break or interruption through a programme carefully weighed, measured, and detailed beforehand. The class hours are now twenty a week, as compared with twenty-four previous to 1884, a reduction owing to the fact that evidence of overwork had become apparent.

The whole work is divided into eight classes, numbering from eighth, as the lowest, up to second, which is followed by the classe de rhétorique and the classe de philosophie, not numbered. There is below the eighth a preparatory class, which is, in its turn, preceded by an elementary division of three classes. Thus the boy may enter very young, and may be promoted to the eighth class when he is nine years old. The work in the preparatory class consists of French together with German or English; to these alone four hours out of the twenty are devoted: also history, geography, and two hours a week for arithmetic, together with an hour each of object lesson and drawing. At nine years of age, then, the collegian is fairly launched upon his career. The number of hours devoted to his mother-tongue is still the same, nine; he has still four hours a week in English or German; history takes an hour and a half, and geography the same; arithmetic and object lessons take three hours, while drawing, as in the preparatory class, occupies an hour. The next year, if he has not failed at examinations, the pupil proceeds to the seventh class, and must be at least ten years old. In it, the division of time to the various subjects is precisely the same.

When the pupil is at least eleven years old, and in the sixth class, i.e., at least six years from the completion of his course, a marked change takes place in the subjects of study, and in the disposition of time. His native language drops at once to three hours a week; he has been exercised in it for years nearly half of the whole class-time, and his style has been largely formed. Perhaps this early and thorough practical exercise in his mother-tongue is a reason why almost every educated Frenchman can express himself in language always elegant, smooth, and concise. What is lost by French and modern languages in the programme is gained by Latin, which rises at once to ten hours a week. History also gains an hour, arithmetic and science losing an hour, while drawing gains the time which they lose. Thus, when the Latin grammar and 'De viris illustribus Romae' is begun, the boy is reading in English Miss Edgeworth's 'Tales,' 'Evenings at home,' and Miss Corner's 'History of England,' or Benedix's 'Der Process,' 'Griechische Heroengeschichte,' etc., in German, with exercises in reading and conversation. In arithmetic, he is doing vulgar and decimal fractions, while in drawing, he is attempting architectural design and the human figure.

In the fifth class the hours are precisely the same until January, when Greek is begun, and to it two hours a week are devoted. The Latin has now got as far as the 'Fables of Phaedrus,' 'Cornelius Nepos,' and the 'Metamorphoses of Ovid.' The Greek is elementary, but in English, Sir Walter Scott's 'Tales of a grandfather,' and other works of similar difficulty, stand side by side with Grimm's 'Fairy tales,' Andersen's 'Tales,' and 'Der Eigensinn' of Benedix. The history corresponds to the language studied, so that in this class Greek history is almost exclusively read. Arithmetic has got as far as the rule of three, and geometry is continued. An elementary course of botany balances a similar course of zoölogy in the preceding year.

In the fourth class, only two hours are devoted to the mother-tongue; Latin has six and Greek six hours; modern languages, history, science (including mathematics), drawing, two each, and geography one. French classical authors are read, Caesar, Ovid, and Virgil, in Latin, conjoined with Latin composition. In Greek, Xenophon, Lucian, and composition are done. Lessing, Musaeus, Kotzebue, and Hoffman, with De Foe, Irving, etc., are read in German and English. Roman history is continued, while a course of geology replaces the botany of the preceding year.

At not less than fourteen years the third class is entered, and the work becomes heavy. In this class, mathematical work increases, and has three hours assigned to it. Latin and Greek have each five hours, with modern languages about as before. It would be tedious to go into detail in all the classes; the principal difference to be noted in the development of the scheme in the next three years is the increasing attention given to mathematics, physics, and history.

At fifteen years, if the boy be clever, he is in the second class. After the completion of this year's work, the programme divides into classe de rhétorique and classe de philosophie. The French classics are continued in the second class, and the older French literature and philology are studied, together with the history of literature. Virgil, Horace, Cicero, Livy, and Tacitus are read in Latin; and Homer, Euripides, Plato, Xenophon, and Plutarch in Greek. In the living languages, pieces from Goethe, Schiller, Hauff, Shakspeare, Goldsmith, Walter Scott, and Dickens are read, and the mathematics go about as far as the end of quadratics.

As stated above, the course now divides into

two classes. In the classe de rhétorique, the languages prevail, while in the classe de philosophie, metaphysics, mathematics, and the natural sciences prevail. A good idea of the proportion may be obtained from the time devoted to each subject. In the classe de rhétorique, French, Latin, and Greek have each four hours; modern languages, history, two hours each; mathematics, etc., three hours, and geography one. In the classe de philosophie, mental and moral science and logic, and the French authors, occupy eight hours, Latin and Greek one, modern languages one, and history two; science (including arithmetic, algebra, geometry, physics, chemistry, and physiology) has eight hours. A fair idea of the difficulty of this final year's work may be obtained by a glance at the authors in the classe de rhétorique. Nearly all the principal French classical authors are read; in Latin, Terence, Lucretius, Virgil, Horace, Cicero, Livy, Tacitus; in English and German, Shakspeare, Irving, Byron, Tennyson, Dickens, George Eliot, Lessing, Goethe, and Schiller; a good deal of modern history is added, with plane and spherical geometry and some chemistry. It might be stated that two hours a week are devoted to drawing, but that in the higher classes it is considered an extra.

If we reduce the above sketch to percentages, taking into account the whole time of the student, from entrance into the eighth class till the end of his course, we obtain the following: —

Subject, French, 20.62 per cent; Latin and Greek, 33.74; modern languages, 12.23; history and geography, 14.68; mathematics and science, 14.68; mental and moral science, 5.00; drawing, 1.25.

In this course some things are obvious. The preponderance given to language and literature, Latin and Greek, is especially noticeable. It cannot be said that the programme is a light one. Another point is, the very small part which options play in it; certain options are allowed to those who intend to become teachers of the natural sciences or mathematics, otherwise the framers of it seem to take for granted that every boy should go through the same course of mental gymnastics. For those who wish to study a profession, or for such as wish to specialize further, the university is open, and the university course presupposes as a basis the broad, general culture of the lycée.

During the winter of 1885–86 there were 14,633 students in the Italian universities: 3,894 of these were at Naples, 2,073 at Turin, 1,216 at Rome, 1,163 at Bologna, 1,008 at Padua, and 1,005 at Pavia. At Ferrara there were but 39. Of the whole number, 5,195 were students of medicine.

WHEN SHOULD THE STUDY OF GREEK BE BEGUN?

The biennial conference of the head masters of the great English schools and colleges always develops some interesting discussions on educational topics of current interest, as well as some very uninteresting ones on matters of purely local interest and importance. At the meeting in December last, Dr. Fearon of Winchester moved two resolutions regarding the study of Greek, and spoke at length in support of them. The resolutions read, 1°, that it is desirable that the teaching of Greek to boys should be begun at a later age than it is at present; 2°, that it is desirable that a knowledge of Greek should not be required for admission to the classical side of the public schools.

In the published report of Dr. Fearon's remarks, we read that he began by explaining what he meant by the words, 'at a later age than at present.' He said that he had recently himself collected statistics, and found, that, of 385 boys now learning Greek, 213 had begun at ten or earlier, and of these 213, seventy-four had begun at nine or earlier. The average age was ten, or rather younger. He had also consulted a number of preparatory school-masters, and, almost without an exception, they put the time that it took them to prepare boys in Greek for admission into public schools at from two to three years. The first proposition he wished to establish, was, that the cause of Greek would not suffer by raising the age of beginning from ten to thirteen. For the last year and a half he had kept accurate records of all boys who had passed through Winchester, and he had submitted their records to his staff. It was difficult to arrange particular facts in a way that would carry general conviction, but the inference that he and his assistant masters — almost without an exception — had drawn, was, that boys who had started Greek at ten were no better than those who had started at eleven. Some of the most able and brilliant classical scholars at Oxford and Cambridge had begun Greek after they were fifteen. But he did not rest his case on his experience with promising boys, who, it might be argued, would come out well under any system. The facts as to backward boys could not be got over, and were most humiliating. Of thirty-five boys who had lately entered in the bottom division at Winchester, only three had reached a point in the school where they read anything harder than the shorter form of an elementary Greek reader. One of them had studied Greek for three years before entering, and for seven years at Winchester; two others had reached that point after three and a half