



FRONT



BACK

TWO VIEWS OF ENGINEERING HALL, UNIVERSITY OF FLORIDA

Vol 10

FEBRUARY, 1916

NSA

College of Engineering

University of Florida

Gainesville



Descriptive Bulletin

OF THE

College of Engineering

OF THE

University of Florida

February, 1916

This Bulletin is intended to give in popular form a brief description of the work of the College of Engineering maintained by the State of Florida as a part of its State University. More complete information can be found in the University Catalog, or obtained by writing to the University of Florida. Inquiries will be welcomed and will receive prompt attention.

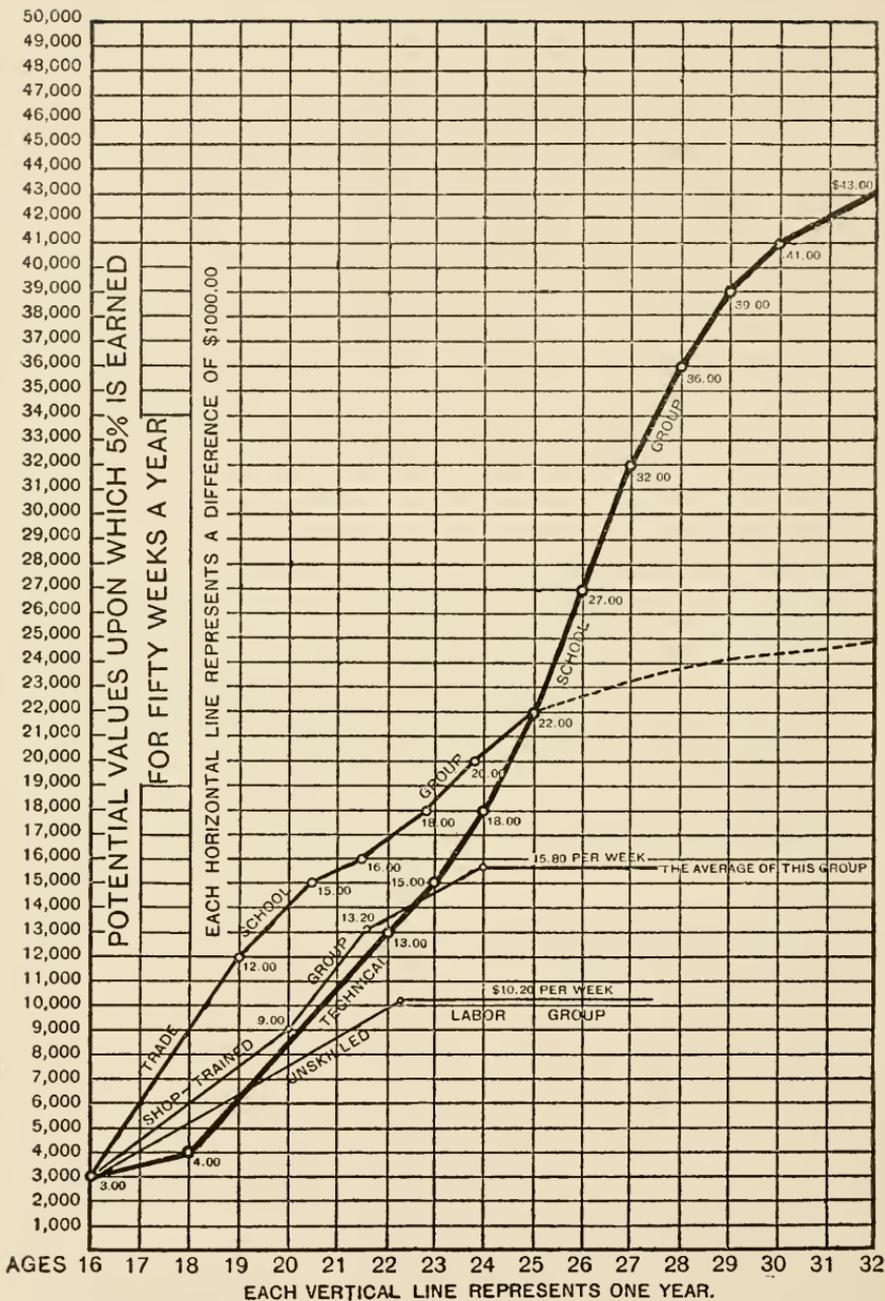
THE PURPOSE OF THE COLLEGE OF ENGINEERING

The College of Engineering is designed, on the one hand, to help young men to prepare themselves for useful occupation and, on the other hand, to help the industries of the State by furnishing engineers and technical employees.

The State of Florida needs numerous public works, such as drainage of its swamps, construction of highways, improvement of its harbors and waterways, added public utilities in towns—water works, electric power plants, gas plants, sewerage systems,—more railroads, further development of its phosphate mines and other mineral resources, and more manufacturing. To meet these demands successfully and economically requires engineers; that is to say, men who devote themselves to the planning of public works, the successful execution of plans, and economical operation. An engineer has been defined as “a man who can do for a dollar what any fool can do for two dollars.” This states plainly the nature of engineering service. It lies, not so much in getting results some how or other, as almost anyone can do, but in obtaining the results in the most satisfactory and economical way, for which it is plain that careful planning, scientific knowledge, and practical experience are necessary.

THE VALUE OF TECHNICAL EDUCATION

It sometimes happens that a man can become a successful engineer through practical experience, and without any systematic scientific education, but such cases are rare; and engineers of this kind are likely to be successful only in imitating the work of others, and to find themselves helpless when they face new problems, since they lack an understanding of fundamental principles. The greater number of successful engineers have been through systematic



THE MONEY VALUE OF TECHNICAL TRAINING.

(Taken from the report of the United States Commissioner of Education, Vol. I, 1905, p. 16)

courses of study in engineering colleges, and it would be very foolish for anyone to undertake to succeed in engineering without securing the necessary technical education. Such a man may succeed to a certain point, but in most cases is hopelessly handicapped if he attempts to reach the higher ranks of his profession. This is very clearly shown by a set of curves, which are reproduced herewith, taken from the report of the United States Commissioner of Education (Vol. I, 1905, p. 16). They show the earnings of technical graduates, graduates from manual training high schools, and of persons with less education who are engaged in engineering work.

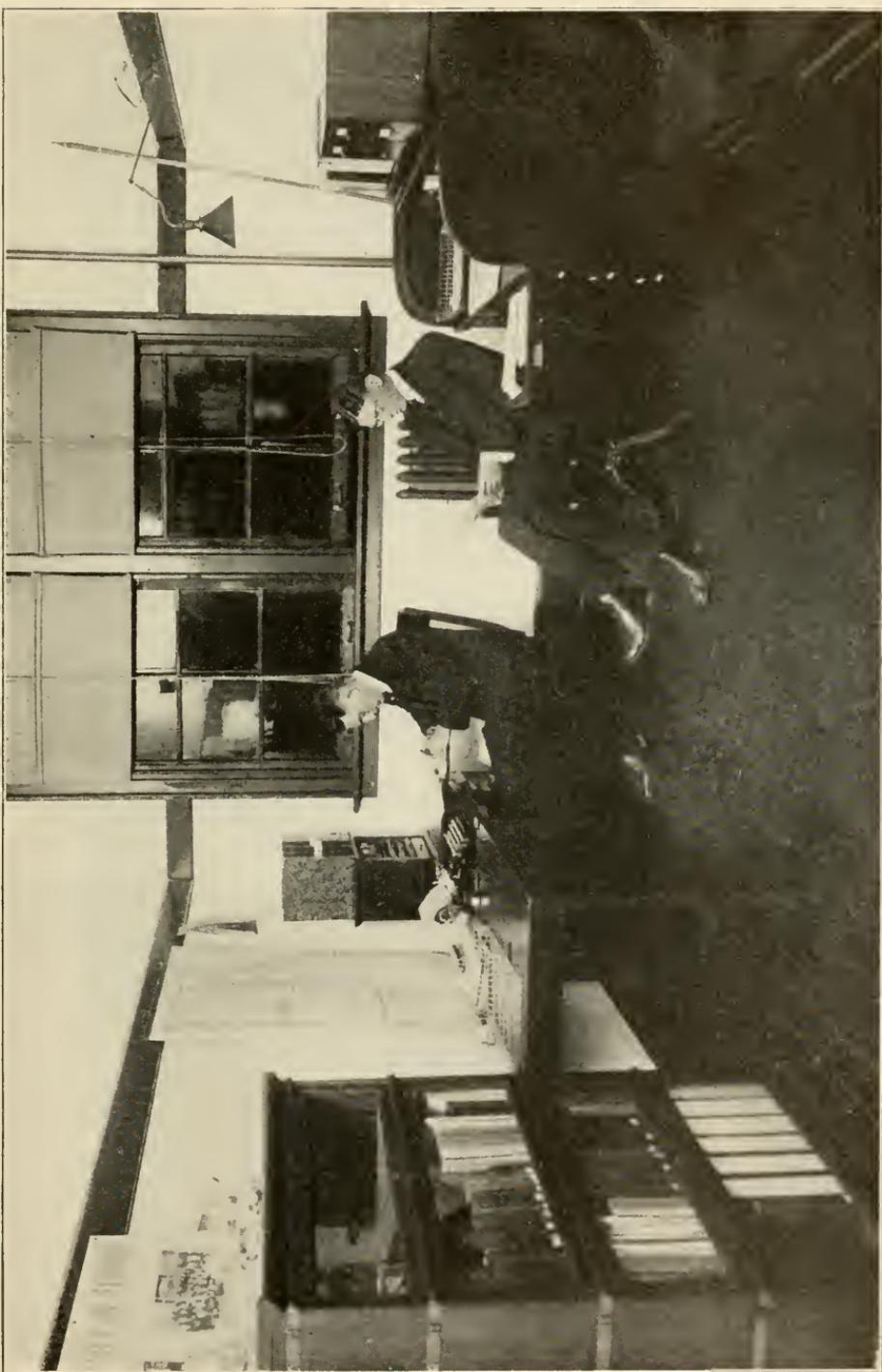
ENGINEERING BUILDINGS AND EQUIPMENT AT THE UNIVERSITY OF FLORIDA

The headquarters and principal building of the College of Engineering is Engineering Hall. It is a three-story brick building, 122 feet by 73 feet, with a one-story wing for boilers and steam engine laboratory. It provides classrooms and drafting rooms for all the engineering departments of instruction, and various special laboratories, such as the hydraulic laboratory, dynamo laboratory, steam engine laboratory, and laboratory for testing materials. Two views of this building are shown herewith (page 2) as well as the plan of the ground floor (page 8).

For the shop work, a separate building is used, located about 400 feet west of Engineering Hall. It is a one-story brick building, 60 feet long by 30 feet wide, with a wing 30 feet by 20.

A part of the work of the College of Engineering coincides with that of the other colleges of the University, and for such work the classrooms and laboratories in other University buildings are used.

Suitable equipment is provided for the various laboratories, of which no description will be given here, since the pictures included in this bulletin should give sufficient idea of its nature.



OFFICE OF THE DEAN OF THE COLLEGE OF ENGINEERING



FACULTY OF THE COLLEGE OF ENGINEERING

From left to right:—R. W. Thoroughgood (Civil Engineering), J. M. Farr (English), R. E. Chandler (Mechanical Engineering), A. J. Strong (Mechanical Engineering), H. G. Keppel (Mathematics), J. R. Benton (Electrical Engineering, and Dean of the College of Engineering), W. N. Perry (Physics), A. A. Murphree (President of the University), E. R. Flint (Chemistry), R. K. Sellers (Civil Engineering), C. L. Crow (Spanish), Major E. S. Walker (Military Science).

CHARACTER OF INSTRUCTION
AT THE
COLLEGE OF ENGINEERING, UNIVERSITY
OF FLORIDA

The courses in engineering at the University of Florida use the same textbooks and are planned in the same way as those of engineering colleges in good standing throughout the United States. In all such institutions it is understood that school training *alone* cannot make a man a successful engineer, even though it is an indispensable element in his ultimate success. Practical experience, as well as purely scientific knowledge, is necessary. On the other hand, every effort is made to have the instruction of as practical a nature as may be. For this reason a great deal of the work of the courses is not by recitations or lectures, but is given in the laboratories, shops, drafting-rooms and field, where students handle for themselves the things about which they study. Along with this practical work, recitations and lectures are carried on, dealing with the theory of the work and supplying general scientific knowledge, especially in mathematics, physics, and chemistry. It has been said that "the most practical of all things is a sound theory," so that, while the term "theoretical" is often popularly used in a contemptuous way on account of the frequency of false theories, on the other hand the study of fully established and well verified scientific theory needs no apology, and, in fact, makes a man *much more practical* than one who lacks such study.

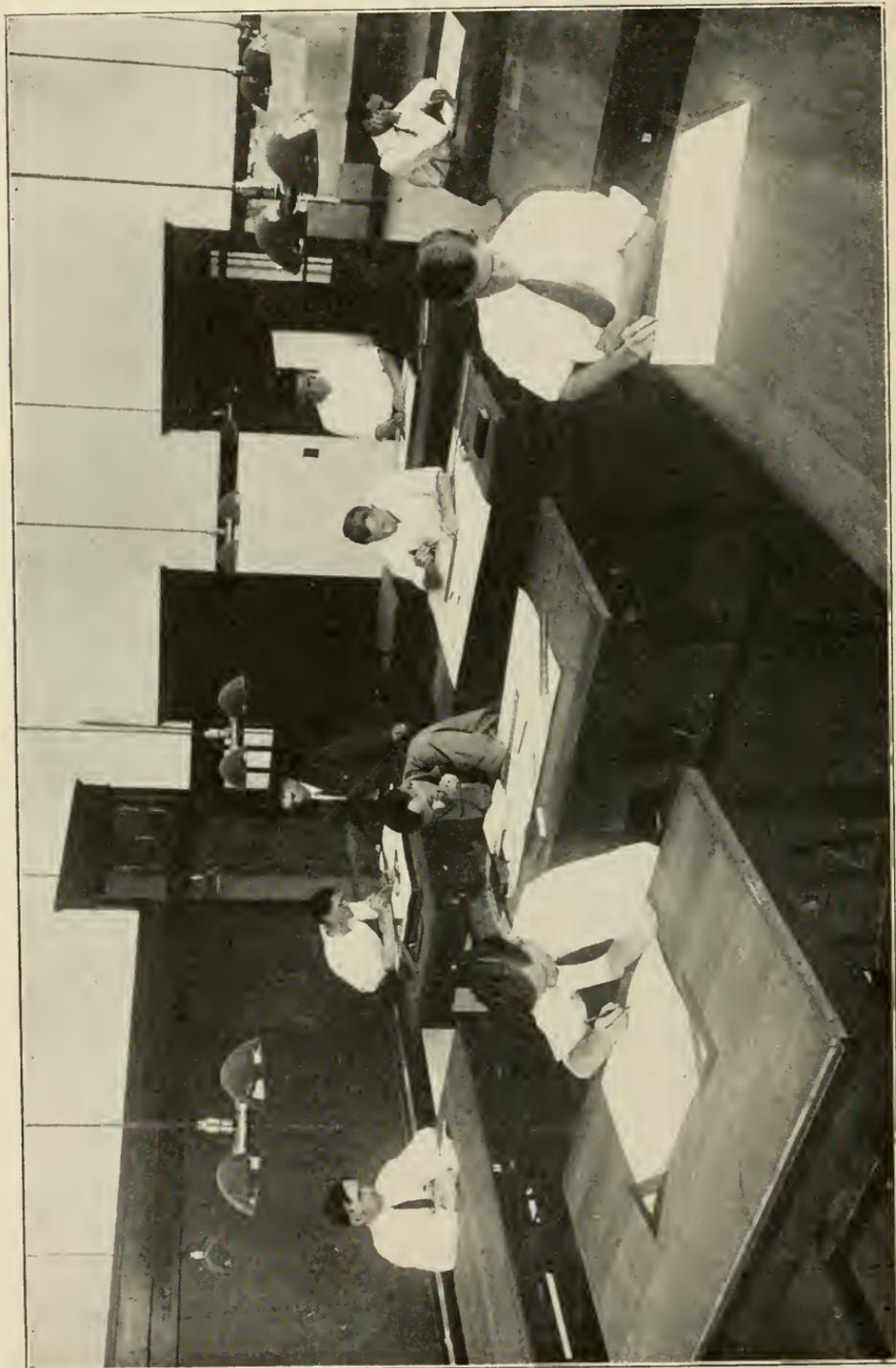
DEPARTMENTS OF INSTRUCTION

DEPARTMENT OF CIVIL ENGINEERING

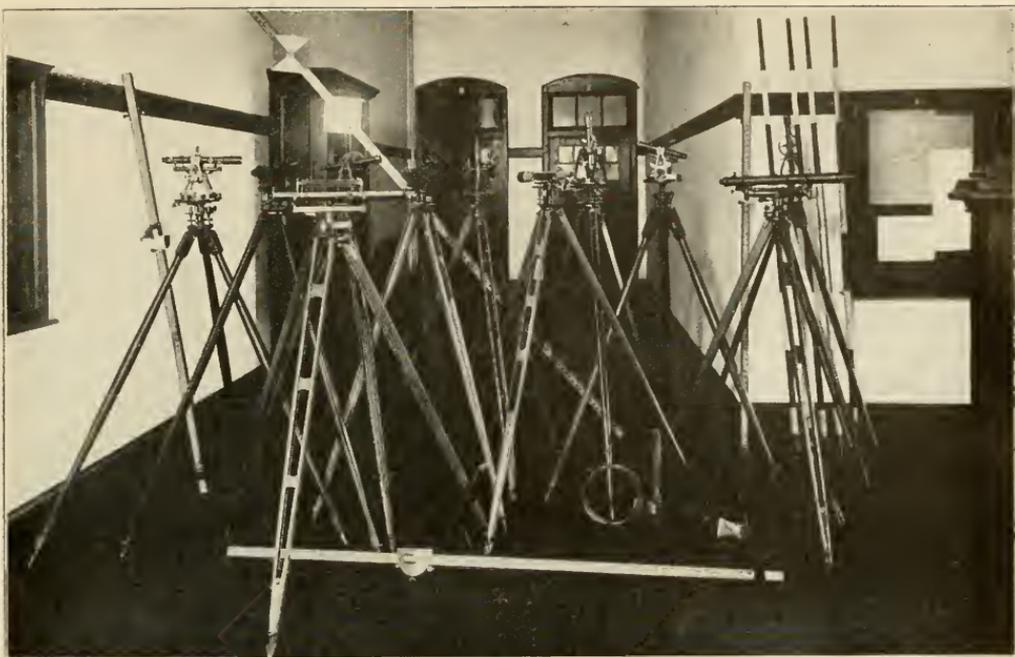
R. W. Thoroughgood, C.E. (Lehigh University), Professor

R. R. Sellers, B.S.C.E. (Bucknell University), Instructor

This department gives instruction in surveying; in the design and location of railroads; in hydraulics, or the theory of water and the appliances for using it (such as dams,



CIVIL ENGINEERING DRAFTING ROOM—CLASS IN BRIDGE AND ROOF DESIGN, OR STRUCTURAL ENGINEERING



A FEW OF THE SURVEYING INSTRUMENTS—CIVIL ENGINEERING DEPARTMENT



FIELD WORK IN SURVEYING



HYDRAULIC LABORATORY—MAKING A TEST OF A VENTURI WATER METER



TESTING LABORATORY—CLASS MEASURING THE CRUSHING STRENGTH OF A CONCRETE CUBE

pipes, canals, pumps, turbines, and harbor works); in structural engineering, or the design of roofs and bridges and framed structures in general; and in municipal engineering, including the subjects of roads, pavements, water supply, and the disposal of wastes. The accompanying pictures show a class in surveying at work, a class in the drafting-room for roof and bridge design, and a class making a test in the hydraulic laboratory (pages 12-14).

DEPARTMENT OF MECHANICAL ENGINEERING

R. E. Chandler, M.E. (Stevens Institute), M.M.E. (Cornell University),
Professor

Major E. S. Walker, U. S. A. (Retired), Associate Professor of Engineering
and Professor of Military Science

A. J. Strong, Instructor

This department gives instruction in Mechanical Drawing, Machine Design, Mechanism, Strength of Materials, Mechanics, Steam Engines and Gas Engines. This department also has charge of the shops, in which practical instruction is given in Carpentry, Wood Turning, Wood Carving, Cabinet Work, Blacksmith Work, Foundry Work, Pattern Making and Machine Tools. The shop work is designed, not so much to make skilled mechanics, as to give the students direct personal knowledge of practical shop processes. The accompanying pictures show a class in mechanical drawing at work in the drafting-room, and some views of the shop work (pages 16-19).

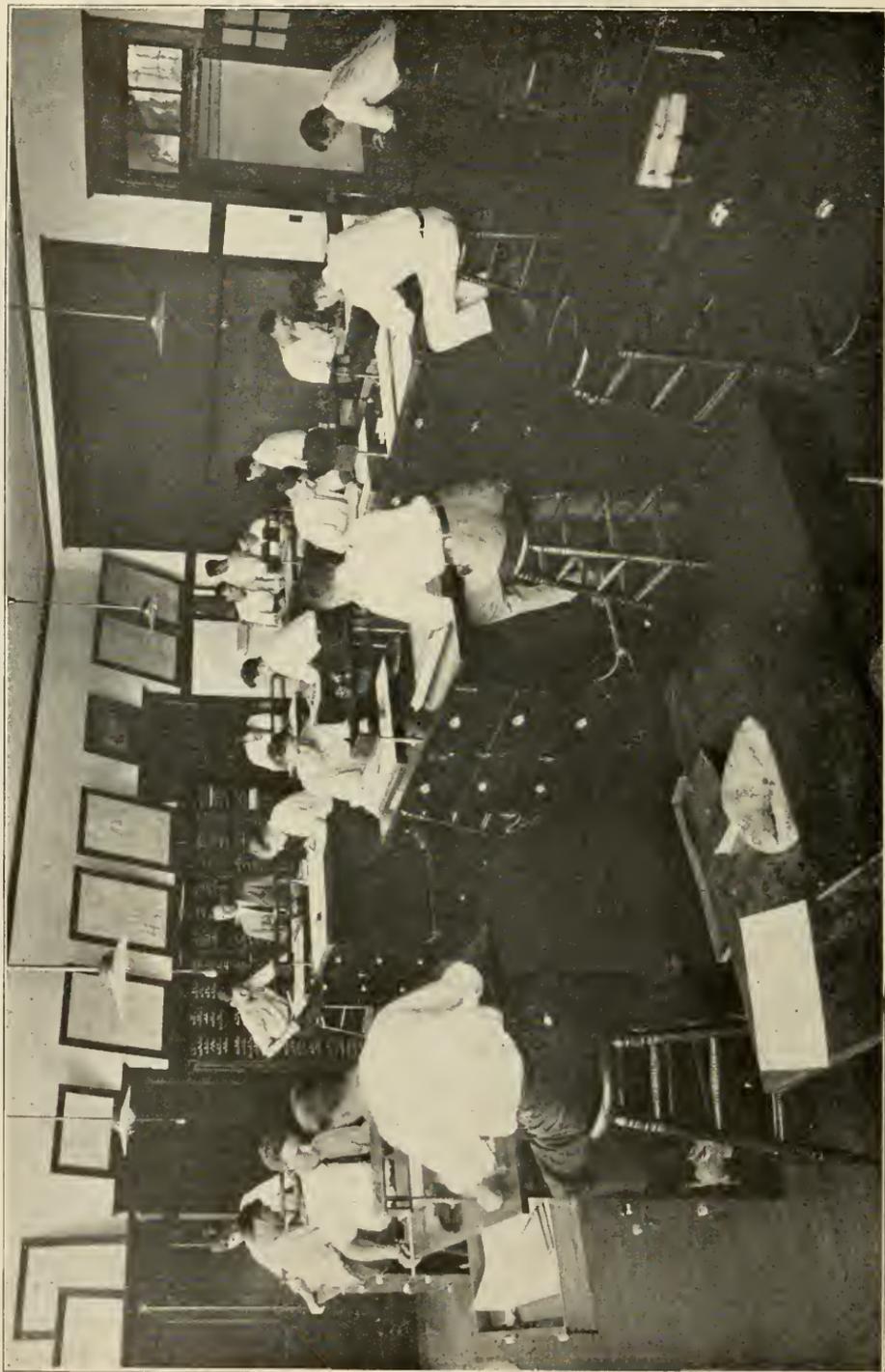
Instruction in the Testing of Materials is given jointly by the Departments of Mechanical Engineering and Civil Engineering. The accompanying illustration shows a class making a test of the strength of a sample block of concrete (page 14).

DEPARTMENT OF ELECTRICAL ENGINEERING AND PHYSICS

J. R. Benton, B.S., Ph.D. (University of Goettingen), Professor

W. S. Perry, A.B. (Southern University), Instructor

This department, in its electrical engineering work, gives instruction on electric dynamos and motors, alternating currents, electrical transmission of power, electric lighting, and the theory of the telegraph and telephone. Pictures are



MECHANICAL ENGINEERING DRAFTING ROOM—CLASS IN MECHANICAL DRAWING AT WORK



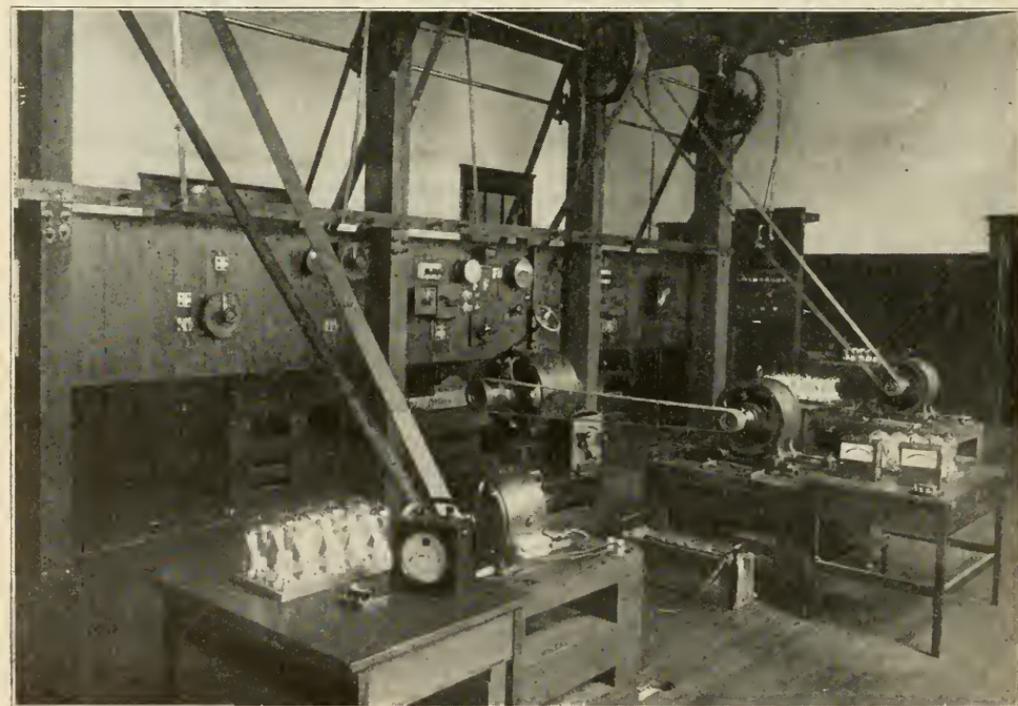
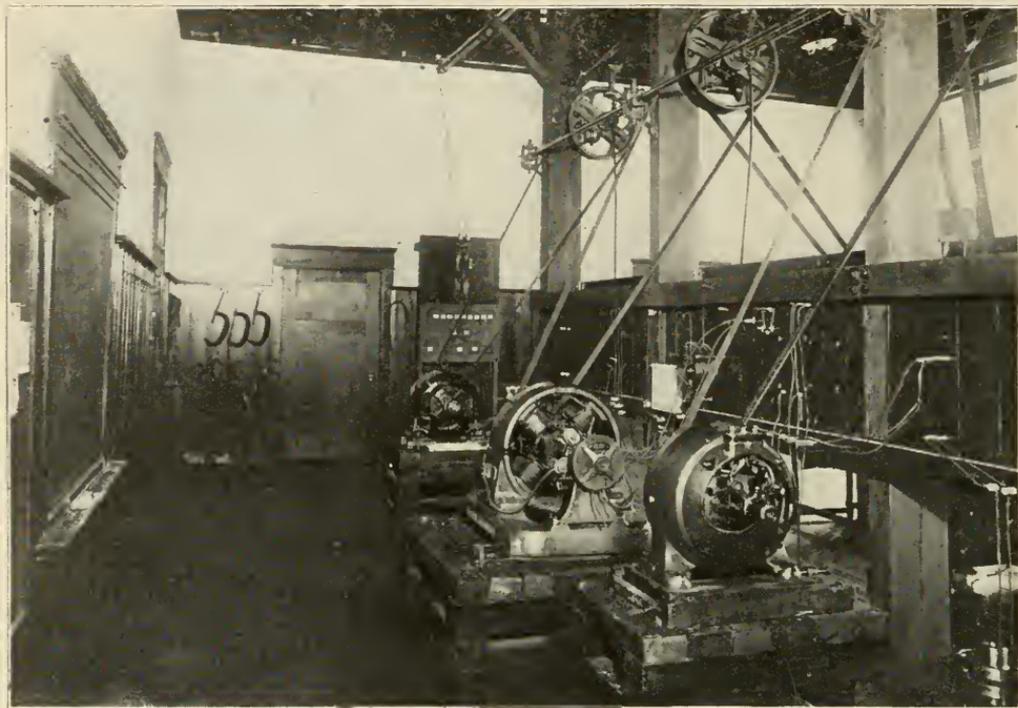
WOOD SHOP.—CLASS RECEIVING INSTRUCTION IN WOOD-TURNING



FORGE SHOP



MACHINE SHOP



TWO VIEWS OF THE DYNAMO LABORATORY

given herewith showing two views of the dynamo laboratory (page 20).

In its work in Physics, the courses customary in American colleges are given, including experimental lectures, recitations and laboratory work, in mechanics, heat, acoustics, optics, electricity, and magnetism. The accompanying pictures show a class at work in the physics laboratory and the physics lecture-room ready for a lecture (page 22). The rooms used by the Physics Department are not in the Engineering Building, but in Science Hall.

DEPARTMENT OF CHEMISTRY

E. R. Flint, Ph.D. (University of Goettingen), M.D. (Harvard University),
Professor

In this department all engineering students are required to take work in general chemistry, both lectures and laboratory work. Many special courses are also offered, which are frequently taken as electives or as extra studies by engineering students, especially the courses in analytical chemistry.

DEPARTMENT OF MATHEMATICS

H. G. Keppel, A.B., Ph.D. (Clark University), Professor

In this department all engineering students are required to take work in analytic geometry, college algebra, spherical trigonometry, and differential and integral calculus. Solid geometry and plane trigonometry is also required of those who have not already had these subjects.

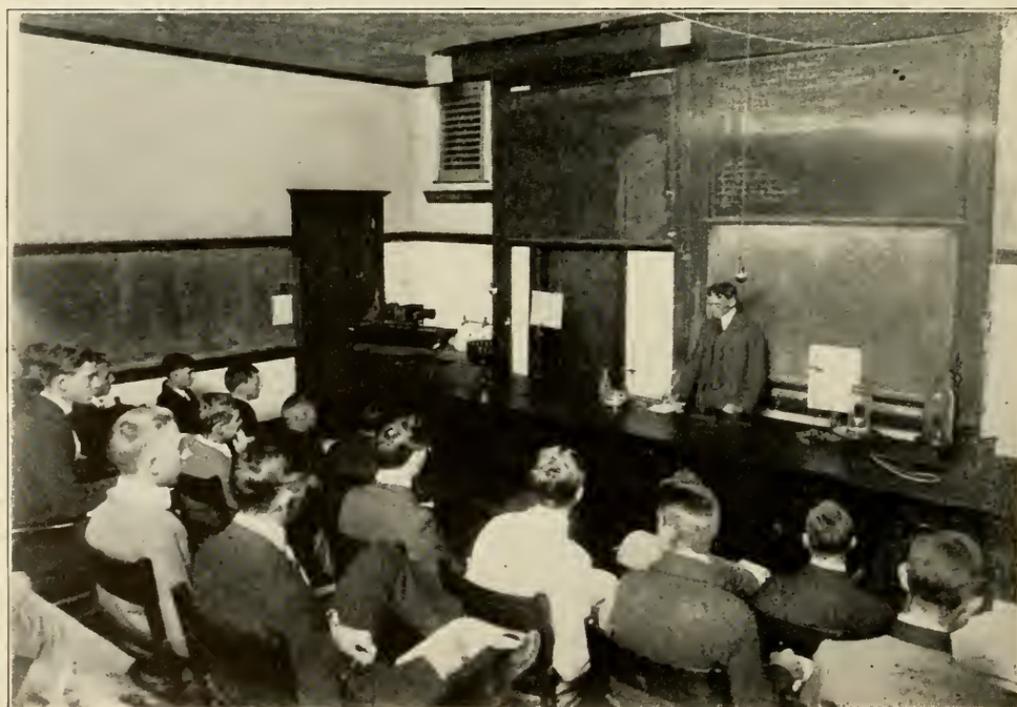
DEPARTMENT OF ENGLISH

Jas. M. Farr, A.M., Ph.D. (Johns Hopkins University), Professor
C. A. Robertson, B.A. (University of Florida), Instructor

In this department all engineering students are required to take work in their freshman year in rhetoric and composition, and also in the senior year on the writing of technical articles. These are compositions dealing always with engineering topics.



PHYSICAL LABORATORY



PHYSICS LECTURE ROOM—FRESHMAN CLASS HEARING AN EXPERIMENTAL LECTURE ON SOUND

DEPARTMENT OF MODERN LANGUAGES

C. L. Crow, M.A., Ph.D. (University of Goettingen), Professor

In this department all engineering students are required to take two years of Spanish. In view of the probable increase in commerce, and other relations between Spanish America and the United States, it is probable that a working knowledge of Spanish will in the future be of great value to American engineers.

DEPARTMENT OF MILITARY SCIENCE

Major E. S. Walker, U. S. A. (Retired), Professor

In the freshman and sophomore years one hour per week is devoted to lectures on military science, and in the freshman, sophomore, and junior years, three hours per week are devoted to military drill. It is thought that instruction in these lines is of great value, whether or not a student performs military duties in later life, since it familiarizes the student with many of the principles of organization and management, and since the physical exercise in performing the drills is promotive of health and strength.

SPECIAL LECTURES

The College of Engineering has been fortunate in having occasional visits from distinguished practicing engineers, who have been kind enough to give addresses on subjects out of their practical experience. These lectures are most valuable to students of engineering.

ENGINEERING CLUB

The students of the College of Engineering maintain a club for the purpose of discussing technical questions in an informal way, of obtaining practice in public speaking and the conduct of public meetings, and of promoting a friendly acquaintanceship among those pursuing engineering studies.



BENTON ENGINEERING SOCIETY—COLLEGE OF ENGINEERING, UNIVERSITY OF FLORIDA.

CURRICULA AND DEGREES

Three curricula, each requiring four years, are offered: one in Civil Engineering, one in Electrical Engineering, and one in Mechanical Engineering. They lead to the degrees of Bachelor of Science in Civil Engineering (B.S.C.E.), Bachelor of Science in Electrical Engineering (B.S.E.E.), and Bachelor of Science in Mechanical Engineering (B.S.M.E.), respectively.

The freshman year is the same for all engineering students; the sophomore year is the same for electrical and mechanical engineering students. The work in Chemistry, English, Spanish, Mathematics, and Physics is the same for all engineering students throughout the curriculum, and in part coincides with that provided for students in the College of Arts and Sciences. All engineering students take some work in drafting and shop practice, but the time devoted to these subjects varies in the different curricula.

A student who has completed the regular curriculum leading to the bachelor's degree in engineering, and who has also had experience in responsible engineering practice, may obtain the degree of Civil Engineer (C.E.), Electrical Engineer (E.E.), or Mechanical Engineer (M.E.), under the following regulations:

The degree of C.E., E.E., or M.E. may be granted to a graduate of the College of Engineering upon recommendation of the head of the department in which the degree is sought, and with the concurrence of the Faculty of the College of Engineering, providing the candidate submits evidence that he has had from two to five years of successful and responsible engineering practice, subsequent to graduation. The length of time demanded will depend on the character of the professional experience, and on the average grade which the candidate obtained while an undergraduate, which must be 90 or more in order to obtain the degree in two years. By "responsible" experience is meant work in which the candidate has had to use his own initiative, as distinguished from the mere rendering of routine assistance.

It is intended that the bachelor degree (B.S.C.E., B.S.E.E., and B.S.M.E.) shall indicate merely the completion of a course of study in the theory of engineering, while the later degrees (C.E., E.E., or M.E.) shall indicate actual and demonstrated proficiency to practice engineering in some one of its branches. Every student of engineering should look forward to obtaining one of these degrees eventually.

Entrance Requirements.—In order to be admitted as a regular student in the College of Engineering, and to take up the regular course of studies leading to a degree, a student must have been graduated from a regular four-year high school, or have had equivalent education. In the case of mature students who have been engaged in actual work related to engineering (surveying, drafting, machine-shop work, or the like), work of this sort will be accepted for entrance credit in place of not more than one year of high school study.

Other Courses.—For the benefit of persons who have not been through high school, who wish to take some engineering studies without being candidates for a degree, a short course is offered, in which instruction is given in mechanical drawing, machine drawing, elementary machine design, wood working, forge and foundry practice, machine shop practice, and elementary mathematics, physics, and chemistry.

OPPORTUNITIES FOR EMPLOYMENT IN ENGINEERING AFTER GRADUATION

Since the foundation of the University of Florida in 1905 there have been forty-three (43) graduates from the College of Engineering, of whom thirty-three (33) are employed as engineers, while the other ten have found their way into other lines of activity. An earnest effort, which is usually successful, is made by the College of Engineering to secure employment for its graduates at the time of graduation, and to keep them employed thereafter. In this effort the successful graduates of former years give very valuable assistance and will no doubt be in a position to do this even

more as time goes on and they reach higher positions and become more numerous. The positions held by University of Florida graduates in engineering up to 1910 (of whom there were seven) are as follows: Assistant Superintendent of Phosphate Mining Company, at Nichols, Florida; Assistant Physicist, Bureau of Standards, Washington, D. C.; Telephone Engineer, State Railroad Commission of Florida; Electrical Contractor, Jacksonville; Civil Engineer, engaged in highway and bridge construction, Yellowstone Park; Civil Engineer for a Lumber Company in Florida. One of the seven is not engaged in engineering work.

EXPENSES

No charge is made to Florida students for tuition at the University of Florida, but the following fees are required each year:

Registration fee.....	\$ 5.00
Infirmary fee	3.00
Contingent fee.....	5.00
Damage deposit.....	5.00
	\$18.00
Less damage deposit returned at end of year.....	5.00
	\$13.00

All students who are not residents of Florida are required to pay a tuition fee of twenty (\$20.00) dollars per year in addition to the above.

Board and Lodging.—Rooms and board will be furnished by the University at a cost of one hundred and twenty-eight dollars and fifty cents (\$128.50) for the collegiate year. Students may occupy a room in the dormitory, without taking meals at the University Dining Hall, at the rate of five (\$5.00) dollars per month for lodging. Board at the Dining Hall without lodging in the dormitories will be furnished at the rate of thirteen dollars and fifty cents (\$13.50) per calendar month.

Uniforms.—For the military drill, students are required to provide themselves with the prescribed uniform, which is furnished under contract. The total cost of this is about fifteen (\$15.00) dollars.

Books.—The cost of books depends largely upon the course taken, but is in no case a large item of expense in proportion to the value of the instruction obtained.

Summary. — The following statement summarizes the probable minimum expenses of a Florida student for the collegiate year in the College of Engineering:

Fees, as above	\$ 18.00
Board and lodging	128.50
Uniform (about).....	15.00
Books (about)	20.00
Incidentals (laundry, athletic dues, etc.) (estimated) ..	30.00
	<hr/>
Total.....	\$ 211.50
Less damage deposit returned at end of year.....	5.00
	<hr/>
	\$ 206.50

Students from other states will pay in addition to the above a tuition fee of twenty dollars.

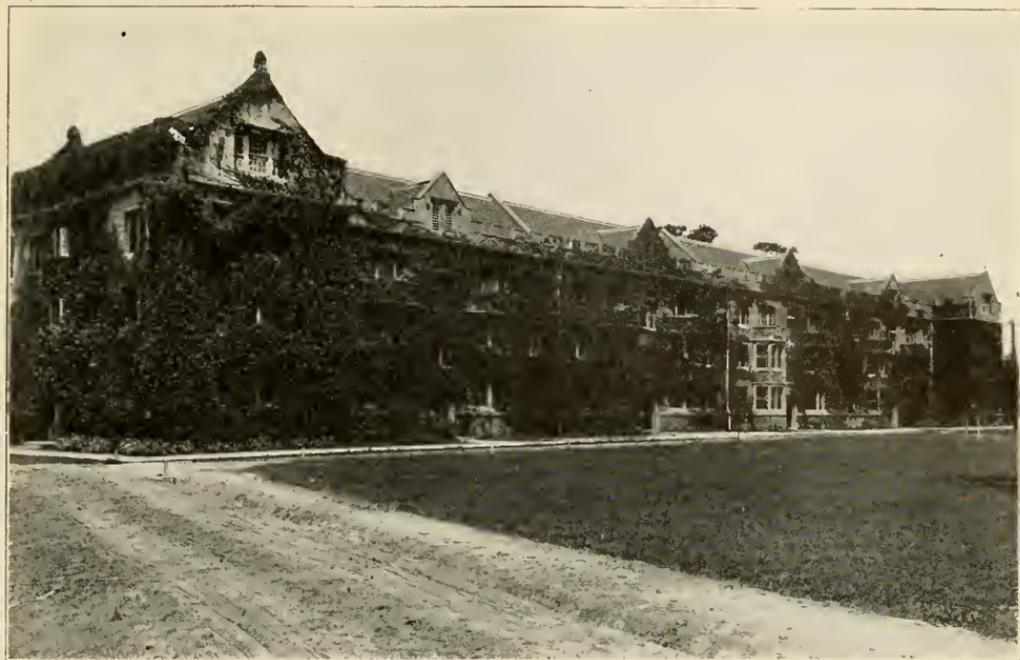
SCHOLARSHIPS

One scholarship securing exemption from the registration fee of five dollars is given to each county in Florida. These scholarships are to be obtained from the County Superintendents of Public Instruction.

Through the generosity of friends, the University is able to offer several scholarships paying from one hundred to two hundred dollars per year. Such scholarships are awarded to indigent students of superior character and ability, and are described fully in the general catalog of the University.

STUDENT LIFE AT THE UNIVERSITY OF FLORIDA

Most of the students live in the two dormitories provided by the University, Thomas Hall and Buckman Hall, shown in the pictures on page 29. These are brick and concrete structures, three stories in height, sixty feet in width, and three hundred, and two hundred and forty feet, respectively, in



THOMAS HALL—DORMITORY



BUCKMAN HALL—DORMITORY



INTERIOR UNIVERSITY COMMONS



UNIVERSITY COMMONS OR DINING HALL



A FEW OF THE STUDENT ACTIVITIES AT THE UNIVERSITY OF FLORIDA

- Upper row: 1. Football team, 2. Y. M. C. A. cabinet, 3. Baseball team.
 Lower row: 1. University Band, 2. Glee Club, 3. Tennis Club.

length. They are built in fireproof sections, each containing twelve suites of dormitory rooms, and on each floor of each section a shower bath, lavatory and toilet. All rooms are furnished with two iron bedsteads and mattresses, chiffonier or bureau, table, washstand, and chairs. The students are expected to provide pillows, bedding, and such other articles as they may wish. In the last few years the enrollment has been too great to provide for all of the students in the dormitories, but rooms can be rented in private houses near the University, many of which are the homes of the professors. The number of rooms obtainable in this way, at moderate prices, is ample.

It is the policy of the University to foster all of those wholesome student activities and amusements that make American college life so attractive. It is found that students can carry on such activities, under the University rules which regulate them, without any detriment to their studies, and with the advantage of gaining certain experiences likely to help them in later life. The athletic teams of the University, in football, baseball and basketball, play with other colleges of the South, under the rules of the Southern Intercollegiate Athletic Association, of which the University of Florida is a member. Students who do not belong to any of the regular athletic teams receive regular instruction in the gymnasium under a competent physical director.

Other successful student enterprises are the following: The Y. M. C. A.; the musical organizations, including the Glee Club, the University Orchestra, and the University Band; the Florida "Alligator", a weekly newspaper owned and controlled by the student body, and printed from its own presses on the University campus; the "Seminole", an annual published each year by the senior class; several literary societies and scientific associations; and chapters of several Greek letter fraternities.

A number of illustrations are given herewith (page 31), which will help to give an idea of the general life of the students at the University of Florida.

WHY FLORIDA BOYS SHOULD GO TO COLLEGE AT THE UNIVERSITY OF FLORIDA

By attending college at the University of Florida any young man who expects to make his home in Florida has an opportunity to form a wide acquaintanceship throughout all parts of the state, which is likely to be of much value to him in later life in whatever profession he may enter. He also has better opportunity to become familiar with the peculiar local conditions affecting his own line of work than is possible if he leaves the state for his college course. Some years ago it was difficult to find good facilities in Florida for pursuing college studies; this condition has now been remedied and no longer furnishes a sound reason for going outside of this state for college study.

At the University of Florida one can obtain not only formal instruction in special courses, but also a broad acquaintance with the general intellectual life of the state. A student of engineering at this institution comes frequently into contact with those who are studying law, agriculture, education, or chemistry, or are specializing in purely cultural studies, or are preparing to take medical courses. Such contact with minds of varying interests is broadening, and is helpful in familiarizing the student with the points of view in various lines of work. A student at this institution also comes in contact with the research work being done by the Agricultural Experiment Station, which has gained so much information of practical value for Florida agriculture, and with the Extension Division, the purpose of which is to diffuse the benefits of specialized knowledge throughout the whole population of the state; with the work of High School Inspection, which is carried on from the University campus, and has helped so much in the development of Florida high schools; with the work of the Florida Plant Board, engaged in using scientific methods for the eradication of citrus canker, and with many other activities carried on from the University campus, and designed to make technical and scientific knowledge of practical value to the people of Florida.



READING ROOM FOR PERIODICALS
UNIVERSITY LIBRARY

The University Library contains 17000 volumes, including a large number on Engineering subjects. In the periodical room shown here, the current numbers of 112 periodicals are kept on the tables for the use of students. All of the important American journals on engineering and related sciences, together with a number of foreign ones, are on file here.

The Library is open every week-day from 8 a.m. to 10 p.m., under the direction of the University Librarian, Mr. M. B. Hadley, A.B. (Yale), who devotes his full time to rendering assistance in making the Library useful to the students.

