

HISTORY
DEPARTMENT OF ENGINEERING GRAPHICS
1870 - 1970
THE OHIO STATE UNIVERSITY

Ralph S. Paffenbarger

The Ohio State University was established in 1870 as The Ohio Agricultural and Mechanical College. Classes began September 17, 1873, with seven professorships. Edward W. Orton served as the first President. He was formerly President of Antioch but came to Ohio State because he would also hold the title of Professor of Geology, Mining and Metallurgy.

In President Edward Orton's report to the Board of Trustees covering the second collegiate year of instruction, an account of the departments of instruction lists: Mechanical and Freehand Drawing as one of the departments added to bring the total to nine. President Orton mentioned the following statement in his report relative to the establishment of this department:

"That the provision of instruction in mechanical and freehand drawing meets a real want among our students as seen in the fact that twenty-four of them have already entered the classes in this department."

Since there were no college divisions at this time all departments (9) reported directly to the President.

Thomas Mathew served as the first instructor in this newly formed department and sent the following report to President Orton:

Mechanical and Freehand Drawing

"1st Report

"Columbus, Ohio
November 20, 1874

Edward Orton, A.M., President

"Sir:

In forming the classes for Drawing, special attention was paid to the convenience of those wishing to pursue this branch of study. As a result we have more numerous recitations though fewer students present at the time.

We commenced with twenty pupils; our number now is 24. Several students take the extra lesson with the class, working as opportunity offers.

We have seventeen recitations per week. Total number since commencing one hundred and thirty five. Considerable interest is felt in the subject of drawing. Hitherto the exercises have been of a pleasing, rudimentary character.

Several gentleman students receive lessons in lettering, as being important to them in engineering and kindred professions. Some of the ladies are studying illuminated lettering. Many have made good progress for the time devoted to the study.

One great advantage to the small class is the extra personal supervision each pupil receives.

Diagrammatic work has been done for the Departments of Chemistry, Geology, and Physics.

Respectfully submitted,

(signed) Thomas Mathew"

Mechanical and Freehand Drawing

"2nd Report

"Columbus, Ohio
November 3, 1875

Edward Orton
President of the Ohio Agriculture & Mechanical College

"Sir:

"The interest in this department has been maintained by the students during the year; very fair improvement is being made, and in some instances it is very marked.

"Instruction has embraced the following subjects. Mechanical drawing from model machines, India ink drawing and lettering, for those who contemplate engineering and surveying as professions; water-color botanical drawing; lithographic drawing and printing; pictorial, lithographic transfer writing and printing; photography from nature and photographic printing; also linear perspective for outdoor sketching.

"In lithographic drawing and photography, some very pleasing pictures have been executed by the students.

"Diagrammatic work in oil colors has been done for the Chemical and Geological departments; also in lithography for Physics and Chemistry, lithographic examination papers for Zoology and Latin and Greek.

"We are in want of more advanced drawing studies (lithographed) either English, French or German, a few good plaster casts of animals, some of the human figure from the antique, and anatomical human figure, a box of watercolors and brushes, also a box of mathematical instruments, some frames and glasses for the exhibition of work done in the room, and for specimens of the different kinds of engraving, etchings and lithography, printing, etc., now in use; also a case for the students drawing materials, etc.

"A knowledge of applied art is becoming a necessity in connection with the educational institutions of the present day. The thronged art halls of our State and county fairs, industrial exhibitions, etc., are an evidence of improved popular taste, developed by the dissemination of good printed pictures at a trifling cost. Our students, whom we may usually expect will, in the

future, be connected with such art displays, should be able to distinguish one kind of picture from another, and have at least a theoretical knowledge of the mode of production. As a pleasant accomplishment, drawing is very desirable, but the ability to draw, in connection with professions of mechanical trades in money value can hardly be over estimated.

"The stages of instruction should embrace mechanical and machine drawing, linear perspective, details of architecture and ornaments from copies, freehand drawing from copies of objects, flowers, foliage, natural history, domestic animals, the human figure, etc.; drawing from plaster casts, shading from the round, sketching from nature, and painting in oil and water colors.

"A taste for the fine arts is no plant of the desert, that will spring up unheeded and spread its blossoms where there is none to enjoy its fragrance, nor a sturdy weed that can struggle into vigor through rubbish and neglect; it is a plant whose seeds will remain inert until called into life by culture and will spread its luxuriance exactly in proportion to the care taken of it.

Respectfully submitted,

Thomas Mathew"

The entire faculty of the Ohio Agriculture and Mechanical College in the year 1875 consisted of 12 people--the President, 7 Professors, 1 Assistant Professor, 1 Instructor, 1 Assistant and the Librarian.

As of this year the University was organized into three schools:

1. Exact Sciences - Mathematics, Civil Engineering, Physics and Mechanics.
2. Natural History - Botany, Zoology, Geology, Agriculture
3. Letters and Philosophy - English Language and Literature, German Language and Literature, French, Latin, Greek Languages and Literature, Political Economy and Civil Polity.

It was noted that the salary of the lone instructor in drawing was \$600.00 for 10 months or \$60.00 per month.

The first texts used were by Albert E. Church, L.L.D., an early professor of mathematics in the United States Military Academy. They were entitled "Elements of Descriptive Geometry" with applications to spherical, perspective, and isometric projections and to shades and shadows. This was supplemented by a book of plates to descriptive geometry which covered problems relative to all the text material. The size of the text was on 5" x 8" pages while the problem book of plates was 8 1/2 x 10 and both were published by the American Book Company. This descriptive geometry textbook was originally published in 1864 and was done so well that it was used continuously as a textbook in the United States Military Academy for forty years and was almost the standard treatise used in other academic, technical schools, colleges and universities. Many revisions occurred in this and new series of plates appeared every few years.

From the third annual report to President Orton it appeared that the first courses in descriptive geometry were being taught in the Department of Mathematics and Engineering, later Civil Engineering, whereas the courses in mechanical and machine drawing were handled by Mr. Thomas Mathew. Instructional texts and materials were very much in need. The subjects that he also taught included much fine art and photography.

In his third annual report to the President, on the Department of Mechanical and Freehand Drawing, Mr. Thomas Mathew described the

many services to other departments and the college as a whole in addition to his teaching assignments. He enlisted the services of students as classroom projects embracing freehand and mechanical drawing, linear perspective, architecture drawing, geological map drawing, chalk drawing on paper, lithographic chalk drawing, printing and print coloring and lettering, photography and photo-printing, lithographic transfer map drawing. Specifically, this work was for Departments of Physics and Mechanics, Political Economy, Chemistry, Zoology (pathological drawings) and Military Science. Under the direction of President Orton, Mr. Mathews completed a large geological map of Ohio, in oil colors, locating the boundaries of the coal and other formations, the situations of furnaces, coal mines, oil wells, sandstone and limestone quarries, salt works, iron ore and black band deposits, statistics of coal shipments, sections of local veins in counties, etc., making a good representation of the varied mineral wealth of the state.

Here is an interesting quotation from Mr. Mathews' report:

"Several students are now making drawings from plaster models, of which we have a small but varied collection, consisting of the human figure, quadruplets, architectural ornaments, medallions, busts, etc. Owing to an increased number of students in photography, it has been necessary to enlarge the dark-house."

From the list of services indicated by Mr. Mathew, the Department of Drawing was early established as a service department. From an enrollment of only seventy-one students, but with the many and varied coverage of their course work with only one instructor it is hard to comprehend how Mr. Mathew accomplished all that he listed in his report. He was truly a

busy individual and his main recommendation was the following:

"If this College is to supplement and complete the best work of the public schools, the establishment and maintenance of a department devoted to art training is seen to be a necessity."

In 1877 the departmental enrollment was 103 students. Work covered much the same content as before with the establishment of a Department of Mines, Mine Engineering and Metallurgy in the College.

By an act of the Sixty-third General Assembly of Ohio, passed May 1, 1878, the Ohio Agriculture and Mechanical College name was changed to "The Ohio State University".

In 1878 the enrollment was 181 for the Department with a plea for the application for more advanced flat studies, landscape and figures, more lithographic stones and greater facilities for photography. Mechanical Engineering was added to the curricular establishments.

In 1879 Mr. Thomas Mathew had, among his many comments, the following interesting paragraph:

"For many this department will no doubt give the means of obtaining a livelihood should circumstance require it. The large percentage of lady students taking drawing and the interest shown in the branches of applied art as taught in this department, should insure for it the same facilities which are accorded to departments in which young men are fitted to become their own bread winners."

Mr. Thomas Mathew, who had served for six years in the capacity of Instructor in Mechanical and Freehand Drawing, retired at the close of the academic year.

President Orton in his letter to the trustees commented: "Mr. Mathew takes with him the thorough respect and cordial goodwill of the faculty, with whom he has worked so loyally and faithfully."

His place on the faculty was filled by the appointment of Mr. William A. Mason, Jr. with the title of Assistant Professor of Drawing, Painting and Design. Professor Mason was a graduate of the Normal Art School of Boston. In his first report to President Orton, under the date of November 1, 1880, he reported among other things the following:

"My students are divided into two classes, one group constituting the Freehand Drawing class, and the other, the class in Mechanical or Projection Drawing. In the former there are now 42 young men and ladies pursuing courses in Industrial and Artistic Drawing from the flat, in outline or shaded; drawing in the round in various mediums with the intention of extending the study to working in color. In the Projection Drawing class there are now 13 young men studying and practicing the elements of mechanical drawing as a preparation for the special drawing in their respective technical courses."

Technical Courses in 1880 - Degrees were offered in Civil, Mining and Mechanical Engineering as well as the Bachelor of Science degree. All had a common first year in which freehand drawing was presented each of the three terms, two hours each week. All branches had descriptive geometry the second term of the sophomore year with various other special drawing courses throughout each curricula such as: Drawing shadows and perspective; special drawing; technical drawing; mechanism; machine design. Presumably the descriptive geometry was taught in the Mathematics and Civil Engineering Department, while many of the special courses were handled by the degree granting departments.

In 1881 President Orton asked to be relieved as President and retired to the position as Professor of Geology. He was replaced by Rev. Walter Q. Scott, Professor of Philosophy and Political Economy.

The official name of the Department of Mechanical and Freehand Drawing was changed to Department of Industrial Art with the beginning of the fall term, 1881, and Professor W. A. Mason, Jr. held the rank of Assistant Professor in Industrial Art. His second annual report to the President, President Scott included in part, the following:

"Nov. 1, 1881

Number of students pursuing the two studies--Mechanical and Freehand Drawing during the college year 1880-1881:

Mechanical Drawing	first term.....	13
Freehand Drawing		42
Freehand Drawing	second term	50
Freehand Drawing	third term	45

145 (twice counted 35)

Net Total for Yr. 110

The present term shows a marked increase in number of students. In the mechanical drawing class there are at present, studying and practicing projection drawing 30 students; an increase of 100% over last year. In the freehand class 45 students avail themselves of the advantage of the studio.

Besides the elementary students in freehand drawing there are the following advanced students (included in the enumeration) pursuing higher branches viz. five in watercolor drawing; three in oil painting; one in clay modeling; and five in crayon portraits.

I have also one student in Architectural Drawing. I am pleased to have some interest shown in this study and will cheerfully welcome others who desire to study in the same direction. I have purchased a series of architectural plates, and should more students join the class in the future, other copies might be needed. I would also suggest that more advanced drawing casts are needed for the advanced students."

In 1882 the faculty organized the various departments of the University into four schools: Art and Philosophy; Engineering; Science and Agriculture.

In the Third Annual Report to the President, Professor Mason mentioned:

"Superior drawings are often willingly given to the department by the students and these I intend to frame using them as examples and guides to future students. Thus each year's class, by passing over the course and leaving behind evidences of its success, makes the success of following classes more certain, as results most plainly indicate processes."

President William Henry Scott in his report of November 15, 1883, to the Board of Trustees included this announcement.

"The resignation of Professor Mason at the close of the year left the Department of Industrial Art without a head. Mr. C. F. Marion was selected by the Board to teach projection drawing for the year, is a competent instructor, and this part of the work goes on satisfactorily. It is to be regretted, however, that no suitable teacher has yet been found to take charge of the freehand drawing. It is desirable that the department should be restored to its integrity and raised as soon as possible to fill rank under the direction of a skillful and experienced professor."

^{Walter} William Quincy Scott resigned as President June, 1883 (later named President Emeritus). He was replaced by William Henry Scott, 1883-1895, who served until 1895. He then served on the faculty as Professor of Philosophy and Political Economy until 1910.

Mr. C. F. Marvin, Mechanical Engineer, graduate of the University Class '83, filled in as an assistant for one year and then was appointed Junior Professor in the U. S. Signal Service Washington. Mr. Marvin later became a national figure in Washington, heading several departments,

the last of which was Head of U. S. Weather Bureau. The Ohio State University recognized him for his distinguished service by awarding him an honorary degree, Doctor of Science, in June, 1932. He was replaced by Gern P. Watt, but history is lacking about his qualifications or even acceptance of the appointment. The department was apparently abandoned with the various engineering departments taking over on their share of the student instruction. This was mainly handled by the Department of Civil and Mechanical Engineering. Joseph N. Bradford, M.E., a graduate of the University, class of 1883, who had been as assistant to Professor Stillman W. Robinson, was made an instructor and placed in charge of mechanical and freehand drawing and the Department was reestablished under that name. Mr. Bradford's first report to President Scott was as follows:

"November 9, 1885

"The Department has, after a lapse of two years, (1883-1885) again been established in the University, and I am glad to report that this year opens with bright prospects.

"The present term commences with eighty-one students which clearly indicates the need of the department. Two classes are in progress at present--one in projection drawing, numbering twenty-four students, and another in freehand drawing numbering fifty-seven students.

"The aim in projection drawing being to teach the student the care and manipulation of drawing instruments, and at the same time to exercise his imagination, in order to form a clear conception of the appearance of objects.

"This ability to form a vivid and distinct mental image, as well as fix it permanently by accurate representations is a very much needed faculty of the engineer, who is frequently called upon not to copy what has been done but to do what has not been done.

"There is needed for mechanical drawing suitable drawing tables to facilitate the work.

"For freehand drawing more copies are needed for flat copy shading, as are also tables and screens.

"I beg leave to call attention to the fact that some applications should be provided by which instruction could be given in the process of "blue printing" which is so universally practiced in drafting departments.

"Part of my time is devoted to Professor Robinson's department.

Very respectfully yours,

J. N. Bradford"

As evidenced by Mr. Bradford's second report to President Scott, it was certain that he was to firmly establish his department. October 30, 1886, his report in part indicated the following: Total enrollment deducting those counted twice 208.

Descriptive Geometry was taught in the department for the first time.

His request for appropriations included:

1. Small appropriation for frames for excellent student drawings for display.

2. Suitable drawing tables built from drawings furnished by Mr. Bradford. Built in the city at a cost of \$8.00 to \$9.00.

3. Another set of J. Scroder's descriptive geometry models (they are almost indispensable) \$125.00.

4. Replacement of worn out copies for freehand drawing and flat copy shading \$25.00.

5. The room receives light from 3 sides and it is necessary to have the light from one direction when shading from models and plaster casts, the windows should be provided with shades of a neutral color which roll from the bottom upwards in order to control the direction of the light.

It was noted from Mr. Bradford's report to President Scott on October 1, 1887, that he was only able to get some new drawing tables. It is certain that the writer of this history used some of those same tables when he came to the University in the fall of 1911 as a freshman in engineering.

Texts were first noted as being listed in catalogs for the year 1887-88. For drawing the listings were as follows:

Fall Term - Mechanical Drawing - 3 credit hours, Text: Warren's, "Projection Drawing".

Winter Term - Descriptive Geometry - 3 credit hours, Text: Davies', "Descriptive Geometry".

Spring Term - Drawing - 3 credit hours, Text: Davies, "Shades and Shadows and Perspective".

During the year before October, 1888, all of Mr. Bradford's requests were finally granted including the window shades giving control over the quantity and direction of light because of its factor in all drawing from plaster casts.

Mr. Bradford in his current report advised the President of the need of establishing a course in architecture. Because of the many inquiries and requests he recommended the inclusion of architectural drawing courses.

Change in texts were noted:

Projection Drawing - Faunce's Mechanical Drawing

Descriptive Geometry - Church (practically a universal adoption throughout the country and formerly used many years at Ohio State)

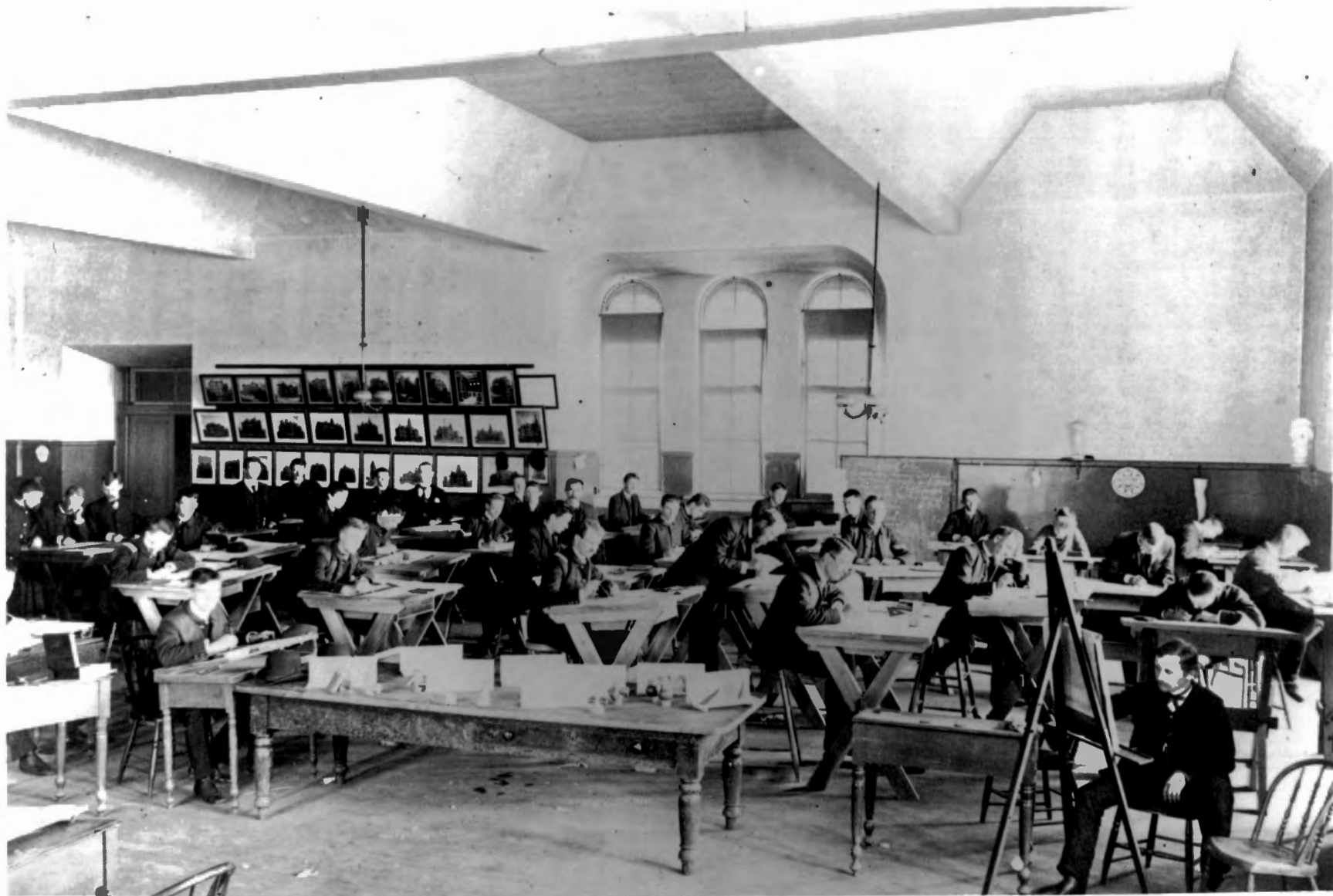
Shades and Shadows - Church

(Photograph #1 is the earliest picture of a drawing class that could be found. This was taken in 1889 and is a classroom in University Hall. There is little artificial illumination. Two chandeliers with three small gas lights each are all that are visible. The class was a mixed group, some working on mechanical, some on freehand at low tables and one possibly painting at an easel. Student attire is quite different. While all are wearing coats, many are in military uniform with caps on desks. Those wearing regular suits wore vests and derby hats as their head gear. Mr. Joseph N. Bradford is shown third from the left at the rear table giving individual instruction to two students.)

In October, 1889, Mr. Bradford made strong requests for more time on many subjects including: projection drawing, descriptive geometry, shades and shadows and freehand drawing. He made known the additional requests for architectural drawing courses. He also asked for an increase in space and need for sky lights in top floor rooms.

Mr. Bradford was promoted to the rank of Assistant Professor before the start of academic year in 1890. In his report to the President for year ending June 25, 1890, and under date of November 5, 1890, he expressed the need of more blue printing and possibly inclusion of a photography course for certain curricula; also, the possibility of the University granting certificates in drawing.

The name of the department appeared to be changed to Department of Drawing and Joseph R. Taylor was also appointed an Assistant to Professor Bradford at the start of this academic year September, 1890.



PHOTOGRAPH NO. 1

Mr Taylor later joined the Department of English (1897) and his years of service were distinguished there because he established himself as one of the most popular teachers in that Department.

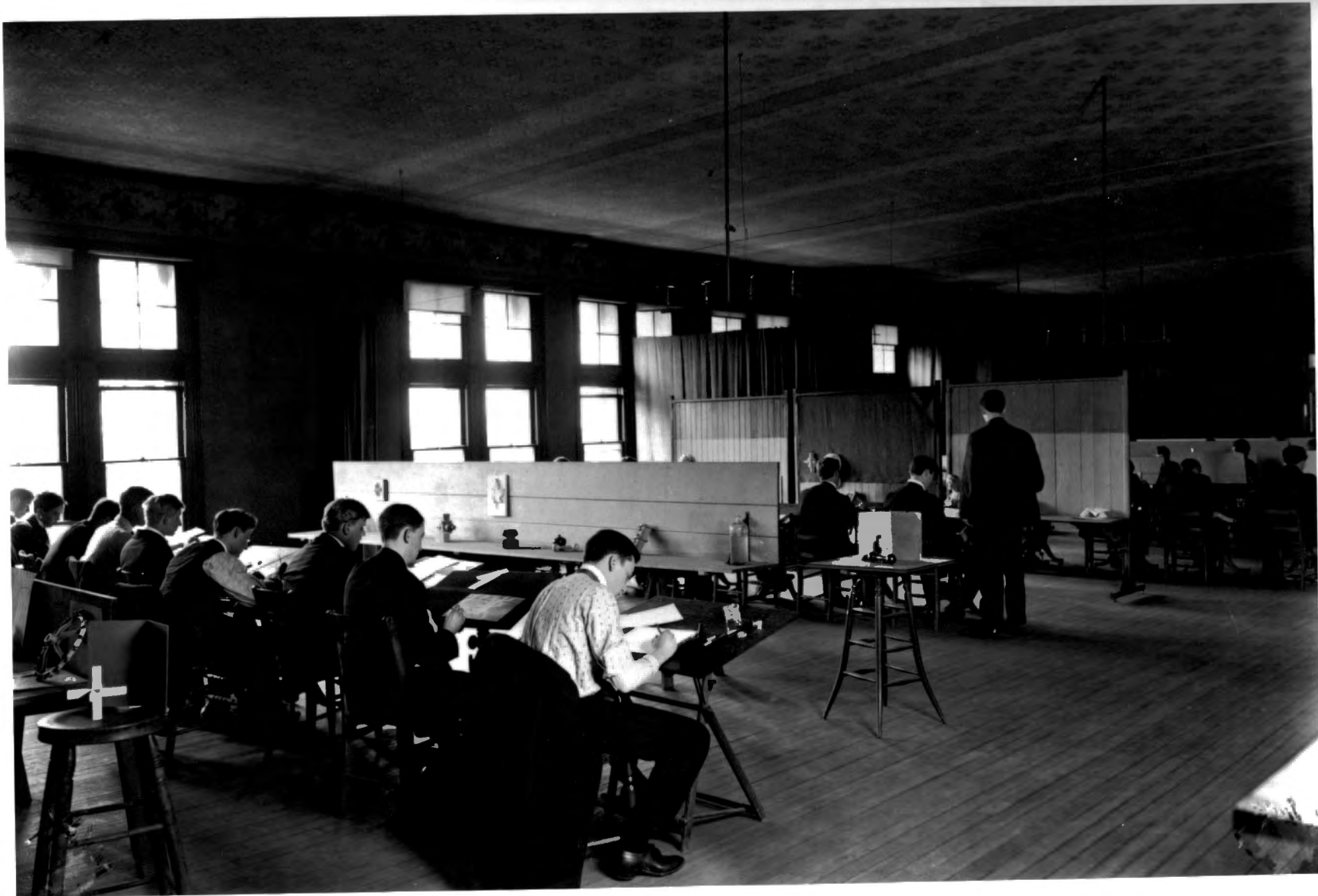
In 1891 Mr. Taylor was in charge of the freehand drawing both (a) outline and (b) charcoal and crayon. He also assisted Professor Bradford in the advanced work such as machine, architectural, pen drawing, crayon drawing, oil painting, water color painting and pastelle.

Because of the marked increase in the number of students for the year ending June 24, 1891, (277 preceding year - 388 total current) a plea went out from Professor Bradford for allotment of more space, better accommodations, lighting and consideration in new buildings now under construction.

(Photograph No. 2 was taken in 1892 on the second floor of the electrical engineering building just northwest of University Hall. This class was a class in freehand sketching working from busts, patterns, models and castings. The instructor was Arthur L. Williston, Director of Industrial Arts.)

It developed that when all statistics were analyzed, the increase in the number of students in drawing last year was greater than in any other department of the University. This was noted in President W. H. Scott's report to the trustees, November 15, 1892. He further commented:

"Two years ago the growth in a single year was 111; and last year it was 294. This extraordinary number is not at all due to the special classes in drawing. The classes are all regular and the work done by them is either required or elective in the prescribed courses of study. The largest class consisting of 119 freshmen, was composed of students in the schools of engineering, all courses



PHOTOGRAPH NO. 2

of which require this subject throughout that year.

"During the last term a student assistant was placed in the department, and at present two such assistants are in attendance. When the school of mechanic arts is opened, a still greater number of students in drawing must be expected, and at least one thoroughly competent man should be added to the teaching force . . ."

This addition later proved to be Arthur L. Williston, Director of Industrial Arts, 1892.

The first class in photography at The Ohio State University was offered in the spring term. There were 16 students in the class that worked under the severe handicap of lack of equipment and space but with extremely satisfying results considering the limitations.

Thanks was extended to Professor C. N. Brown, head of Civil Engineering, for allowing the department to share recitation rooms many times during the year even to their own inconvenience.

(In Photograph No. 3, University Hall, where first classes in drawing were held, is on the left in back of trees. Hayes Hall, in foreground, is building in which classes were held from 1892 to 1923. Fewer drawing classes were held here after the completion of Brown Hall in 1905. This picture was taken in 1896.)

Hayes Hall was started in 1891, the central portion of which was three stories high with the wings two stories high. The space allotment was as follows: First floor - reception room, office, reading room, 2 recitation rooms, 2 home ec., forge shop, machine shop, and foundry; second floor - mechanical museum, recitation rooms, office, and wood working shop; third floor - drawing rooms, modeling, wood carving and



PHOTOGRAPH NO. 3

photography. Hayes Hall was completed in December, 1893, and the Department of Drawing moved to the top floor in January, 1894. The new quarters were well lighted, well ventilated, well adopted to the work, and were adequate for all present needs.

THOMAS EWING FRENCH - Thomas Ewing French of Dayton, Ohio, matriculated at Ohio State University in the fall term, 1891, in Mechanical Engineering. While in high school he studied mechanical drawing and design at night and entered the employ of the Smith-Vaile Company as draftsman. Here he advanced to the position of Chief Draftsman and was also engaged as instructor in drawing in the evening classes of the Y.M.C.A. He chose Ohio State because of his desire to study under Dr. Stillman W. Robinson, head of the Mechanical Engineering Department, and his contact with that great engineer proved a lasting inspiration to him. He worked with Dr. Robinson as a student and helped make drawings for his books on mechanism. Mr. French also worked for Mr. Bradford, and in his sophomore year he was appointed an Assistant Instructor and taught his first classes in the spring term. Mr. Arthur L. Williston, Director of Industrial Art Department, also taught in the department during the year 1892-93. Professor Bradford had been promoted to the rank of Associate Professor. Some of the student assistants who aided in the work of the department must have performed their duties without pay as no record of names or salaries could be found.

In 1894 the staff of the Department of Drawing consisted of Associate Professor Bradford, Mr. Taylor, Mr. French and assistants. Thomas Kenyon Lewis, B.Sc., was a new member added at the beginning of the fall term. Mr. French continued his part-time teaching through his senior year. He worked for Professor Robinson and earned his entire way through the University. He made many patent office drawings also during his student days. He received the degree Mechanical Engineer at the June commencement, 1895, and then continued on in the Department of Drawing as a full-time teacher.

(Photograph No. 4 was taken in 1898 and is a classroom on third floor, rear wing, of Hayes Hall looking toward rear of room--no artificial illumination.)

(Photograph No. 5 is same room taken in 1899 looking toward front of room. Carbon filament drop lights have been added. This perhaps improved the lighting 10%.)

President William Henry Scott resigned after having served as head of the University for twelve years and was succeeded by Dr. James H. Canfield who took office on July 1, 1895.

Because of continual ill health and the pressure of private affairs, Professor Stillman W. Robinson resigned as head of the Department of Mechanical Engineering late in the summer of 1895.

Up to this time the school of Engineering, like other schools of the University, was operating without deans; but effective with the fall term, 1895, the schools were all changed to colleges. There were six in



PHOTOGRAPH NO. 4



PHOTOGRAPH NO. 5

number: (1) Arts, Philosophy & Science; (2) Agriculture & Domestic Science; (3) Engineering; (4) Pharmacy; (5) Law; and (6) Veterinary Medicine. The first Dean of the College of Engineering was Nathaniel W. Lord, Professor of Mineralogy and Metallurgy, who served until 1901 and was succeeded by Professor Christopher N. Brown, head of Civil Engineering, who died after serving one year.

In the fall term of 1896 Mr. Taylor transferred to the Department of Rhetoric which was his field of major interest. During the early part of 1897 his title was changed to Assistant Professor of Rhetoric and English Language.

There were 11 different courses offered in the Department of Drawing which included: (1) Freehand, (2) Lettering, (3) Mechanical Drawing, (4) Descriptive Geometry, (5) Drafting and Blueprint Reading, (6) Technical Drawing, (7) Photography, and the rest were specialized courses. Some of the degree-granting departments likewise taught some of the specialized and advanced drawing courses.

The faculty of the Department of Drawing for the year ending June 30, 1897, consisted of Associate Professor Joseph N. Bradford, Assistant Thomas E. French and Assistant Thomas Kenyon Lewis with some student assistant aides.

Two courses in Architectural Drawing and the work of instructors and total students is shown in the analysis below:

	Hours Per Week						Number of		
	Lectures			Laboratory			Students		
	Terms			Terms			Terms		
	1	2	3	1	2	3	1	2	3
Freehand Drawing (1)				16	12	12	90	117	52
Lettering (2)						10			73
Mechanical Drawing (3)	2	4	2	8	8	12	70	64	56
Photography (7)	1		1	4		8	9		29
Mechanical Drawing (8)	1	1		3	4		10	7	
Mechanical Drawing (10)	1			4			31		
Mechanical Drawing (11)		1			8			2	
Clay Modeling (12)				4	4	4	7	10	6
Technical & Decorative Design (13)				4	4		11	4	
Pen Drawing (14)				4			6		
Technical Drawing (5)	1			4			33		
Orders of Architecture (1)		1			8			4	
Styles of Architecture (2)			1			8			6
Total for Year							<u>697</u>		

A three year course in Architecture was set up in 1896 to be under the direction of Professor Bradford and the courses added to the Department of Drawing were as follows: (1) Orders of Architecture, (2) Styles of Architecture, (3) Designing, (4) Specifications, (5) Decoration and Ornament,

(6) Estimates, (7) Heating and Ventilating, (8) Designing.

In the President's report to the Board of Trustees for the year ending June 30, 1898, it was noted that Silas Martin was appointed as an Assistant in Drawing. An announcement was made that the next President of the University would be Reverend William Oxley Thompson, D.D.

President Canfield said of Dr. Thompson:

"His broad and intelligent sympathy with all the educational work of the state has put him in close touch with the best and most advanced teachers of the commonwealth. He has breadth of vision, a willingness to cooperate with others, good common sense (the most uncommon of the senses), and above all he has a distinct Christian Character, combined with moral courage and a generous and intense nature."

Thomas Ewing French was promoted to Assistant Professor at the beginning of the fall term, 1898, and another assistant, Joseph H. Vosskuehler, was added to the staff. Mr. Vasskuehler had several years' experience as a designer and draftsman for companies in Dayton, Ohio, and as a patent draftsman for a local office of patent attorneys, Finckel and Finckel.

The number of courses also increased in the departments offerings since the 1900-1901 catalog listed 27 different courses. The chief additions were: (a) Drafting (frequently spelled draughting) and Blue Printing, (b) Technical Drawing (house designing for students in Domestic Economy), (c) Lectures and Practice - Technical Drawing consisting of the designing and preparation of specifications of structures related to agriculture and three elective courses in Art taken primarily by Domestic

Economy students. Courses #17, 18 and 19 - Lectures and Practice

(a) color work - water and oil, (b) objects of art, ideas and subjects, style and individuality, and (c) water and oil and sculpture.

In Dr. Thompson's first report for the year ending June 30, 1900, to the Board of Trustees he announced the largest enrollment in the history of the University at 1252. He gave extended coverage to the service of the late Professor Edward Orton, first President of the University, who died October 16, 1899.

Noteworthy in Dr. Thompson's report is his comments on the enlargement of buildings.

"It is not possible to foresee the growth of a University. Already the University has outgrown the expectations of many of its friends. The present roll of students taxes to the utmost the buildings. In the case of Hayes Hall the present accommodations for the department of drawing are insufficient and overcrowded. At least \$10,000.00 should be expended in the enlargement of this building. Plans for enlargement have been suggested by Professor Bradford that are in harmony with the architectural design. These additions would greatly increase the efficiency of the Department.

"I would respectfully urge the equal claim of the fine arts, historically considered to recognition at the hands of those who govern the affairs of this growing institution. Architecture, sculpture and painting have been too closely connected with the advance of civilization to be ignored in any schemes of study which deal with the achievements of man in history; and the great improvements and multiplication of reproductive processes have made it possible to present to the eyes of students, in orderly succession the history of these arts (especially of the first two) with a graphic success not achieved before."

It was noted that the Department presented work in 23 courses to 1064 students during the year. (Includes repetitive count of the same

students in different courses).

Thomas Ewing French was promoted to Associate Professor of Architecture and Drawing in 1901 and the Department was changed to Architecture and Drawing. The degree of Civil Engineer in Architecture was established in 1900. The total number of courses offered in the department in the three terms rose to 39 and were taught by a staff of five full-time teachers (Professor Bradford, Associate Professor French, Instructors Lewis, Martin, Vosskuehler and assistants). It was evident that more space would be needed in 1900 so preliminary planning was started on expanding for the whole engineering college.

In June, 1902, the Board of Trustees appropriated \$80,000 toward an engineering building. This building was intended to accommodate the departments of Civil Engineering, Architecture and Drawing. This building, along with two others, was originally under the direction of Professor C. Newton Brown, former Head of Civil Engineering and Dean of the College of Engineering in 1901, and when completed was named after this distinguished professor who had died before ground was broken for the building. Contract was let and work began March 16, 1903. Brown Hall was located on the site of the Chemistry Building, which was destroyed by fire in 1887.

Edward W. Orton, Jr., son of the first president, became Dean of the College of Engineering in 1902. Dean Orton, at the time of his appointment, was Professor and Director of the Department of Clay Working and

Ceramics. He had been on the faculty since 1894 and as President Thompson had stated: "To him, perhaps, more than to any other one was due the organization of the work in Ceramic Engineering. . ." Dean Orton served until 1915. He was on leave two years of that time--Professor Frank Ray being Dean the years 1907-1908 and Professor James E. Boyd, Acting Dean, 1909-1910.

President Thompson in his report to the Board of Trustees for the year ending June 30, 1903 stated:

"The College of Engineering has suffered perhaps more than any other in the University from the rapid growth in numbers. There should be \$250,000 provided in order to erect necessary buildings for departments of mine engineering, ceramic, electrical engineering and mechanical engineering. This technical education is of such importance that we cannot afford to neglect it."

(Photograph No. 6 shows the front entrance to Brown Hall. While this building was completed in 1906 this photograph was taken in 1937 and the building slightly older. The Engineering Drawing Department occupied all of the second floor and Architecture and Civil Engineering occupied the first floor and basement.)

Brown Hall was completed in time to be used September, 1906, and the Department of Architecture and Drawing as well as the Department of Civil Engineering were able to start classes there in the fall term. The top floor of Hayes Hall was also used for drawing classes for several years after as well.

University enrollment at the end of the year, June 30, 1904, was 1827. Department of Architecture and Drawing had enrollment as follows: fall term - 780, winter term - 1007, spring term - 889. Several students



PHOTOGRAPH NO. 6

were enrolled in more than one course during these terms. Thomas K. Lewis and Joseph H. Vosskuehler were appointed Assistant Professors at the start of the academic year, September, 1905. Professor Vosskuehler resigned during the year, however. Other staff members were: Assistant Professor T. K. Lewis, Instructors C. C. Major, Silas Martin, J. S. Tidball, Ralph Rogers, and Robert Meiklejohn.

For the year ending June 30, 1906, the University enrollment had reached 2,157 and the College of Engineering had 787. Dean Edward Orton, Jr., College of Engineering, in his report to President W. O. Thompson pointed out the fact that:

"The College of Engineering has grown at a rate commensurate with the growth of all other departments of the University put together as it constituted about 40% of the total attendance for a number of years.

"There are two changes which the College of Engineering has desired to make, and which it is hoped are now arranged for the coming year. The first of these is in the Department of Architecture and Drawing. This department is numerically one of the largest in the University, including as it does all the work in freehand drawing, mechanical drawing, art work (painting in oils, water color and pastel) photography, clay modeling together with Descriptive Geometry and the courses in Architecture, historical and technical. The total registration in the Department is about 1000 per year, which will necessarily increase in the future.

"The architectural work has hitherto not been given the full emphasis to which it is entitled as it was developed gradually as an off-shoot from the Department of Drawing. The lack of equipment for teaching architecture has been a severe handicap. Last year this was partially remedied as to the library by an appropriation of \$700.00 and this year a start has been made towards other equipment by a direct appropriation of \$5000.00 from the Legislature which will put the work of the department upon quite a different plane. In view of this fact the division of the work seems timely.

"It will allow Professor Bradford to devote time and energy to developing architectural work, which he has necessarily been obliged to spend in administrative work heretofore. On the other hand, the Department of Engineering Drawing will still remain one of the large departments of the University after taking from it the Art and Architectural features. The elevation of Professor T. E. French to the direction of this work meets with general approval in the Faculty of the College of Engineering."

This was the original Department of Engineering Drawing and it soon became a national collegiate change from the term mechanical drawing and departments were changed or established throughout the United States and eventually abroad. The change can be attributed to one man, Professor Thomas E. French.

Courses offered by the Department in 1906-1907:

<u>Course No.</u>	<u>Name</u>	<u>Total Students (3 Terms)</u>
2	Lettering	249
5	Technical Drawing (2 sections)	86
10	Mechanical Drawing (3 sections)	64
14	Pen Drawing	13
20	Mechanical Drawing	13
21	Freehand Drawing	16
27	Technical Drawing	27
29	Freehand Drawing (13 sections)	810
33	Freehand Drawing	35
38	Projection Drawing (7 sections)	273
34	Technical Delineation	22
36	Descriptive Geometry	137

<u>Course No.</u>	<u>Name</u>	<u>Total Students (3 Terms)</u>
31	Descriptive Geometry	58
18	Geometric Drawing	225
19	Water Color Painting	16
35	Shades , Shadows , Perspective	136
	TOTAL	<u>2180</u>

At the close of this school year, and in his report to the Trustees, Dr. Thompson recommended to the Trustees that the law providing the limitation of professors' salaries to \$2500.00 a year was about to be changed as a bill had been introduced in this session of the Legislature for that purpose.

The Art Department functioned as a department this year for the first time thus relieving the Department of Engineering Drawing and the Department of Architecture of several courses.

(Photograph No. 7, taken in 1907, in Room 201 Brown Hall, shows a class in Engineering Drawing. The instructor (name not known) is standing near center rear window facing camera.)

The 1907-1908 report showed the University enrollment to be 2686; Engineering College 879; Arts, Philosophy, and Science 683.

Earliest texts used in the Department of Engineering Drawing were Anthony and Ashley's "Mechanical Drawing" and Church's "Descriptive Geometry", used exclusively in that subject until Professor William



PHOTOGRAPH NO. 7

Griswold Smith had a book published by McGraw-Hill Company in 1912 on "Practical Descriptive Geometry". This book was adopted in 1912-1913 and used for many years afterward. From the early days of duplicating processes, much supplemental material was prepared as instructional material and problem specifications as well as study and homework sheets and drawings. Practically all of the descriptive geometry problem assignments were original with the various staff members. Earliest projection drawing text was by Faunce. No copies or record of this book could be found. From 1894, through its several editions, extended use of the "Technical Drawing Series", particularly, "Elements of Mechanical Drawing" by Gardner C. Anthony were used by the department. Professor Anthony was a distinguished professor of Tufts College and Dean of the Department of Engineering. Also used by the department were his works in "Machine Drawing" and "The Essentials of Gearing."

Professor Thomas E. French, in collaboration with Assistant Professor Robert Meiklejohn, prepared the first text issued from the Department of Engineering Drawing entitled "The Essentials of Lettering." This was published in 1909 by McGraw-Hill Company and had additional printings in 1910 and 1912 and proved extremely popular with its hundreds of adoptions.

(Photograph No. 8 shows a class in Engineering Drawing in Room 201 Brown Hall, taken in 1910. Note artificial illumination. Instructor standing, silhouetted in third window from rear, is Ralph Rogers.)

In the year 1908-1909 Ralph Rogers and Robert Meiklejohn were



PHOTOGRAPH NO. 8

promoted to the rank of Assistant Professor. W. J. Norris was named an instructor and E. J. Gilbert a student assistant.

New staff members in the year 1909-1910 were instructors A. C. Harper, Owen E. Williams and Cree Sheets. Courses added to the curricula included: Teaching of Mechanical Drawing for students in Industrial Arts and House Planning for students in Domestic Science (now Home Economics).

THOMAS E. FRENCH - It was during the year 1910 that Martin M. Foss, a traveling representative of the newly organized McGraw-Hill Book Company, in calling on the Department of Engineering Drawing, recognized in the group headed by Professor Thomas E. French one of the most successful and talented groups in its field in the United States. He said to Professor French: "We want a new mechanical drawing text." "There are already fifty drawing books on the market" protested French. "But which is is standard?" countered Foss. "We want a text that will be widely accepted as the standard work on the subject."

Professor French accepted the challenge. Discarding the time-worn name "Mechanical Drawing" he coined a new title and wrote a text, "A Manual of Engineering Drawing for Students and Draftsmen", which was published in 1911. He was ably assisted by Assistant Professor Robert Meiklejohn, Instructors Owen E. Williams, Arthur C. Harper, Cree Sheets, Frederick W. Ives, William D. Turnbull and William J. Norris, which were the entire teaching staff of the department. The staff contributed immeasurably in the preparation of drawings, problem material as well as advice and suggestions in the text.

This pioneering book (now in its 10th edition) made publishing history. It was a truly monumental classic, and for many years was a perennial leader in its field and held the American publishers record as the best selling of all college textbooks. This text is attributed to giving great impetus to the McGraw-Hill Publishing Company, as well as helping Martin Foss, who later became President of the company. Over a quarter of a million copies of "Engineering Drawing" were sold in the first four years after it was published. This text was his second--his first having been "Essentials of Lettering", with Robert Meiklejohn, published in 1909. His other four texts in his total authorship were: "Agricultural Drawing and the Design of Farm Structures" with Frederick W. Ives, published in 1915; "Mechanical Drawing" (high school text), with Carl L. Svensen, published first in 1919, (now in its seventh edition); "Lessons in Lettering" (Books I and II) with William D. Turnbull, published first in 1921; "Engineering Drawing Problem Sheets" in 1936, with Harry M. McCully, Professor and Head of Engineering Drawing at Carnegie Institute of Technology. The total copies of these publications would be several millions.

Early in life Professor French studied art as a hobby and painted in both water color and oil. Next he went in for arts-craft, specializing in designing and making jewelry and silverware. Then came black-and-white and he became an etcher of distinction. Here he specialized in book plates and achieved professional status, twice winning the National Prize for the best plate of the year.

Later, his interest in bookplates led to a study of heraldry. He wrote the articles on heraldry and seals for the "Dictionary of the Arts."

He designed many bookplates and worked with Arthur N. McDonald, dean of the contemporary gravers, and an outstanding artist who did the engraving in bare copper or steel. Thomas Ewing French designed and Arthur N. McDonald engraved many of the Ohio State University's bookplates. Just to name a few: Ohio State Seal, Siebert Plate, the Coleman Plate, the Pomerene Plate, the Orton Memorial Library Plate, the Sharp Library of Chemistry Plate, the George F. Arps Collection Plate and a beautiful specimen plate - Library of The Ohio State University.

A few of the National recognized plates were for Phi Beta Kappa, Phi Gamma Delta social fraternity and the Baseball Library for Cooperstown, New York.

Thomas E. French was an authority on college sports. He served on the Ohio State Athletic Board for many years. He served as its chairman several times and was the representative to the "Big Ten" Conference from 1912-1944. He served for a time as Chairman of the Committee on Committees and Eligibility of the National Collegiate Athletic Association. On the Ohio State campus he was known as the "Daddy of the Stadium" since he was head of the board which financed and built Ohio Stadium. In recognition to the fine contribution that Professor French had made to the Ohio State University, the Western Conference and the National Collegiate Athletic Association, an athletic structure on the University campus was

dedicated on February 25, 1957, and named in his honor as the Thomas E. French Field House.

Professor French was a Trustee of the Columbus, Ohio, Gallery of Fine Arts and a Director of the American College Society of Print Collectors. He was a Fellow of the American Association for the Advancement of Science and member of the Society for Promotion of Engineering Education (now American Society for Engineering Education) in which Society he was the primary force in establishing the societies first division known as the Division of Engineering Drawing. He served as its first chairman and was a familiar figure at the meetings for many years. This Division really became the chief interest group of all college teachers of Engineering Drawing. Other such divisions such as this were later established. At present there are 26 such as well as professional branches and extensive committees.

As a member of the parent society S.P.E.E. (now A.S.E.E.) he served as its Vice President in 1927-28 and a member of the Executive Council in 1916-1919.

As a member of ASME Professor French served that society on the Standards Committee. He was chairman of the American Standards Committee on Drawing and Drafting Room Practice, now known as USASI Committee Y14.

Other memberships of Professor French were Rotary Club and Kit-Kat Club of Columbus, Newcomen Society of England, and American

Bookplate Society. His college fraternity was Phi Gamma Delta and his four honorary keys were: Phi Beta Kappa, Tau Beta Pi, Sigma Xi, and Epsilon Pi Tau.

In addition to the degree of Mechanical Engineer, received in 1895, Thomas E. French was awarded the honorary degree of D.Sc. by Monmouth College in 1921. He had many citations and awards but his most gratifying recognition came in June, 1943, when he was honored as the recipient of two Lamme Medals--one awarded by A.S.E.E. for meritorious achievement in engineering education; the other awarded by Ohio State for outstanding contributions to the engineering profession itself. He was the only man ever to receive both awards. He was already familiar with both medals when they were handed to him--he himself had helped to design them some fifteen years earlier.

The national citation read as follows:

"To Thomas Ewing French for his genius in teaching the graphical language of engineering; for his fertility in producing textbooks of engineering drawing based on sound principles of teaching and upon a broad knowledge of the requirements of practical construction; for the breadth of his personal culture and his perennial interest in succeeding generations of students inspiring them beyond the technical boundaries of his own field, for his guidance of the athletic problems of his university which rendered great service to the other universities of the Middle West--the Lamme Medal for achievement in Engineering Education is awarded."

Because of the significance of the many contributions to teaching and authorship, as well as to their years of loyal and distinguished service to The Ohio State University, it seems advisable to discuss the background and biography of the staff of the Department of Engineering

Drawing in the years 1909-1911. These are the men who assisted Professor Thomas E. French with the first edition of "Engineering Drawing".

ROBERT MEIKLEJOHN - a native of Chillicothe, Ohio, graduated from The Ohio State University in 1904 and following one year with the Illinois Steel Company returned to his Alma Mater as an Instructor in Engineering Drawing. He advanced to Assistant Professor in 1908 and served as full professor from 1920 until his retirement in 1952 with the title Professor Emeritus. He served as Secretary of the College of Engineering from 1921 to 1930 while teaching full time. He served the department as Acting Chairman from 1942 to 1944. Even though he was retired he continued to serve the University until the time of his death, January 20, 1964, by helping to prepare the University diplomas -- having hand lettered thousands before they were done on the letter press. He was an outstanding teacher and a co-author with Dr. French on "The Essentials of Lettering" and a heavy contributor to the first edition of French's "Engineering Drawing".

OWEN ESTEL WILLIAMS - a graduate in Mechanical Engineering from Purdue University in 1904, became a member of the department as an Instructor in 1909. He had served the Dodge Manufacturing Company, Mishawaka, Indiana, in the capacity as a mechanical engineer and machine designer since his graduation. He was a skillful draftsman, a devoted teacher whose students praised and admired him for excellent classroom presentations. Alumni always looked him up when they returned to the campus.

He received a full professorship in 1925 and became an Emeritus Professor upon his retirement in 1949. Professor Williams served as Exchange Professor in Engineering Drawing at the University of Iowa in 1922. He made extensive contributions to the early editions of "Engineering Drawing" by Thomas E. French and gave 40 years of excellent service to the Department and the University. He died in University Hospital, May 24, 1962.

WILLIAM DAVIS TURNBULL - was born in Ironton, Ohio, on December 5, 1883. He graduated from the College of Engineering at The Ohio State University in 1908 with the degree of Civil Engineering. Following two years of professional experience as Assistant City Engineer of Ironton, Ohio; City Engineer of Cattlesburg, Kentucky; and Assistant County Engineer at Painesville, Ohio, he returned to his Alma Mater in 1910 as an Instructor in the Department of Engineering Drawing. He received the rank of Professor in 1923. His ability as a draftsman, particularly in the art of lettering and illumination, gained for him national recognition. He was responsible for the production of the "Official Highway Map of Ohio" and the "Official Railroad Map of Ohio". He assisted in preparing "The Base Map of Ohio" and "Geologic Map of Ohio". He contributed to the first edition of "Engineering Drawing", Thomas E. French, and was co-author with Professor French of "Lessons in Lettering", Books I and II. His illuminations, chief of which was his contribution to the book presented to the late Dr. William Oxley Thompson upon his retirement as President of the University.

As a teacher, his keen sense of humor, coupled with his outstanding ability, gained a position of great respect and admiration among his students.

Dean Turnbull became Secretary of the College of Engineering in 1922 and served the College while teaching full time in the Department of Engineering Drawing until 1928 when he was made Junior Dean of the College. He devoted full time to this position serving in this capacity until his retirement in 1954, except for one year, 1936, when he served as Acting Dean of the College. His 45 years of continued and devoted service was a great contribution to his Department of Engineering Drawing and the College of Engineering. He died in August 25, 1955, just a little over a year following his retirement.

ARTHUR C. HARPER - was a member of the staff at the time of the production of the Engineering Drawing text. He was a graduate of Pennsylvania State with the degree B.S. M.E., 1906, M.E., 1907. He had taught at Penn State from 1907 - 1910 when he came to Ohio State as an Instructor in Engineering Drawing. He was an excellent teacher in Descriptive Geometry. He contributed to the first edition of "Engineering Drawing" and left the University in 1915 to become Associate Professor in Drawing at the University of Illinois. He had a distinguished career in the field since he left the University of Illinois in 1921 to become head of the Department of Industrial and Mechanical Engineering at Pratt Institute. In 1931 he became President of Wyomissing Polytechnic Institute where he served

continuously in that capacity until his retirement in 1954.

FREDERICK W. IVES - a native of Wisconsin, received his B.Sc. and M.E. degrees from the University of Wisconsin. Following his graduation he taught one year in the Department of Engineering Drawing at his Alma Mater. He joined the Department of Engineering Drawing as an Instructor in 1910. He also did some work on the first edition of "Engineering Drawing" and taught from the text four more years before joining the Department of Agricultural Engineering at Ohio State as an Assistant Professor in 1914. He was co-author with Thomas E. French on the text "Agricultural Drawing and the Design of Farm Structures", published by the McGraw-Hill Book Company in 1915. Professor Ives was appointed Chairman of the Department of Agricultural Engineering in 1918 and served until his death in June, 1920. His death resulted from injuries received in a railroad accident which occurred on his way back from an engineering convention. The accident occurred near South Bend, Indiana. He was riding in the same Pullman coach as Professor French at the time but fortunately Professor French was not injured. Ives Hall on the Ohio State University campus is named after the late Professor Ives which was a fitting tribute to a great teacher and distinguished engineer.

Other staff members at the time of the first edition of "Engineering Drawing" who also contributed to the book were Cree Sheets and W. J. Norris, both instructors. Mr. Sheets was a graduate in Civil Engineering

and served the department from 1906 to 1917 and resigned as an Assistant Professor to go into private practice as a structural engineer. Mr. Norris was an artist and taught from 1906 until 1916 when he joined the Department of Art and taught there for three more years.

The semester plan was adopted throughout the University beginning with the first semester, Fall of 1910 (College of Arts, Philosophy & Science and College of Law had been on semester plan for some time previously). The three term plan had been used continuously from the opening of classes up to that time.

Beginning in the first semester, Fall of 1911, French's "Engineering Drawing" was used in all drawing classes except descriptive geometry and lettering. Beginning with the first semester, 1912, all classes used "Practical Descriptive Geometry" by William Griswold Smith. This book was quite an improvement over the text by Church, used for many years previous to this new publication. It still employed the old Mongean system and space problems in all four quadrants. Lettering classes used "Essentials in Lettering" by French and Meiklejohn.

In descriptive geometry and some of the other engineering drawing classes where formal lectures preceded the laboratory sections, a study sheet or homework sheet was always given out and this was required to be worked outside of class and returned at the next lecture period. These study sheets were mimeographed problems that entailed an enormous amount of preparation time on the part of the staff, but as far as the student was concerned, many hours of work to get them completed on time. It had the

advantage of obtaining better preparation from the student. It gave the instructor much more material to grade as well. In the basic mechanical drawing course an early use of the ruling pen was established since in the early days all working drawings were inked on tracing linen and blue-printing from the tracing was the method of reproduction. Because of the expense of tracing cloth, much inking was done on drawing paper by inking over the penciled layout. This was used extensively until a good grade of pencil vellum tracing paper was developed in the nineteen twenties and then practically no inking was taught after that time or at least it was eased off. This worked to advantage as far as problem coverage was concerned and took away much of the drudgery of drafting.

The Department of Engineering Drawing taught 25 different courses in the school year, 1912-1913, one to four semester credit hours. Eight hundred fifty-two students were enrolled the first semester of this year and six hundred thirty-six the second semester. Many of these numbers were counted more than once if they were in different courses at the same time.

All freshmen engineers took:

Elementary Mechanical Drawing #101, 2 credit hours, 1st sem.
 Mechanical Drawing #102, 3 credit hours, 2nd semester

All sophomore engineers took:

103 Descriptive Geometry, 3 credit hrs., 1st semester
 104 Machine Sketching, 2 credit hrs., (Mech.), 2nd Semester
 105 Descriptive Geometry, 3 credit hrs., (Civil), 1st Semester
 106 Advanced Descriptive Geometry, 3 credit hrs., (Civil),
 2nd Semester

- 107 Descriptive Geometry, 3 credit hrs., 1st Semester
- 110 Technical Sketching, 2 credit hrs., (Mech), 1st Semester
- 115 Charcoal and Arch., 2 credit hrs.
- 116 Pen Drawing, 2 credit hrs, Art. and Arch.
- 117 Water Color, 3 credit hrs., Art and Arch
- 118 Charcoal from the Antique, 2 credit hrs., Art
- 119 Clay Modeling, 2 credit hrs., Art students
- 121 Technical Drawing, 2 credit hrs., Junior Chemical
- 125 Mechanical Drawing, 2 credit hrs., Agr. & Forestry
- 128 House Planning, 2 credit hrs., Home Ec., Soph., 2nd semester
- 129 Lettering, Mech., Pharmacy, 1 credit hr.
- 130 Teaching Mech. Drawing, 3 credit hrs., Ind. Arts
- 131 Teaching Mech. Drawing, 3 credit hrs., Ind. Arts
- 135 Technical Delineation, 1 credit hr., soph.
- 136 Technical Delineation, 2 credit hrs., soph.
- 137 Engineering Drawing, 2 credit hrs., Forestry
- 138 Engineering Drawing, 2 credit hrs., Forestry

Many special courses were set up to take care of needs of the particular engineering branch and other courses were for different colleges such as Arts, Education, Agriculture, Home Economics, Pharmacy, Commerce, and Dentistry.

(Photograph No. 9 was taken in 1913. It represents the Departments of Architecture and Engineering Drawing's entry in the parade celebrating the fortieth anniversary of the founding of The Ohio State University--taken along North Oval Drive.)

The total college enrollment at the time of June 30, 1915, commencement was undergraduate (degree courses) 845; undergraduate (certificate courses) 22 or a total of 867. The total University enrollment was 4,597 and it was the first year for students in medicine and dentistry--Starling Ohio Medical and Dental Colleges having been just added to the University. Total degrees conferred at this year's commencement was 757 and, of these, 108 were in Engineering.



PHOTOGRAPH NO. 9

CARL LARS SVENSEN - An early addition to the staff of Engineering Drawing in these most formative years was in the person of Carl Lars Svensen, a native of Massachusetts, graduate of Tufts College in Mechanical Engineering, who had taught in the department there following graduation from 1908-1913. He joined the department at Ohio State in 1914 and taught until 1923. During his stay at Ohio State he authored many texts. His first was "A Handbook of Piping" - 1918; "Essentials of Drafting" - 1918; chief contributing author to Thomas E. French on the second edition of "Engineering Drawing" - 1918; co-author of "Mechanical Drawing" for high school students with Thomas E. French - 1919; "Machine Drawing" - 1923; "The Art of Lettering" - 1923; "Drafting for Engineers" - 1927; "Architectural Drafting" with Edgar Shelton - 1929; "Aircraft Drafting", 1941; "A Manual of Blueprint Reading" with William E. Street - 1944; "Engineering Graphics" with William E. Street, 1962; and many workbooks and drafting problem layout sheets to go along with his many texts. The text which he co-authored with Thomas E. French "Mechanical Drawing" for high school students had phenomenal success and like "Engineering Drawing" led the field being the most popular text among all high school text books. This text is still being revised by Dr. Svensen and since Professor French's death has had two revisions - - now in its seventh edition and well over one million copies published in all editions. Dr. Svensen left Ohio State in 1923 to become Professor and Head of the Engineering Drawing at Texas Technological College in Lubbock, Texas,

and served in that capacity until 1933. He ran a consulting engineering practice in Lubbock 1933-1942 and then became Executive Secretary of the Texas State Board of Registration for Professional Engineers until his retirement in 1957. In 1953 he received the Distinguished Service Award of the American Society for Engineering Education Division of Engineering Drawing.

Dean Edward W. Orton, Jr. who had served the College of Engineering as dean since 1902 (except during the years 1907-1908, when Professor Frank Ray served, and 1909-1910, when Professor James E. Boyde served, when Dean Orton was on leave from the University) resigned to become Research Professor in Ceramic Engineering effective June 30, 1916. Professor Edwin F. Coddington of the Department of Mechanics was appointed Acting Dean. He had served some in 1915 and continued until 1920. Dean Coddington, in his first report to President Thompson, said: "The most urgent needs of the College of Engineering are additions to the Chemistry Building and Brown Hall. The congested conditions in these buildings has become almost intolerable."

Dean Coddington continued to emphasize the needs of the College of Engineering in his report the following year ending July 30, 1917. This was in part as follows:

"At the time Brown Hall was constructed there was in the Department of Engineering Drawing two instructors and 266 students. During the past year there were 9 instructors and 969 students working in the same space. This has been done by doubling up on lockers and adding more tables."

Professor French says:

"I do not know of another department on the campus that has been forced for thirteen years to carry its equipment back and forth daily from one building to another as this department has."

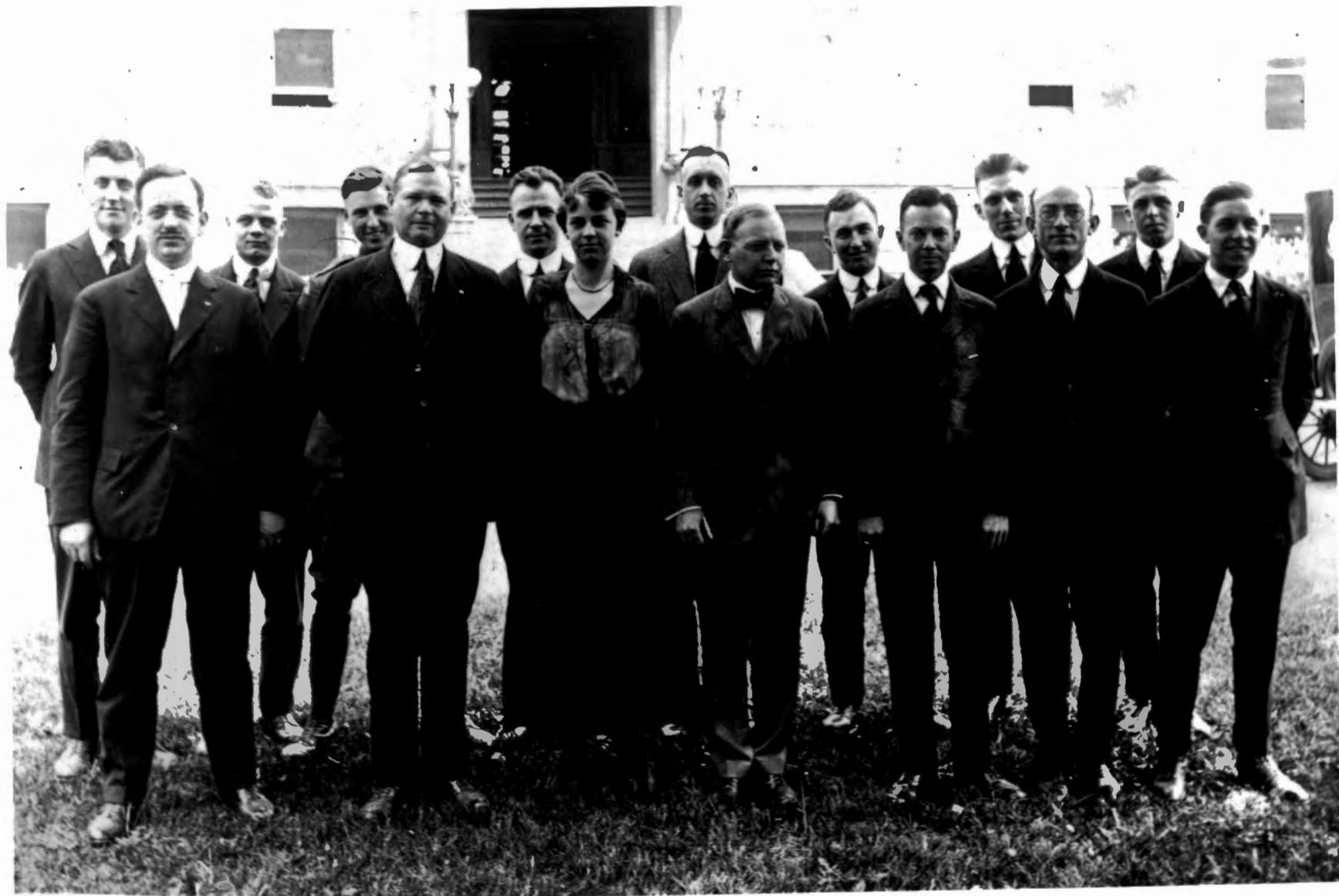
THOMAS A. BOYD - a student in Chemical Engineering, served as a student assistant in the Department of Engineering Drawing in the years 1916 to 1918. He graduated in 1918 with the degree B.Ch.E. and had a distinguished career chiefly with the General Motors Corp. He received the professional degree of Ch. E. in 1938. He headed the Research Laboratory Fuel Division of General Motors from 1923 until his retirement in 1954. He worked under Charles F. Kettering, and along with Dr. Kettering and Dr. Thomas Midgley, Jr., became the co-discoverer of anti-knock compounds including the organic compounds of lead used in ethyl gasolines. He was the recipient of the Distinguished Alumnus Award, the Lamme Medal, and an honorary Doctor of Science degree, all from his Alma Mater. He was the author of several books, technical papers and magazine articles. A distinguished professional engineer and a great contributor to the engineering college and university.

During the school years of 1917-1918 and 1918-1919, known as the war years, more unfortunate experiences were encountered with decreasing enrollments, etc. With the beginning of 1919 the University, both as to faculty and students, had returned with enthusiasm to the ordinary pursuits of education. Enrollment showed a steady increase through 1919 and beginning with the first semester in the Fall of 1919 emergency

measures were taken to increase the staff. New instructors added in the Department of Engineering Drawing were Lloyd K. Eagle, 1917; Wooster Bard Field, 1918; Ralph S. Paffenbarger, 1910; Floyd M. Martin, 1919; and student assistants Dale O. Miller, Paul Shawan, and Ralph D. Baker.

(Photograph No. 10 shows the Department of Engineering Drawing taken in front of Brown Hall, June, 1920. They are, left to right, front row: Carl L. Svensen, Thomas E. French, Tecla F. Hold, Robert Meiklejohn, Owen E. Williams, William D. Turnbull, Bertram Jochen. Back row: James Reed, Fred H. Pumphrey, Elza Staten, Ralph S. Paffenbarger, Wooster B. Field, Lloyd Eagle, Floyd Martin, and Paul Shawan.)

Because of the increased enrollment (1919-1920 - 7000 students) and the crowded facilities resulting, much emphasis was placed on new buildings and the expansion of many existing buildings. Holding early priority before the war was Brown Hall. This was still high on the list and preliminary planning on this extension was started. Building budget exceeded \$400,000 for 1920-1921 projects and Brown Hall addition was prepared among others for contracting in late 1920. Professor French was not only interested in this project but also the new athletic field and stadium. Plans for Ohio Stadium were well under way and a campaign started for raising funds in early 1919-1920 as the result of his promotion. Both Brown Hall addition and Ohio Stadium were dedicated in 1922. Twenty additional buildings and remodeling projects were put into various stages of activity around the University at the time with several involving the College of Engineering. The return to the Quarter Plan was being favorably considered.



PHOTOGRAPH NO. 10

In the Department of Engineering Drawing texts used in the various courses were: "Engineering Drawing", Thomas E. French, 2nd edition; "Essentials in Lettering", French and Meiklejohn; "Agricultural Drawing", French and Ives; "Practical Descriptive Geometry", William Griswold Smith, 2nd edition, plus volumes of mimeographed instructions, study sheets, problems and layouts to the extent that students bought some of these from the department which in those days were the only source of supply on campus until we had the University Co-op Bookstore, established July, 1921. Considerable less emphasis was placed on inking techniques and more concentration on extended problem coverage. Many special courses were offered to students outside of engineering such as agriculture, home economics, industrial arts, fine arts, dentistry, pharmacy, optometry, and besides basic courses, special courses to sophomore, junior and senior engineering students in their own departmental categories. These were such as: Special Technical Sketching, Advanced Descriptive Geometry, Machine Drawing, Fine Arts Book Plates, and Heraldry, Teaching of Mechanical Drawing, Machine Drawing, Advanced Machine Drawing and Freehand Sketching. Senior courses were offered in Chemical Engineering both in Equipment and Plant Layout and Design. For many years the Department of Engineering Drawing offered courses in basic drawing and descriptive geometry to the freshmen in Architecture. The Home Economics students were offered required courses in houseplanning. As our staff increased in size every effort was made to select staff from the

various branches of engineering and architecture as well as capable experienced instructors in all the fields in which we gave instruction. For twenty-five years all freshmen dental students took a special course. Pharmacy students took one course in lettering and a special course in lettering in which many of the artistic types for special documents and illuminations were stressed. The two lettering books: "Lessons In Lettering", Books I and II, by French and Turnbull designed like the old Spencerian Writing Books were used by the thousands throughout the United States. These were used in the department in all basic courses of drawing as well as in straight lettering courses. Total class enrollment in the Engineering Drawing Department for the year 1919-1920 was: first semester - 1543; 2nd semester - 1182.

Professor Thomas E. French was awarded the honorary degree of Doctor of Science by Monmouth College at its June Commencement in 1921.

New instructors added in the year 1920-1921 were Ralph W. Dunkle, James Reed, and Howard F. Yerges. Student assistants were: Bert A. Jochen, Allen J. Smith, Walter Taylor, Dwight Gardner, John P. Ramells, Harold Stonek Francis J. Rataiczak and Thomas N. Finical.

Professor Robert Meiklejohn was promoted to the rank of Professor, effective Autumn 1920, and was the third person to acquire that rank in the department.

Acting Dean Coddington assumed the rank of Professor of Mechanics

the same year, with the appointment of Dean Embury A. Hitchcock, who returned to the University from industry, having served as Professor of Mechanical Engineering from 1892-1912.

Beginning with the Summer Quarter, 1922, the University adopted the four-quarter plan and has since continued the system. New addition to the staff was Allen P. McManigal, Instructor.

With the shift from semesters to quarters there was considerable change in the various curricula throughout the university. Course numbers were changed from 100's to 400's for most basic courses. Credit hours likewise were changed. Advanced courses were not only numbered in 500's and 600's with most graduate credit courses in the 700's and 800's.

Freshmen Engineering Drawing classes started with 401-4 credit hours, Elementary Mechanical Drawing, 402-4 credit hours, Mechanical Drawing, 403-4 credit hours Descriptive Geometry; Architectural students took 410 and then were kept together as a group and took 411-Architectural Drawing and a special Descriptive Geometry course 412, all four credit hour courses. With the opening of the four quarter system, 22 different courses were offered--many being offered more than one quarter in a school year. The quarter system offered more flexibility for students entering at any quarter (Autumn, Winter, Spring or Summer). Likewise students who dropped out because of illness or unavoidable causes could re-enter more often under the semester system.

For the school year, 1922-1923, Professor Owen E. Williams went

to the University of Iowa at Iowa City to teach in the Department of Engineering Drawing there as an Exchange Professor for Frederic G. Higbee, Professor and Head of the Department of Engineering Drawing at the University of Iowa who came to Ohio State for the year.

With the addition to Brown Hall, five new classrooms and four offices and a storage room were added. The main departmental office, which was Room 203 Brown Hall, was moved into the new addition and established in Room 218. A portion of this office was also used as a preparation room for instructional materials and housed the mimeograph and eventually a multigraph machine as well as a small printing press. All drawing paper was blank printed on this press and many problems were printed from cuts prepared at downtown establishments until a multigraph machine was acquired in the early 1940's.

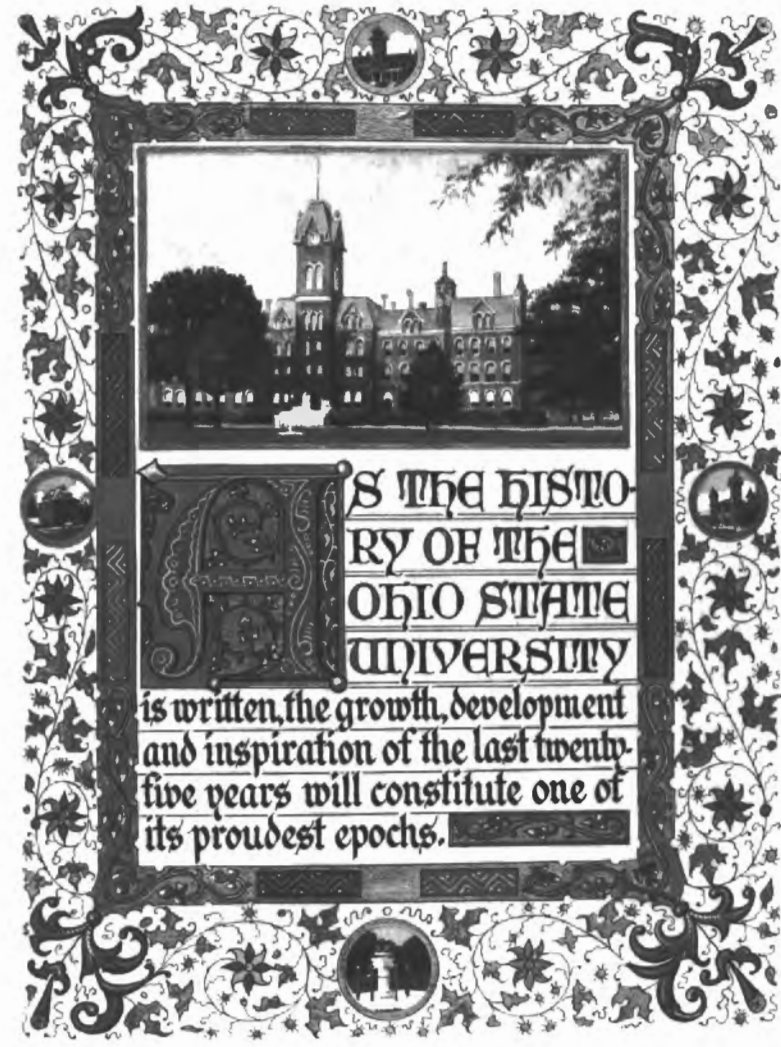
The Department of Engineering Drawing prepared all diplomas for the University from the time of the first graduation. They were hand engrossed on sheepskin and from recorded time were under the direction of the Chairman of the department. In the early stages these diplomas were exceptionally large. Their overall dimensions being $15 \frac{5}{8}$ " x $19 \frac{3}{8}$ ", then reduced to $12 \frac{5}{8}$ " x $16 \frac{5}{8}$ " in 1910, and then $8 \frac{1}{2}$ " x 11" in 1932. Sheepskin was used until 1932 when a change was made to a fine grade of heavy parchment and finally the best grade of heavy calandered stock. All sheepskin diplomas were rolled and tied with scarlet and grey ribbons for commencement presentation. In 1932 the diplomas were inserted into a red

leather folder with the University Seal printed in gold on the front cover of the folder. Beginning Spring Quarter, 1942, all diplomas were printed on the engraved blanks purchased from the engravers. There has been no hand lettering since that time. The diplomas were done in the department's preparation room, 214 Brown Hall. The name, the college, the degree and signatures were printed as well as the date of graduation.

Upon the retirement of Professor Thomas E. French, Professor Robert Meiklejohn, who had for forty years helped with the diplomas, was in charge. Professor Ralph S. Paffenbarger, Chairman since 1944, for the next twenty years was director of the diploma preparation. In 1964 it was recommended that the diploma preparation function be removed from the Department of Engineering Drawing. The press was moved in 1965 to Lord Hall where the diploma preparation function was performed by Central Duplicating, a sub-unit of the University Print Shop.

(Not only did the department have many people skilled in the art of engrossing diplomas but they produced some of the most beautiful illuminations which were real works of art. Pictured in Photographs No. 11 and No. 12 are illustrations of four pages taken from the booklet presented to Dr. William Oxley Thompson upon the occasion of his retirement as President on July 1, 1924. This was done primarily by Dr. Thomas E. French and Dean William D. Turnbull. Being in black and white, instead of color, does not do justice to their grandeur.)

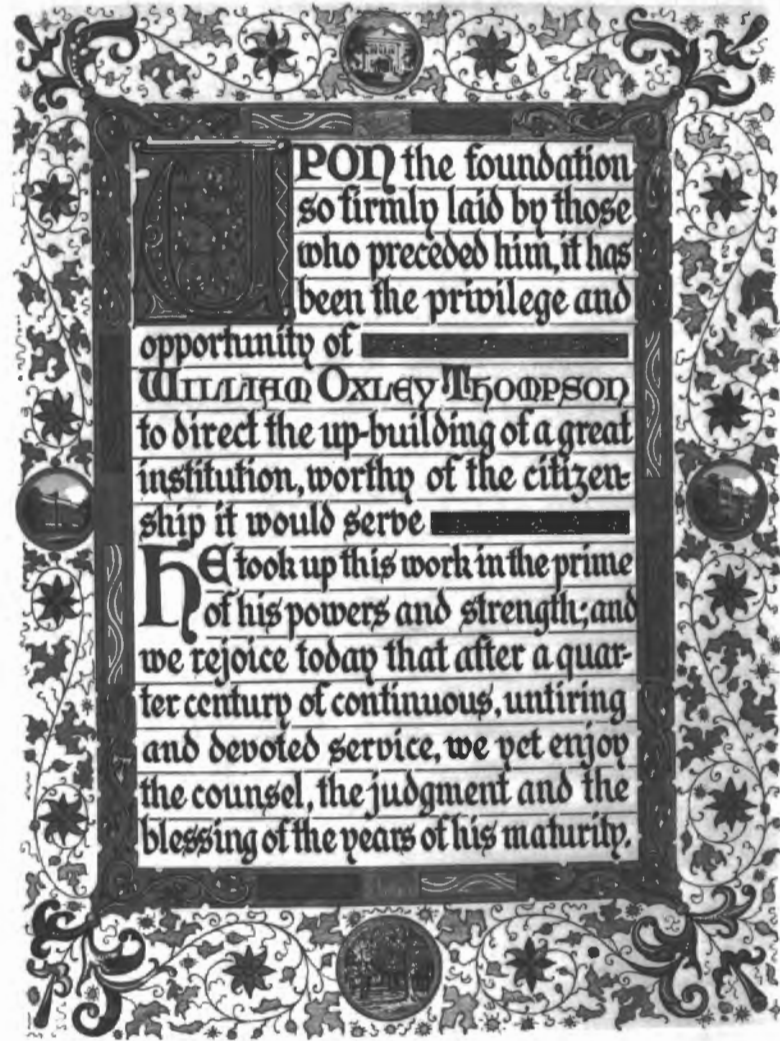
With the new classrooms in 1922, new drawing tables were obtained and mounted between lockers. Individual lighting was provided at each table. These individual lights were provided with a lock type socket which served its purpose but was far from satisfactory due to



PHOTOGRAPH NO. 11



An able and far-sighted administrator, he has met and discharged, with increasing success and wisdom, the problems pertaining to a ten-fold increase in attendance and an expenditure commensurate with and attendant upon the ever widening fields of University service.



UPON the foundation so firmly laid by those who preceded him, it has been the privilege and opportunity of **WILLIAM OXLEY THOMPSON** to direct the up-building of a great institution, worthy of the citizenship it would serve. **H**E took up this work in the prime of his powers and strength; and we rejoice today that after a quarter century of continuous, untiring and devoted service, we yet enjoy the counsel, the judgment and the blessing of the years of his maturity.

PHOTOGRAPH NO. 12

continuous maintenance. The locker arrangement was satisfactory but lighting without shadows was never solved until overhead fluorescent lighting was installed in the early 1940's.

(Photograph No. 13 shows the type of individual light brackets at each table as previously mentioned. The class is a war training class taken in 1941. The instructor is Professor Ralph Paffenbarger standing in aisle between the first and second row.)

(Photograph No. 14 is a picture of Brown Hall addition completed in 1922 and occupied in 1923. The Department of Engineering Drawing occupied the second and third floors. The Department of Architecture was on the first floor and the Department of Photography was in the basement.)

During the years 1923-1924 departmental changes were: W. D. Turnbull from Assistant Professor to Professor; Wooster B. Field and Ralph S. Paffenbarger from Instructor to Assistant Professor. New appointments were: John M. Russ appointed Assistant Professor; Charles D. Cooper, Ralph W. Dunkle and George E. Large were appointed as instructors. A total of 22 courses were offered by the department. They were: 7 four-credit hour courses to the freshmen engineers and architects; 1 two-credit hour course to dental students; 1 two-credit hour course in lettering to pharmacy students; 2 three-credit hour courses to applied optics students; 3 three-credit hour courses to sophomore engineering students in machine drawing; 1 four-credit hour course in advanced descriptive geometry; 1 three-credit hour course in technical drawing; 1 three-credit hour course in projection drawing; 1 three credit hours course in house planning for home economic students; 1 five-credit



PHOTOGRAPH NO. 13



PHOTOGRAPH NO. 14

hour course in drawing in business for industrial Management students; 3 two credit hours courses each in (a) chemical machine drawing, (b) chemical plant layout, and (c) chemical plant design for senior chemical engineering students. The third edition of French's "Engineering Drawing" was used in 1924.

Professor Thomas E. French was granted a leave of absence for the Winter and Spring Quarters in 1925. He visited many universities in the British Isles, many countries of continental Europe, Egypt and Palestine. He procured a large collection of old manuscripts and etchings. He used much of this material in teaching courses in lettering, book plate design and heraldry. Many of these courses were offered through the College of Education and many fine arts majors studied under Professor French.

New additions to the department in 1924-1925 were the appointments as instructors: Lawrence D. Jones, Louis D. Lutzenberger, and Willard V. Grove.

(Photograph No. 15 is entitled "Department of Engineering Drawing drawing on their pipes". The pipes were German merschaums and were the gifts of Professor French upon his return from a trip abroad. Going around the table clockwise, starting at the left and of the table, are pictured: Thomas E. French, Owen E. Williams, Ralph S. Paffenbarger, Lawrence D. Jones, Robert Meiklejohn, Louis D. Lutzenberger, John M. Russ, Charles D. Cooper, Willard V. Grove, Wooster B. Field, William D. Turnbull, and Allen P. McManigal.)

Dr. William Oxley Thompson retired as president of the University on November 5, 1925, and the new president installed was George W. Rightmire, Professor in the College of Law.



PHOTOGRAPH NO. 15

One of the most notable changes came about in the Department of Engineering Drawing at the beginning of the school year 1926-1927 when a new textbook was used in descriptive geometry entitled: "Geometry of Engineering Drawing" by George J. Hood, Professor and Head of Engineering Drawing at the University of Kansas. This text presented the subject in a much more simplified way known as the direct method. The students seemed to grasp the problems more quickly and retain them throughout the duration of the course. More subject material was covered and greater interest was shown by the students.

The Department, as had been the custom for many years, continues to hold regular weekly staff meetings. These meetings provide a great help in presenting the subject matter and coverage in multi-section courses. Guests from other departments are invited from time to time and surveys of opinions of the various degree-granting departments as well as from other colleges are discussed. Many valuable suggestions are obtained in this manner and better coordination of the work offered is an advantage to the students. This department is one of the few departments that still holds weekly conferences.

Assistant Professor Owen E. Williams was advanced to the rank of Professor effective Autumn Quarter, 1926.

In the annual report of the Department of Engineering Drawing at the conclusion of the year 1927-1928 it was noted that: "The outstanding thought is of the fine spirit of harmony and esprit de corps of the staff."

One of the factors in the success of this department has been the continuity of service in the teaching staff.

During this year Professor Turnbull was transferred to the College of Engineering Office and made Junior Dean. His work in the department was taken over by Lawrence D. Jones.

Staff changes in the year 1928-1929 included: Assistant Professor Harry H. Brittingham; Paul E. Henderson and Jay N. Edmondson were appointed as instructors. Total enrollment in all classes were as follows: Autumn Quarter - 848; Winter Quarter - 639; Spring Quarter - 624.

The 4th edition of French's "Engineering Drawing" was used in Autumn Quarter, 1929. Lieutenant Colonel Lawrence E. Schick of the United States Military Academy was assigned to come to Ohio State University for the year 1929-1930 where he observed, sat in classes, and participated in helping in various laboratory sections throughout the year. Upon his return to West Point he was promoted to the rank of Colonel and made Head of the Department of Engineering Drawing at the U. S. Military Academy. Colonel Schick remained in this position until his retirement in 1956. He frequently sent members of his staff to our department for consultation and observance of courses and classroom procedures. One of these assignees in the year 1933 was Captain Frank G. Davis, who later upon his retirement from the U.S. Military Academy in 1954, came to Ohio State and served as an instructor in the Department of Engineering Drawing from 1954 to 1965.

Staff changes for the year 1929-1930 included: Lawrence D. Jones and Allen P. McManigal were promoted from Instructor to Assistant Professor and Mr. Jones was made Secretary of the College. Two new instructors were added to the staff and they were Charles J. Vierck and J. Vernon Otter.

Staff changes for the year 1931-1932 included the following from Assistant to Associate Professor: Wooster B. Field, Ralph S. Paffenbarger, and John M. Russ.

JOHN M. RUSS - During the year 1932-1933 Professor Russ taught Engineering Drawing at Purdue University as an exchange professor for J. Howard Porsch, who joined our staff for that year. Professor Russ resigned from Ohio State and accepted a professorship under Professor Frederic Higbee at the University of Iowa. The same year he finished his exchange professorship at Purdue University. He replaced Professor Higbee as Chairman of the Department of Engineering Drawing at the University of Iowa in 1951 and served in that capacity until his retirement in 1961.

GILBERT CODDINGTON - served as a student assistant in the department from 1929-1931 during his years as a student in Architecture. He joined the staff as a full-time instructor upon graduation from Columbia University in 1935 with the degree M.Sc. in Architecture. Mr. Coddington assisted Professor French in revising the chapter in architectural drawing for the 5th edition of "Engineering Drawing". He was promoted to Assistant Professor in 1937. He resigned in 1946 to become a partner in

the newly established firm of Brooks and Coddington Architects of Columbus, Ohio. On May 2, 1958, he was recognized at the 5th Annual Conference for Engineers and Architects by being presented a "Distinguished Alumnus Award". The year previous he was awarded a special citation by the Commission on Architecture of the National Council of Churches for his creative design of St. Stephens Episcopal Church of Columbus, Ohio. This was rated as one of the 18 outstanding church buildings constructed in the last 25 years. He returned to Ohio State in 1961, joining the staff of the School of Architecture where he is continuing as an Associate Professor.

The 5th edition of French's "Engineering Drawing" was used in the department beginning Fall Quarter, 1935. At this time a workbook entitled "Engineering Drawing Sheets", Series A, by French and McCully, was used for all sections of engineering drawing for engineers except descriptive geometry. This was also somewhat a replacement for the "Lesson Lettering Books I and II" that had been used since 1924 for all classes in beginning drawing. The various lettering exercises were included in these new work sheets. Co-author with Professor French on this workbook was Harry M. McCully, Professor and Chairman of the Department of Engineering Drawing at Carnegie Institute of Technology. This workbook had sufficient problem coverage for two beginning courses and one or more advanced courses and had wide adoption throughout the country. It was later revised several times to vary the problem content

throughout and let the schools use different series in alternate years.

In the late twenties and by 1932 all study sheets in all courses were abolished and greater concentration on laboratory sheets was instituted. This came about due to the increased demand on the student's time and the fact that encroachment on some of that time demanded more time than credit hours warranted. Due dates were maintained on all assigned work with penalties for lateness in all graded laboratory assignments.

Professor McCully's son, Harry M. McCully, Jr., taught in the department from 1942-1948 and resigned to accept an Assistant Professorship in Engineering Drawing at Princeton University under Professor Frank Heacock.

Mr. Henry Sherman, son of Professor Christopher Sherman, Head of the Civil Engineering Department at Ohio State, taught in the Engineering Drawing Department during the school year 1936-1937. Stephen Stinson was also an instructor on the staff for this period.

Dean E. A. Hitchcock of the College of Engineering retired September 1, 1936, after sixteen years' service in that capacity. He was replaced by Junior Dean William D. Turnbull as Acting Dean for the year 1936-1937 and he was in turn succeeded by Charles E. MacQuigg, a graduate of Ohio State in Metallurgy in 1909. Dean MacQuigg received an honorary Doctor of Engineering degree in 1946 from Clarkson College.

Changes in the Engineering Drawing Department for the school year 1935-1936 were as follows: Wooster B. Field and Ralph S. Paffenbarger were promoted from Associate Professors to Professors; Professor Lawrence

D. Jones and Allen P. McManigal from Assistant Professors to Associate Professors; and J. N. Edmondson, H. H. Brittingham and C. J. Vierck from Instructors to Assistant Professors.

In the year 1937-1938 five new instructors were added to the staff-- they were: Alfred J. Philby, Fairfax E. Watkins, Paul E. Machovina, La-Valle R. Schruben and Hollie W. Shupe.

WOOSTER B. FIELD - graduated from Ohio State with the degree of C.E. in Architecture (1918). He practiced architecture in Dayton and Columbus before returning to his Alma Mater in 1917 as an instructor in Engineering Drawing. He became an Assistant Professor in 1921, Associate Professor in 1930, and Professor in 1936. He directed the course work in the department for freshmen architects, as well as a course in house planning for home economics students. He did some architectural work while teaching, was known particularly for his many skills such as painting, wood carving and sculptoring. He finished many beautiful wood carvings in furniture and frames as well as many beautiful water color paintings of his travels, some of which were exhibited in the Faculty Club. He sculptored a bust of Professor French which was cast in bronze and presented to the University by Dale O. Miller, former student assistant, an E.E. graduate in 1920, and President of Rochester Gear Company, Rochester, Michigan. Professor Field was the author of "An Introduction to Architectural Drawing", "Architectural Drawing" and "House Planning", McGraw-Hill Company. He retired with the rank of Professor Emeritus in 1956.

RALPH S. PAFFENBARGER - a native of McArthur, Ohio, held three degrees from Ohio State: B.E.E., 1915; B.I.E., 1928; and M.Sc., 1930. He returned to his alma mater in 1919 after teaching in Chillicothe High School 1916-1917 and at the same time worked for Mead Corporation in the same city. He served one year in the U.S. Army during World War I and one year as an engineer with the Ohio Fuel Gas Company prior to his appointment within the department.

He served as an Instructor in Engineering Drawing, 1917-1923; Assistant Professor, 1923-1930; Associate Professor, 1930-1936; Professor, 1936-1964. He retired in 1964 with the rank of Professor Emeritus after 45 years of continuous service. He succeeded Professor Robert Meiklejohn as Chairman of the Department of Engineering Drawing in 1944 and served in that capacity for 20 years.

Professor Paffenbarger was active in the American Society for Engineering Education and served as Chairman of the Engineering Drawing Division, 1950-1951, as well as served on the Executive Committee of the Division, 1944-1954; member General Council 1952-1956; and Chairman of Ohio Section, ASEE, 1943-1954. He received the Distinguished Service Award for the Engineering Drawing Division of ASEE, June 26, 1956, at Iowa State University.

He was a contributor to "Mechanical Drawing", 5th edition, French & Svensen, McGraw-Hill Company; contributor to "Engineering Drawing", Thomas E. French, 3rd, 4th, 5th, and 6th editions; co-author of 7, 8th and

9th editions , McGraw-Hill Company.

He was Secretary of Y14 Committee, Standard Drawing and Drafting Practice (now USASI Y14) from 1944-1964.

Professor Paffenbarger is a Registered Professional Engineer in the State of Ohio.

Since his retirement he has served as a National Councillor to Tau Beta Pi, national honorary engineering society, 1965-1970.

HARRY H. BRITTINGHAM - graduate in Mechanical Engineering from the Missouri School of Mines, Rolla, Missouri, 1929, and joined the staff as an instructor in the Fall Quarter, 1929. He was promoted to Assistant Professor in 1937. He died of a heart ailment in 1942.

Professor Brittingham proved to be a fine asset to the department. In his early years of teaching he was placed in charge of instruction and chaired the committee outlining the first two freshmen courses in Engineering Drawing for engineers. He was a talented instructor, a fine person, and the department suffered a severe loss when he passed away in December, 1942. During his early work he had served as a student assistant under Professor Clair V. Man, Chairman of the Engineering Drawing Department at the Missouri School of Mines.

ALLEN P. McMANIGAL - entered the services of The Ohio State University in October, 1922, as an instructor in Engineering Drawing. He had served in the Bridge Construction Division 27th Engineers, First Army, American

Expeditionary Forces in France, 1918-1919. He was an assistant engineer to Frank A. Ray, Consulting Mining Engineer, serving from 1919 until he came to the University. He completed his academic work in Mining Engineering while teaching, graduating with the degree of B.E.M. in 1926. He was promoted to Assistant Professor, 1928; Associate Professor, 1934; and Professor, 1943.

He was the university chimes master since their installation (25 years), playing twice daily.

He was an excellent teacher and highly respected by his colleagues and students. He particularly excelled in the teaching of descriptive geometry and related subjects. His untimely death on March 28, 1950, was a distinct loss to the department and the University which he faithfully served for 28 years.

LAWRENCE D. JONES - spent forty-two years of life on the campus of The Ohio State University. He enrolled in the College of Engineering in 1923. He then was employed by the Pure Oil Company but returned to the campus in 1924 as an Instructor in Engineering Drawing. His teaching career was marked by regular promotions with rank of full professor being conferred upon him in 1943.

In 1929 Professor Jones became Secretary of the College of Engineering, performing his duty in addition to his teaching assignments until 1943 when he forsook the classroom to devote full time to College affairs. During the war years he also served as Assistant Coordinator of both the Engineering

Science Management War Defense Training Program and the Army Specialized Training Program.

He served as Acting Dean of Engineering from 1952 to 1953 and as Associate Dean from 1954 to 1958. He then moved to the office of the President of the University where he continued to serve as Secretary of the Faculty Council and the University Faculty, having originally received these latter appointments in 1945.

Professor Jones died unexpectedly, while at work in his office, October 27, 1961. He was an excellent teacher, an able administrator, and a keen interpreter of College and University affairs. His contributions to the official life of our campus community was relied upon by the Administration for his sense of dedication, his profound knowledge of procedure, and his support of all things good for the University.

In recognition of his accomplishments the Board of Trustees dedicated one of the Tower Dormitories, located in the northeast section of our campus, in 1969, naming it in his honor--Jones Graduate Tower.

CHARLES D. COOPER - a native of Cambridge, Ohio, graduated from Ohio State in June, 1923. He joined the teaching staff as an Instructor in Engineering Drawing in the Fall Quarter, 1923, and was promoted through the successive ranks to that of Professor in 1944. Professor Cooper's teaching was in diversified courses for several years. His teaching was very productive in every course that he had a part in preparing. Very resourceful and devoted to his work, he not only assisted in many ways in the preparation

of new problems and the design of much quiz and examination material but also in the administration of handling and grading student work in the multi-section courses. He assumed the supervisory role in Drawing 401 for all freshmen engineers upon the death of Professor Brittingham and headed the Committee on Instruction in that work until his retirement in 1966 with the rank of Professor Emeritus. Professor Cooper assisted in preparing material for the 5th and 6th editions (revisions) of "Engineering Drawing" by Thomas E. French and was a co-author on the 7th and 8th editions of the same text. He was co-author of a workbook to accompany the last two editions entitled "Engineering Drawing Problems", Series A, B, C, and D. The others who produced these series from Ohio State were Professor Charles J. Vierck and Professor Paul E. Machovina.

JAY N. EDMONDSON - graduated from the University of Iowa in 1927 with the degree of B.S. in General Engineering and obtained his professional degree of M.E. from the same institution in 1947. He taught in the Department of Engineering Drawing at the University of Iowa in the year 1927-1928 before coming to join the staff at Ohio State as an Instructor in 1928. He had a wide variety of industrial experience in the summers of 1924, 1925, 1926, and 1927 in radio, telephone, and ceramic industries. He advanced in the department at Ohio State through the ranks of Assistant Professor, 1936; Associate Professor, 1942; and in 1945 was transferred to the Department of Industrial Engineering with the rank of Professor. He taught many sophomore courses in technical sketching and machine drawing as

well as some of the basic courses. In Industrial Engineering he taught courses in work measurement and standards, industrial quality control, tool engineering, plant equipment and design, and production engineering. He retired in 1963 with the rank of Emeritus Professor of Industrial Engineering after 35 years of service.

CHARLES J. VIERCK - graduated from the University of Iowa in 1929 with the degree B.S. in M.E. He came to Ohio State as an Instructor in Engineering Drawing in 1929 and was advanced through successive ranks to a full Professor in 1946. He left the University in 1959 after thirty years of service and moved to Jupiter, Florida. At the same time he accepted a visiting professorship in Engineering Graphics at the University of Florida in Gainesville, which position he still holds.

Professor Vierck was manager of the University Drafting Bureau at the University of Iowa during his student days from 1927 to 1929.

At Ohio State he worked summers of 1929, 1930, and 1931 for Harrop Ceramic Service Company on Plant Design and for Allied Engineering Company on Kiln Design summers of 1933, 1934, and 1935. He taught many courses in the department, both basic and machine sketching and machine drawing, as well as assisting Professor French in his courses offered in the College of Education such as book plate design and heraldry. He assisted Professor French in the 5th and 6th revised editions of Engineering Drawing and following Professor French's death in 1944, produced the

7th edition of the Engineering Drawing text with the assistance of Professor Charles D. Cooper, Associate Professor Paul E. Machovina, Professor Ralph S. Paffenbarger and Associate Professor Hollie W. Shupe of the department. Professor Vierck and the four aforementioned personnel at the same time were technical advisers on a series of directly correlated motion picture and film strips. Professor Vierck co-authored a workbook with Charles D. Cooper and Paul E. Machovina on "Engineering Drawing Problems". On the eighth edition of the Engineering Drawing text Professor Vierck's name was added to the main authorship and it became French and Vierck's "Engineering Drawing" with the assistance of Cooper, Machovina, Paffenbarger, and Shupe as on the previous edition. This edition was published in 1953. Professor Vierck revised the 9th edition of French and Vierck's "Engineering Drawing" with the assistance of Professor Ralph S. Paffenbarger in 1960. He was co-author with Professor Richard I. Hang on a workbook accompanying this edition--"Fundamental Engineering Drawing Problems". The 10th edition of French and Vierck's "Engineering Drawing" was published in 1966 and is the first edition not being used at The Ohio State University. In its place is a text on "Graphic Science" by French and Vierck which contains the text material of "Engineering Drawing" by French and Vierck plus descriptive geometry.

LAVELLE R. SCHRUBEN - graduate of Kansas State University in 1936, with the degree B.S. in E.E., was appointed an Instructor in Engineering

Drawing in 1937 and left to accept an Assistant Professorship at the University of Michigan in 1940. In 1946 he was appointed Associate Professor of Engineering Drawing at the University of Southern California where he now heads the Division of Engineering Graphics.

ALFED J. PHILBY - a native of Sandusky, Ohio, was graduated from Ohio State University in 1931 with the degree B.Sc. in Educ. and was appointed an Instructor in Engineering Drawing in 1937. He had been an Instructor in the Salem-Oak Harbor schools from 1931-1937. He was promoted to Assistant Professor in 1942 and to the rank of Associate Professor in 1947. Professor Philby, in addition to the basic courses, taught the teachers' courses in industrial arts as well as the course in lettering. He was one of the most skilled teachers in chalk board presentation and received wide recognition for his fine ability in freehand drawing both locally and nationally. He assisted Dean Turnbull in revising the books "Lesson In Lettering I and II", French and Turnbull. He died April 21, 1963, after twenty-six years of faithful service to the department and university.

PAUL E. MACHOVINA - a native of Berea, Ohio, graduated from The Ohio State University in 1936 with the degree of Bachelor of Engineering in Mining. He spent the first year after graduation with the Timken Roller Bearing Company in Canton, Ohio.

He had served as a Student Assistant in the Department of Engineering Drawing from 1932-1936 and returned as an Instructor in the Autumn Quarter,

1937. He was promoted to Assistant Professor in 1947; to Associate Professor in 1947 and acquired the rank of Professor in 1957.

Professor Machovina assisted in revisions of "Engineering Drawing", Thomas E. French, and was a contributing author to the 7th and 8th editions. He was the author of "A Manual for the Slide Rule", McGraw-Hill Company, 1950, co-author of "Engineering Geometry and Graphics", Shupe and Machovina and several workbooks in Engineering Drawing and descriptive geometry. For the last several years of his teaching he was the supervisor and chairman of the Committee on Instruction of the third quarter of freshman engineering drawing. This course was 405 (4 credit hours) later 442 (3 credit hours, 1960) covering slide rule instruction, dimensioning, charts and graphs, graphical solutions and working drawings. He died unexpectedly August 13, 1963, and his 26 years of continuous and devoted service, including his many contributions added much to the growth of the department.

HOLLIE W. SHUPE - graduated from Ohio State University in 1936 with the degree B. Arch. and worked in the University Architect's Office before he accepted an instructorship in the Department of Engineering Drawing in 1937. He was promoted to Assistant Professor in 1941. He spent his summers working in the University Architect's Office through 1950. From 1941-1946 he was a Lieutenant Colonel, F.A.U.S. Army, and spent a considerable part of that period in the Pacific War Zone. Upon his return from active duty he received his appointment as Assistant Professor and was

promoted to Professor in 1948. Professor Shupe assisted in revisions of "Engineering Drawing" by Thomas E. French and was a contributing author to the 7th and 8th revision editions. He was a co-author with Paul E. Machovina of "Engineering Geometry and Graphics", Shupe and Machovina. The same authors, together with Richard I. Hang, combined to finish several problem books on the same subject. These, along with the textbook, were used by the department from the time of publishing, 1956 through 1965, in descriptive geometry. Professor Shupe served for several years as supervisor and chairman of the Committee on Instruction of Drawing 403, descriptive geometry, (4 credit hours) and later 441 (3 credit hours). His contributions to the department as an administrator and supervisor of this assignment were significant. Professor Shupe left the department to become the University Architect in 1965--the position he now holds.

Current staff members are not included in the biographical data but instructors' quarters of service is appended hereto and reference can be made to that date for information for those connected with teaching and administrative assignments from the year 1937-1938 to the present time.

President George W. Rightmire retired July 1, 1938, and was succeeded by Dean William McPherson who served two years as acting president. He was made President Emeritus on February 1, 1940, when Howard Landis Bevis was selected as the seventh president of the University. He was inaugurated October 25 of that year. The threat of war prompted stepped

up activity in the University. Defense programs were established for specialized courses in many fields with classes being held at night. The department was swamped with requests for these courses and over half the staff participated by teaching two or three nights a week in this work. Many women entered these courses because of the demand for draftsmen and the shortage of men due to the number of selective service trainees. This program was expanded after Pearl Harbor into the Engineering Science Management War Training and later the Army Specialized Training Program so that the facilities and personnel were taxed to capacity over the next four years to take care of the increased needs in extra courses. At the same time the University went on an accelerated program in many of the professional schools, including engineering and the Department of Engineering Drawing worked the year round through 1941 to 1945 and for three summers had little time off.

Professor French retired as Chairman of the department and assumed the title of Professor Emeritus on October 1, 1942. Professor Robert Meiklejohn was appointed Acting Chairman and took over the assignment on that date.

Vice President J. L. Morrill, the first University Vice President, resigned in 1942 to become President of the University of Wyoming. He was succeeded by Professor Harvey Davis, Chairman of the Department of Education.

University enrollment dropped to 17166 in 1943. The department lost

the services of Hollie W. Shupe, Fairfax E. Watkins, and Harold T. Amrine (who were all army reserve officers) for four years, 1941 to 1945.

JOSEPH N. BRADFORD - Professor Emeritus and former University Architect, Joseph Nelson Bradford died December 13, 1943. Professor Bradford became a student only four years after the University was founded. He took two years preparatory and then transferred to a regular course and graduated in 1883 with the degree in Mechanical Engineering. His was the second such degree granted by the University. Following work for Ohio Geological Survey and Motor Power Department of Pennsylvania Railroad in autumn of 1885 he was appointed by the University as an assistant in Mechanical Engineering and Drawing. This appointment anti-dated the establishment of the Engineering College by ten years. Promotions to Assistant Professor and Associate Professor of Drawing came in 1890 and 1892. In 1899 he became Professor of Architecture and Drawing at which time the curriculum in Architecture was established. In 1906 when Engineering Drawing became a separate department under Thomas E. French, Professor Bradford's title was changed to Professor of Architecture. Thus he was a member of the Drawing Department for 21 years and 16 years (1890 to 1906) its chairman. He also was the first to hold the office of University Architect which was added to his title in 1912. He retired in 1930 after forty-five years of active service to the University. Thirteen more years before his death were spent in gathering material for "Photographic History" of the University.

"Outdoor Sketching" was Professor Bradford's hobby. He loved nature and captured it in all its moods and color with his deft brush in either oil or water color. The pages of Howe's "History of Ohio" are enlivened with his sharp pen sketches.

While serving as University Architect, Professor Bradford prepared the plans and supervised the construction of nearly fifty of the buildings now on the campus besides many additions and alterations to older buildings of the Engineering College he helped fashion and lay its very cornerstone. As student, teacher, architect and Emeritus Professor, his connection with the University extended over a period of sixty-six years marked by devotion to duty, loyalty and modesty over his very real accomplishment. No group of students ever received more friendly encouragement than did those fortunate enough to have classes under his guidance.

Professor Meiklejohn resigned as Acting Chairman of the Department of Engineering Drawing effective July 1, 1944, and was succeeded by Professor Ralph S. Paffenbarger on that date.

(Photograph No. 16 pictures the four men who have held the title of Chairman of the Department of Engineering Drawing during the first one hundred years since the founding of the University.

(1) Joseph Nelson Bradford - taught in Department of Drawing (1885-1906), 16 yrs. as Chairman (1890-1906), Chairman, Department of Architecture (1906-1930) and also first University Architect (1912-1930), retired 1930, photographic history of University 1930-1943.

(2) Thomas Ewing French - Taught in department 1892-1942), department name changed to Department of Engineering Drawing 1906, 36 years as chairman (1906-1942)

(3) Ralph Seal Paffenbarger - Taught in Department (1919-1964), 20 years as Chairman (1944-1964).

(4) Paul Thurman Yarrington - Taught in Dept. (1946 -), Assistant Dean, College of Engineering (1958-) and also Chairman, Department of Engineering Drawing (1964-).

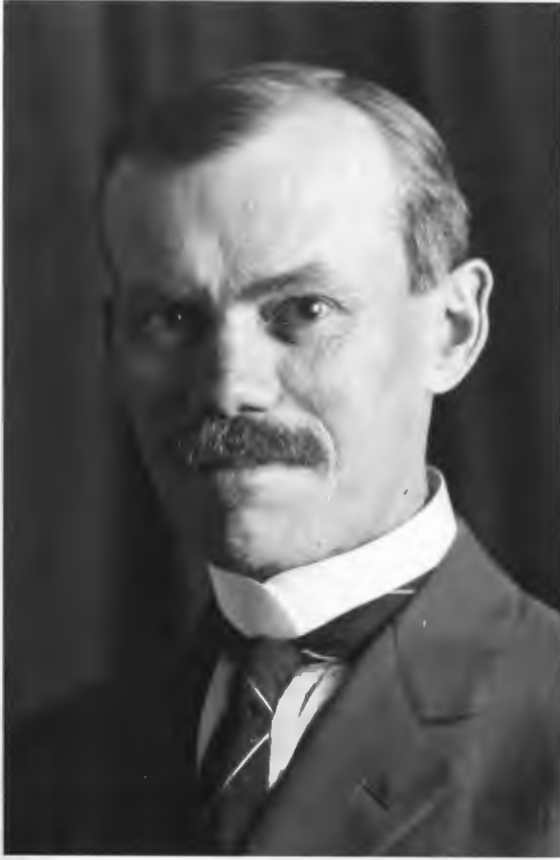
Following an extensive survey of course material and the sequential offerings, it was decided the the department might do a better job by re-arranging and shifting courses. In preparation for the five-year engineering program and to meet the satisfaction of the degree-granting departments in the College of Engineering, several changes were inaugurated. The course numbers were changed slightly as well as times of offering. The first year courses for all engineers were changed so as to make descriptive geometry the second course instead of the third in the sequence. More emphasis was placed on graphical solutions and creativity in dimensioning and working drawings with the advanced courses meeting the needs in the new correlation changes.

Professor emeritus and former chairman of the department, Thomas E. French died November 2, 1944. In his tribute to Dr. French, President Bevis said:

"Few members of the faculty have contributed so much to the life of the University in so many ways as did Professor French.

"He was first of all a teacher and achieved a world wide reputation as a leader in the field of engineering drawing. As an active member of the university staff for 44 years and as the long-time head of the Engineering Drawing Department he saw many of his students achieve positions of highest responsibility in their profession.

(1)



(2)



87



(3)



(4)

PHOTOGRAPH NO. 16

"Dr. French's life was one of great stature and it is in no small degree due to men like him that Ohio State has achieved high rank among the universities of the world. As we mourn his passing, we honor him for his years of devotion and service to his family, his university, and to his fellowmen."

In 1944 many temporary barrack type buildings were erected on campus to take care of the expected student increase after the war. This upswing began in the year 1945-1946 and two such structures just east of Brown Hall were used. It was necessary to schedule classes through the noon hour and up to 6:00 p.m. to take care of the day load. Night classes were offered from 7:00 to 10:00 p.m. three nights a week. In 1946-1947 the department had the largest staff in its history. This included 55 full and part-time instructors with 5 student assistants and 3 office secretaries and 1 technical assistant. Brown Hall was used to capacity, two temporary barrack buildings (50 students per class), drawing rooms in Robinson Laboratory, Lord Hall, and even the Armory were used with a special drawing room set up for naval science students.

(Photograph No. 17 is a picture of the department at this peak period and practically all were present for the picture.)

From this staff (many members did their first quarter of teaching) the following are still with the department (1969) and still serving the University: Hollie W. Shupe, Professor and University Architect; Fairfax E. Watkins, Professor; Eldis O. Reed, Associate Professor; Clyde H. Kearns, Associate Professor; Richard I. Hang, Professor; Richard W.



DEPARTMENT OF ENGINEERING DRAWING

OCTOBER 31, 1946

Row 1—Martha Marzine, Eileen Chandler, Charles [unclear], Lawrence Jones, Allen McManigal, [unclear] Meiklbiola, Ralph Paffenbarger, Owen Williams, Hollie Shupe, Wanda Field, Lawrence Soderberg, Harold Whittemore, Wilma [unclear]
 Row 2—[unclear] [unclear], William Kearns, Norman [unclear], Harry Newley, Samuel Rickert, Clyde [unclear], Eldis Reed, Fairfax Watkins, Charles Cooper, Alfred Philby, Richard Parkinson, Frank Koran, Wilson [unclear]
 Row 3—Charles Murray, Max Puderbaugh, Susan [unclear], Selma Steiger, [unclear] Hoover, Henry Harris, Keith Jacobs, Harold Oglevee, Paul Mackovina, Harry McCully, Lloyd [unclear], James [unclear]
 Row 4—Billy Eads, Emily Ashyk, Thomas Smith, Richard Kelly, Harvey [unclear], Howard Goard, Harry Baueggeman, Charles Holt, Willard Andrews, Alvin Cooper, Harold [unclear], Willard Brown, David Ekey

PHOTOGRAPH NO. 17

PHOTO-HISTORY

No. 48824

Subject

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Department of Photography

The Library of Congress

Parkinson, Professor; Paul T. Yarrington, Assistant Dean of the College of Engineering and Chairman of the Department; Eileen Chandler, Secretary; Mrs. Wilma Russell Harper, Secretary. Pictured also in this group are three living Emeritus Professors--they are: Charles D. Cooper, Emeritus Professor, 1966; Wooster B. Field, Emeritus Professor, 1956; Ralph S. Paffenbarger, Professor Emeritus and former Chairman of the department, 1964.

University enrollment passed 24000 in 1947 and reached 28582 in 1948.

(Photograph No. 18 shows Dale O. Miller (on right in picture), President of the Rochester Gear Works of Birmingham, Michigan, and former student assistant in the Department of Engineering Drawing (1919-1920), presenting the department a finished cast bust of Dr. Thomas E. French on October 14, 1948. This was originally sculptored by Professor Wooster B. Field (in center of picture) of the department in 1942 while Professor French was still living. Professor Ralph S. Paffenbarger (on left in picture), Chairman, accepted it for the department.

The finished cast bust was fine expression on behalf of Mr. Miller in appreciation of the friendship and admiration he held for Dr. French and it was placed in the Thomas E. French Memorial Conference Room (203 Brown Hall).

The 1948-1949 school year marked the 75th anniversary of the founding of The Ohio State University, and the week of January 23, 1949 was set aside for the College of Engineering and the various departments of the College to put on special programs for this occasion. The Department of Engineering Drawing sponsored the first mid-winter meeting of the Engineering Drawing Division of ASEE and had 125 in attendance for



PHOTOGRAPH NO. 18

a special program January 27-29, 1949. Professor Frederick G. Higbee, Chairman of the Department of Engineering Drawing at the University of Iowa, gave the main address of our session in conjunction with the Survey of Engineering class in University Hall Chapel. He was introduced by Junior Dean William D. Turnbull and spoke on "The History of Drawing".

Professor Ralph S. Paffenbarger was elected President of the Faculty Club in 1949 and served in 1950. He was the third person recognized from the Department of Engineering Drawing. The first was Thomas E. French, 1937, and the second was William D. Turnbull, 1946. There have been two more since that time from this department to serve as President of the Faculty Club and they are Lawrence D. Jones, 1954, and Hollie W. Shupe, 1967. This number (5) established the department as furnishing more presidents to this group than any other in the University.

Professor Paffenbarger was also honored in 1950 when he was made Chairman of the Engineering Drawing Division of the American Society for Engineering Education and served in that capacity from July, 1950, to July, 1951. In June, 1951, he was Chairman of an Engineering Drawing Summer School for Engineering Drawing Teachers of the United States and Canada. This was held at Michigan State University in East Lansing, Michigan, and was attended by 156.

Professor O. E. Williams retired on July 1, 1949, after forty years of faithful service to the department.

Professor Allan P. McManigal died unexpectedly March 28, 1950,

after 28 years of service to the department. For 25 of these years Professor McManigal had played the University chimes twice daily during the regular school quarters. He was one of the few persons ever to play the chimes since their installation. Thousands of students through the years knew and appreciated his inspiring efforts in furnishing the mellow tones at mid-day and at the close of afternoon classes.

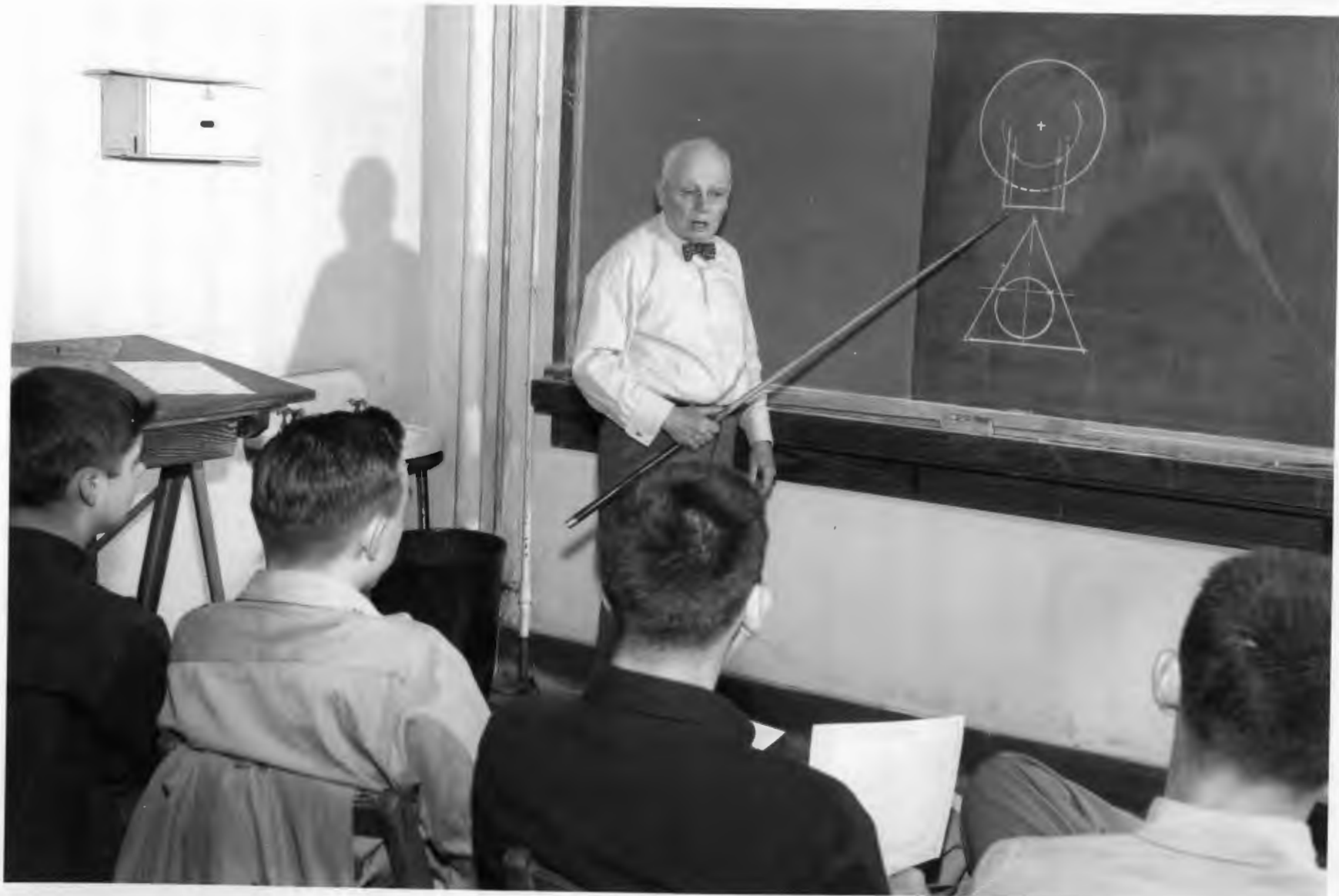
Vice-President Harlan H. Hatcher resigned June 1, 1951, to become President of the University of Michigan. Frederic W. Heimberger succeeded him.

The Department of Architecture was changed to School of Architecture and Landscape Architecture.

Dean Charles E. MacQuigg of the College of Engineering died on April 24, 1952. Associate Dean Lawrence D. Jones served as Acting Dean 1952-1953.

(Professor Robert Meiklejohn is pictured in Photograph No. 19 lecturing to his last class in descriptive geometry before retiring July 1, 1952. This completed 47 years of active teaching and faithful service to the University. He continued to serve, however, until his death in January, 1964, mainly by helping to prepare diplomas for graduating seniors.)

Dean Gordon B. Carson was appointed Dean, July 1, 1953, and served in that capacity until 1958 when he was named Vice-President of Business and Finance. As Dean of the College he instituted an Annual Conference for Engineers (ACE Day) in May, 1954, and the Engineering Drawing Department held a Graphics Conference in the afternoon of this



PHOTOGRAPH NO. 19

day which was well attended. This replaced Engineers' Day which had been previously held but on a much smaller scale and was a very progressive change.

Dean William D. Turnbull retired July 1, 1954, but unfortunately did not get to enjoy many years of retirement as he died after a short illness August 25, 1955. His contributions to the department which he so faithfully served from 1910-1928 were without a doubt unsurpassed by many other staff. He was an expert in mapping and his beautiful illuminations were works of real art. In his early years of teaching he helped engross thousands of the University diplomas along with Professors French and Meiklejohn.

In 1953 the department started to use the eight edition of French and Vierck's "Engineering Drawing" and this represented the forty third consecutive year for this book. Total sales were close to two million. A supplement book for slide rule instruction, by one of our own staff members, Paul E. Machovina, and workbooks by Charles D. Cooper and Paul E. Machovina were adopted.

Beginning the Autumn Quarter, 1956, the department began using Shupe and Machovina's "Engineering Geometry and Graphics". This text was prepared in mimeographed form by two members of our staff and tried out the year previous before being published by McGraw-Hill Company. It replaced Hood's "Geometry of Engineering Drawing" which had been used in the department for the past 30 years.

Dr. Howard L. Bevis retired as President of the University and was replaced by Dr. Novice G. Fawcett on August 1, 1956. Dr. Fawcett had previously been Superintendent of the Columbus Public School System. St. John Arena and French Field House were dedicated February 25, 1957. The Thomas E. French Field House, completed at a cost of \$1,010,000.00, was designed for indoor track meets and practice facilities for other varsity activities including football, baseball, and tennis.

Among other tributes given the late Thomas E. French at this dedication was this:

"Remaining somewhat in the background but always a powerful force in Ohio State University's athletic development, the late Professor Thomas E. French was faculty representative in the Western Conference for 32 years--longer than any man in the history of the Big Ten."

Dr. Bland L. Stradley, Vice-President for Student Affairs, died August 4, 1957.

(Photograph No. 20 pictures a copy of the Distinguished Service Award presented to Dr. Stradley, June, 1952. This was hand lettered and illuminated by Professor Wooster B. Field of our department.)

This year (1957) marked the beginning of activities with off-campus branches started in Marion and Newark. The department became very much involved in these activities since drawing classes had to be staffed at these branches. This was a drain on the staff since it was an extra assignment for two nights' work per week and on these first three branches quite a time element because of driving to and from



B L A N D L O Y D S T R A D L E Y

began his service with the Ohio State University in the early years of his manhood and has continued in that service with ever increasing wisdom and effectiveness. In the course of his service he has been Chairman of the Entrance Board, Dean of the College of Arts and Sciences, and Vice President in charge of Student Relations. The successful administration of these offices has required in high degree the qualities of decision, firmness, insight, and tact. With slight regard to his own welfare, he has lavishly expended his time and energy upon his work. His faith in the University and his zeal in its behalf have been unbounded.

Under his guidance the correlation of University agencies dealing with students has been developed and improved.

He has brought honor to the University through his tireless service in intercollegiate organizations, particularly the Ohio College Association and the North Central Association of Colleges and Secondary Schools of which he was President.

In token of its grateful recognition the Board of Trustees hereby confers upon Bland Lloyd Stradley the Ohio State University Distinguished Service Award.....

Board of Trustees of
The Ohio State University

By _____

Chairman _____

Secretary _____

these locations. In 1960 the Lima Branch was opened and in 1962 the Lakewood Branch. Both these latter two were reached by flying. When weather did not permit, it imposed a problem at times to keep caught up with the schedule. In 1964, the Dayton Branch was set up, now absorbed by Wright State University and the Lakewood Branch, now absorbed by Cleveland State University.

Associate Dean Harold A. Bolz was appointed Dean of the College of Engineering, July 1, 1958, and Assistant Professor Paul T. Yarrington of the Department of Engineering Drawing was named Assistant Dean of the College, and after the Summer Quarter, 1958, assumed that position full time. He likewise was retained as a staff member in the department with the rank of Associate Professor.

(Photograph No. 21 is a picture of a tree section with the University Seal burned into it. This was presented to Professor Paffenbarger by former student assistant (1919-1920), Dale O. Miller of Birmingham, Michigan, on the day of Ohio State's observance of the Seventy-fifth Anniversary of the opening of its doors to students, October 14, 1948. The section of wood was cut from a tree on Mr. Miller's old homestead in Trentwood (Montgomery County, Ohio, and according to the ring count was the same age as the University. The seal burned into the wood is the University Seal that was designed by the late Dr. Thomas E. French.)

Due to the proposed establishment of a pre-engineering division and a professional division there developed considerable curricula changes throughout the college. This divisional operation of the college began in full swing in the Autumn Quarter, 1961. The Department of Engineering Drawing incorporated many of their changes in the pre-engineering division



PHOTOGRAPH NO. 21

beginning with the Autumn Quarter, 1959. Courses were renumbered due to a change in credit hours as well as sequence and content. Because of the reduction from 4 to 3 credit hours of our freshmen engineering courses it was found necessary to integrate descriptive geometry with engineering drawing subjects. Much of the descriptive geometry was taught in the first course. Freshmen courses:

Engineering Drawing 440 - 3 credit hours - Lettering, Orthographic Projection, Auxiliary Projection, Point-Line-Plane Problems, Intersections, Parallel and Perpendicular Relationships, Applied Geometry, Cylinder, Cone, Convolute Transitions and Tangent Planes. Mr. Shupe, Supervisor.

Engineering Drawing 441 - 3 credit hours - Intersections and Developments, Representational Drawing, Conventional Practices, Shape Description, Reading Problems, Sections, Pictorial Drawing, Basic Dimensioning. Mr. Cooper, Supervisor.

Engineering Drawing 442 - 3 credit hours - Slide Rule, Screw Threads, Fasteners, Standard Parts, Symbols, etc., Sketching, Couplings, Gears, Keys, Pins, Piping, Limit Dimensioning, Working Drawing, Charts, Graphs, Curve Fitting, Graphic Integration and Differentiation. Mr. Machovina, Supervisor.

Other departmental offerings 1961-1962:

400 - 4 credit hours - Elementary Engineering Drawing, elective in all curricula except engineering. Mr. Brown, Supervisor

402 - 4 credit hours - Principles of Engineering Drawing - elective in all curricula except engineering. Mr. Rickly, Supervisor.

416 - 2 credit hours - Elements of Drawing and Lettering - elective in all colleges of education, engineering, commerce, arts and science. Mr. Philby, Supervisor.

439 - 3 credit hours - Drawing in Business, Industrial Management. Mr. Parkinson, Supervisor.

504 - 4 credit hours - Technical Drawing, Industrial Arts. Mr. Reed, Supervisor.

506 - 4 credit hours - Structural Drawing, Industrial Arts. Mr. Watkins, Supervisor.

508 - 4 credit hours - Commercial Art, Interior Design, Industrial Design, Medical Illustration. Mr. Philby, Supervisor.

710 - 3 credit hours - Advanced Graphics - Methods of Graphical Presentation and Calculation. Types of Application of Charts, Graphical Integration, Anamorphosis of Curves, Nomography. Mr. Hang, Supervisor.

755 - 3 credit hours - Chemical Plant Design, Sketching and preliminary layout for industrial chemical plants including design and selection factors for equipment and process auxiliaries. Mr. Parkinson, Supervisor.

Professor Emeritus Owen E. Williams died May 24, 1962, after being hospitalized with complicated illness for two months--a devoted teacher who always placed his students and classroom duty above everything else. As a result he was remembered and recognized by hundreds of his former students who had been fortunate enough to have been in his classes.

(Photograph No. 22 pictures Associate Alfred J. Philby lecturing to his class in Room 202N Brown Hall in 1953. Professor Philby did a beautiful job at the chalkboard as shown by his freehand sketches in the picture. Slide rule demonstrator is shown mounted on wall at right. Fluorescent lighting had been installed about five years.)

In 1963 the department lost two staff members by death, each of whom had 26 years of service to the department. The first was Associate Professor Alfred J. Philby who died April 21, and the second was Professor Paul E. Machovina who passed away August 13, 1963. Both of these men were key figures in teaching and supervising courses as well as adding to



PHOTOGRAPH NO. 22

the help rendered in various texts published by staff members and were severely missed following their departure.

Professor Emeritus Robert Meiklejohn died on January 20, 1964. His service to the University spanned a period of almost sixty years--42 of active teaching and almost 13 afterward in helping in the department. The University was his life and he worked diligently and faithfully to serve it to within two months of his death.

In 1964, Ohio State ranked sixth in terms of full-time students--29406, and ninth in grand total of enrollments--33284. Enrollment in Engineering Drawing classes for the year 1963-1964 was as follows:

Summer	Autumn	Winter	Spring	Total
54	1130	998	780	2962

Professor Ralph S. Paffenbarger retired from the University with the rank of Professor Emeritus on July 1, 1964. He was succeeded as Chairman of the Department of Engineering Drawing by Dean Paul T. Yarrington, Assistant Dean of the College of Engineering and who still serves in this dual capacity.

(Photograph No. 23 is a color photograph of Hitchcock Hall which is the new home of the Department of Engineering Drawing (now Engineering Graphics). The department occupies the second and third floors of the building. The College of Engineering and its related offices occupy the first floor along with the Engineering Experiment Station.)

(Photograph No. 24 shows two pictures of the drawing room facilities in this new structure. The upper picture shows a student and his facilities at close range. The lower photograph shows an engineering graphics class at work. Professor Alfred B. Devereaux is the instructor in the left background.)



PHOTOGRAPH NO. 23



PHOTOGRAPH NO. 24

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During the school year, 1964-1965, curricular changes were discussed within the department and with the Committee on Engineering Instruction of the College of Engineering. In reviewing many engineering programs throughout the nation a decision was made to again reduce the amount of course material in drawing required for engineering students. Effective Autumn Quarter, 1965, a two-course sequence, Engineering Graphics I, followed by Engineering Graphics II, Winter, 1966, was offered to a limited number of students on a trial basis. Within these two 3-quarter credit hour courses about 40% was descriptive geometry and another 40% coverage emphasized graphical-numerical type problems. The remaining percentages of time still placed emphasis on sections and conventions, dimensioning, and "limited" design problems by the students.

Effective Autumn Quarter, 1966, a new two-course sequence, each of 3-quarter credit hours, was adopted, Engineering Drawing 440 and Engineering Drawing 442, as the requirement for all new freshmen entering the College of Engineering. These two courses had a format similar to the trial sections offered the preceding year.

These two courses were later changed to Engineering Graphics 111 and 112 when the University adopted a new numbering system for all courses. These courses, under the new numbering system, were offered for the first time Autumn Quarter, 1967.

During the Spring Quarter of 1964 the first attempt at graphical output by the use of the digital computer was initiated for the University

by the Department of Engineering Drawing.

A small electro-mechanical plotter, California Computer Products - 500 series, was purchased from funds through the Engineering Experiment Station. The plotter was driven by an IBM 1620 computer. All hardware was located in the Computer Center and was available to faculty and students of the University.

Needless to say this particular hardware, within six to eight months after installation, was in constant use some 16-20 hours per day by various researchers throughout the campus.

Starting with the year 1964, final stages of detail planning for the new engineering classroom building got under way. This new building, later known as Hitchcock Hall and located at the corners of Neil and Woodruff Avenues, was initially planned to house the Engineering College administration including the Experiment Station, the Department of Engineering Drawing, the School of Architecture, the Department of Photography, and a part of the research elements of the Department of Civil Engineering. Prior to final detail planning a decision was made not to move the School of Architecture from the present location in Brown Hall. During the final planning it became evident that space for the Department of Photography would be limited as well as vehicular traffic to and from the building as required by the Department of Photography. Hence the decision was made not to locate the Department of Photography in Hitchcock Hall.

The Department of Engineering Drawing played a large role in the design of the classrooms, teaching facilities, and offices it was to occupy in Hitchcock Hall. The department submitted plans to the architect which were accepted and approved with only minor changes.

Not only was new space provided but new equipment for the classrooms and offices were obtained--the first in approximately 40 years. New drawing tables for the classrooms were designed by the department and fabricated locally.

The department moved from Brown Hall to Hitchcock Hall during the month of February, 1967.

During the late 1950's the Division of Engineering Drawing of ASEE was changed to the Division of Engineering Graphics. As a result many departments nationally made similar name changes.

The Department of Engineering Drawing, The Ohio State University, was changed to the Department of Engineering Graphics effective Summer Quarter, 1967.

During the school year, 1966-1967, the department administered and taught Engineering Mechanics 200, a 3-quarter credit hour course in digital computer programming, a course required of all engineering students. During the following year, 1967-1968, the responsibility for this course was shifted from the Department of Engineering Mechanics to the Department of Engineering Graphics.

With the advent of the published "Goals in Engineering" by the

American Society for Engineering Education, the College of Engineering through the Committee on Engineering Instruction, seriously began a study of the engineering curriculum during the school year, 1967-68. In brief, a decision was made by the faculty of the College of Engineering to discontinue the 5-year engineering program and to adopt a 4-year undergraduate program, effective with the Summer Quarter, 1969.

The above decision meant a total revision of the curriculum presently offered by each department within the College of Engineering. Again the time allocated for engineering graphics was reduced. The two 3-quarter credit hour courses, Engineering Graphics 111 and 112, were combined into a single 4-quarter credit hour course and was offered for the first time Summer Quarter, 1969.

A major change was requested by the Division of Design, College of the Arts, for their students. Effective Winter Quarter, 1970, Engineering Graphics 121 and 122, two 3-quarter credit hour courses, will replace Engineering Graphics 537, a 5-quarter credit hour course. These two new courses will better meet the needs for those students undertaking work in the Division of Design, College of the Arts.

The total course offerings by the Department of Engineering Graphics is as follows for the school year, 1969-70:

- Engineering Graphics 100 - 4 credit hours
- Engineering Graphics 102 - 4 credit hours
- Engineering Graphics 110 - 3 credit hours
- Engineering Graphics 121 - 3 credit hours
- Engineering Graphics 122 - 3 credit hours

Engineering Graphics 194 - 4 credit hours
Engineering Graphics 200 - 3 credit hours
Engineering Graphics 204 - 4 credit hours
Engineering Graphics 206 - 4 credit hours
Engineering Graphics 208 - 4 credit hours

The Department of Engineering Graphics has completed purchase of a 565 California Computer Products electro-mechanical plotter to be on-line with a Hewlitt-Packard 2115 digital computer - 8K storage. This hardware is to be installed within the Department of Engineering Graphics. It is presently planned to offer courses in Computer Graphics within the near future.

It is predicted that about 800 new freshmen will enroll in engineering during the school year, 1969-1970. Enrollment trends have been constant over the past eight to ten years.

APPENDIX

DEPARTMENT OF ENGINEERING DRAWING
INSTRUCTORS' QUARTERS OF SERVICE

1937 - 1938

Professor & Chairman T. E. French - Autumn, Winter, Summer
Professor Robert Meiklejohn - Autumn, Winter, Spring
Professor O. E. Williams - Autumn, Winter, Spring
Professor W. B. Field - Autumn, Winter, Spring
Professor R. S. Paffenbarger - Autumn, Winter, Spring
Associate Professor A. P. McManigal - Autumn, Winter, Spring
Associate Professor L. D. Jones - Autumn, Winter, Spring
Assistant Professor C. D. Cooper - Autumn, Winter, Spring
Assistant Professor C. J. Vierck - Autumn, Winter, Spring
Assistant Professor J. N. Edmondson - Autumn, Winter, Spring
Assistant Professor G. H. Coddington - Autumn, Winter, Spring
Assistant Professor H. H. Brittingham - Autumn, Winter, Spring
Instructor P. E. Machovina - Autumn, Winter, Spring
Instructor H. W. Shupe - Autumn, Winter, Spring
Instructor F. E. Watkins - Autumn, Winter, Spring
Instructor L. R. Schruben - Autumn, Winter, Spring
Instructor A. J. Philby - Autumn, Winter, Spring

1938 - 1939

Professor & Chairman T. E. French - Autumn, Winter, Spring
Professor Robert Meiklejohn - Autumn, Winter, Spring
Professor O. E. Williams - Autumn, Winter, Spring
Professor W. B. Field - Autumn, Winter, Spring
Professor R. S. Paffenbarger - Autumn, Winter, Spring
Associate Professor A. P. McManigal - Autumn, Winter, Spring
Associate Professor L. D. Jones - Autumn, Winter, Spring
Assistant Professor C. D. Cooper - Autumn, Winter, Spring
Assistant Professor C. J. Vierck - Autumn, Winter, Spring
Assistant Professor J. N. Edmondson - Autumn, Spring, Summer
Assistant Professor G. H. Coddington - Autumn, Winter, Spring
Assistant Professor H. H. Brittingham - Autumn, Winter, Spring
Instructor P. E. Machovina - Autumn, Winter, Spring

1938 - 1939 (Cont'd)

Instructor H. W. Shupe - Autumn, Winter, Spring
 Instructor F. E. Watkins - Autumn, Winter, Spring
 Instructor L. R. Schruben - Autumn, Winter, Spring
 Instructor A. J. Philby - Autumn, Winter, Spring

1939-1940

Professor & Chairman T. E. French - Autumn, Winter, Spring
 Professor Robert Meiklejohn - Autumn, Winter, Spring
 Professor O. E. Williams - Autumn, Winter, Spring
 Professor W. B. Field - Autumn, Winter, Spring
 Professor R. S. Paffenbarger - Autumn, Winter, Spring
 Associate Professor A. P. McManigal - Autumn, Winter, Spring
 Associate Professor L. D. Jones - Autumn, Winter, Spring
 Assistant Professor C. D. Cooper - Autumn, Winter, Spring
 Assistant Professor C. J. Vierck - Autumn, Winter, Spring
 Assistant Professor J. N. Edmondson - Autumn, Winter, Spring
 Assistant Professor H. H. Brittingham - Autumn, Winter, Spring
 Instructor P. E. Machovina - Autumn, Winter
 Instructor H. W. Shupe - Autumn, Winter, Spring
 Instructor F. E. Watkins - Autumn, Winter, Spring
 Instructor L. R. Schruben - Autumn, Winter, Spring
 Instructor A. J. Philby - Autumn, Winter, Spring

1940 - 1941

Professor & Chairman T. E. French - Autumn, Winter, Spring
 Professor R. Meiklejohn - Autumn, Winter, Spring
 Professor O. E. Williams - Autumn, Winter, Spring
 Professor W. B. Field - Autumn, Winter, Spring
 Professor R. S. Paffenbarger - Autumn, Winter, Spring
 Associate Professor A. P. McManigal - Autumn, Winter, Spring
 Associate Professor L. D. Jones - Autumn, Winter, Spring
 Associate Professor C. D. Cooper - Autumn, Winter, Spring
 Assistant Professor C. J. Vierck - Autumn, Winter, Spring
 Assistant Professor J. N. Edmondson - Autumn, Winter, Spring
 Assistant Professor G. H. Coddington - Autumn, Winter, Spring
 Assistant Professor H. H. Brittingham - Autumn, Winter, Spring
 Instructor P. E. Machovina - Autumn, Winter, Spring
 Instructor H. W. Shupe - Autumn, Winter
 Instructor F. E. Watkins - Autumn, Winter, Spring
 Instructor A. J. Philby - Autumn, Winter, Spring, Summer
 Instructor H. T. Amrine - Autumn, Winter, Spring

1941 - 1942

Professor & Chairman T. E. French - Autumn, Winter, Spring
 Professor Robert Meiklejohn - Autumn, Winter, Spring
 Professor O. E. Williams - Autumn, Winter, Spring, Summer
 Professor W. B. Field - Autumn, Winter, Spring
 Professor R. S. Paffenbarger - Autumn, Winter, Spring, Summer
 Associate Professor A. P. McManigal - Autumn, Winter, Spring
 Associate Professor L. D. Jones - Autumn, Spring, Summer
 Associate Professor C. D. Cooper - Autumn, Winter, Spring, Summer
 Assistant Professor C. J. Vierck, Autumn, Winter, Spring, Summer
 Assistant Professor J. N. Edmondson - Autumn, Winter, Spring, Summer
 Assistant Professor G. H. Coddington - Autumn, Winter, Spring, Summer
 Assistant Professor H. H. Brittingham - Autumn
 Instructor P. E. Machovina - Autumn, Winter, Spring, Summer
 Instructor A. J. Philby - Autumn, Winter, Spring, Summer
 Instructor Harry H. Hawley - Autumn
 Instructor Paul S. Shook - Autumn, Winter, Spring, Summer
 Student Assistant Clyde H. Kearns - Autumn, Winter
 Student Assistant David E. James - Autumn, Winter
 Student Assistant J. William Salter - Autumn
 Student Assistant H. Keith McFarland - Winter

1942 - 1943

Professor & Acting Chairman Robert Meiklejohn - Autumn, Winter, Spring
 Professor O. E. Williams - Autumn, Winter, Summer
 Professor W. B. Field - Autumn, Winter, Spring, Summer
 Professor R. S. Paffenbarger - Autumn, Winter, Spring, Summer
 Associate Professor A. P. McManigal - Autumn, Winter, Spring
 Associate Professor L. D. Jones - Autumn, Winter, Spring
 Associate Professor C. D. Cooper - Autumn, Winter, Spring, Summer
 Associate Professor C. J. Vierck - Autumn, Winter, Spring, Summer
 Associate Professor J. N. Edmondson - Autumn, Winter, Spring, Summer
 Assistant Professor G. H. Coddington - Autumn, Winter, Spring, Summer
 Assistant Professor P. E. Machovina - Autumn, Winter, Spring
 Assistant Professor A. J. Philby - Autumn, Winter, Spring, Summer
 Instructor P. S. Shook - Autumn, Winter
 Instructor H. M. McCully - Autumn, Winter, Spring
 Student Assistant R. W. Parkinson - Autumn, Winter
 Student Assistant W. C. Martin - Autumn, Winter
 Student Assistant R. A. Field - Autumn, Winter
 Student Assistant W. S. Wagner - Autumn
 Student Assistant H. K. McFarland - Winter

1943 - 1944

Professor & Acting Chairman Robert Meiklejohn - Autumn, Winter, Spring
 Professor O. E. Williams - Autumn, Winter, Spring
 Professor W. B. Field - Autumn, Winter, Spring
 Professor R. S. Paffenbarger - Autumn, Winter, Spring, Summer
 Professor A. P. McManigal - Autumn, Winter, Spring
 Professor L. D. Jones - Autumn
 Associate Professor C. D. Cooper - Autumn, Winter, Spring
 Associate Professor C. J. Vierck - Autumn, Winter, Spring
 Associate Professor J. N. Edmondson - Autumn, Winter, Spring, Summer
 Assistant Professor G. H. Coddington - Autumn, Winter, Summer
 Assistant Professor P. E. Machovina - Autumn, Winter, Spring
 Assistant Professor A. J. Philby - Autumn, Winter, Spring, Summer
 Instructor D. A. Hindman - Autumn, Winter
 Assistant Instructor A. R. Crawford - Autumn
 Assistant Instructor Harry H. Hawley - Winter
 Assistant Instructor A. J. S. - Winter

1944 - 1945

Professor & Chairman R. S. Paffenbarger - Autumn, Winter, Spring, Summer
 Professor Robert Meiklejohn - Autumn, Winter, Spring
 Professor O. E. Williams - Autumn, Winter, Spring, Summer
 Professor W. B. Field - Autumn, Winter, Spring, Summer
 Professor A. McManigal - Autumn, Winter, Spring
 Professor C. D. Cooper - Autumn, Winter, Spring, Summer
 Associate Professor J. N. Edmondson - Autumn, Winter
 Associate Professor C. J. Vierck - Autumn, Winter, Spring, Summer
 Assistant Professor G. H. Coddington - Autumn, Winter
 Assistant Professor P. E. Machovina - Autumn, Winter, Spring
 Assistant Professor A. J. Philby - Autumn, Winter

1945 - 1946

Professor & Chairman R. S. Paffenbarger - Autumn, Winter, Spring
 Professor Robert Meiklejohn, Autumn, Winter, Spring
 Professor O. E. Williams - Autumn, Winter, Spring
 Professor W. B. Field - Autumn, Winter, Spring
 Professor A. McManigal - Autumn, Winter, Spring
 Professor L. D. Jones - Autumn, Winter
 Professor C. D. Cooper - Autumn, Winter, Spring
 Associate Professor C. J. Vierck- Autumn, Winter

1945 - 1946 (Cont'd)

Assistant Professor P. E. Machovina - Autumn, Winter, Spring, Summer
 Assistant Professor A. J. Philby - Autumn, Winter, Spring, Summer
 Assistant Professor H. W. Shupe - Autumn, Winter, Spring, Summer
 Assistant Professor Henry H. Harris, Autumn, Winter, Spring, Summer
 Assistant Professor F. E. Watkins - Autumn, Winter, Spring, Summer
 Professor Richard C. Miller - Autumn
 Instructor Harold T. Amrine - Autumn, Winter, Spring, Summer
 Instructor Harry M. McCully - Winter, Spring, Summer
 Associate Professor E. C. Clark - Winter, Spring
 Instructor (Part time) Don Hindman - Winter, Spring
 Instructor (Part time) Eldis O. Reed, Winter, Spring, Summer
 Instructor (Part time) Henry Abbott - Winter
 Assistant (Part time) Lloyd Treleaven - Winter, Spring
 Instructor S. E. Rickly - Spring, Summer
 Instructor (Part time) C. H. Kearns - Spring, Summer
 Student Assistant H. W. Goard - Spring, Summer
 Student Assistant Ben C. Michener - Spring, Summer
 Student Assistant Charles R. Hall - Spring, Summer
 Student Assistant Harold J. Oglevee - Spring
 Student Assistant Haskell H. McGriff - Spring
 Student Assistant Richard I. Hang - Spring
 Student Assistant W. F. Andrews - Spring, Summer
 Student Assistant Glen C. Hoover - Spring, Summer
 Instructor F. M. Torrence - Summer
 Instructor W. S. Steiger - Summer
 Student Assistant William Kearns - Summer
 Student Assistant H. J. Oglevee - Summer
 Student Assistant C. R. Pettis - Summer

1946 - 1947

Professor & Chairman R. S. Paffenbarger - Autumn, Winter, Spring, Summer
 Professor Robert Meiklejohn - Autumn, Winter, Spring
 Professor O. E. Williams - Autumn, Winter, Spring
 Professor W. B. Field - Autumn, Winter, Spring
 Professor Allen McManigal - Autumn, Winter, Spring
 Professor L. D. Jones - Autumn, Winter
 Professor C. D. Cooper - Autumn, Winter, Spring
 Professor C. J. Vierck - Autumn, Winter, Spring
 Associate Professor P. E. Machovina - Autumn, Winter, Spring, Summer
 Assistant Professor A. J. Philby - Autumn, Winter, Spring, Summer

1946 - 1947 (Cont'd)

Assistant Professor H. W. Shupe - Autumn, Winter, Spring
 Assistant Professor H. E. Harris - Autumn, Winter, Spring
 Assistant Professor F. E. Watkins - Autumn, Winter, Spring, Summer
 Assistant Professor Harry H. Hawley - Autumn, Winter, Spring
 Instructor Harry M. McCully - Autumn, Winter, Spring, Summer
 Instructor Eldis O. Reed - Autumn, Winter, Spring, Summer
 Instructor Sam E. Rickly - Autumn, Winter, Spring
 Instructor C. H. Kearns - Autumn, Winter, Spring, Summer
 Instructor Don O. Hindman - Autumn, Winter, Spring
 Instructor C. R. Hall - Autumn, Winter, Spring
 Instructor Willard H. Brown - Autumn, Winter, Spring
 Instructor Howard W. Goard - Autumn, Winter, Spring, Summer
 Instructor W. S. Steiger - Autumn, Winter, Spring
 Instructor Henry Abbott - Autumn, Winter
 Instructor Richard I. Hang - Autumn, Winter, Spring
 Instructor L. R. Soderberg - Autumn
 Instructor Lloyd Yates - Autumn, Winter, Spring
 Instructor David E. James - Autumn
 Instructor Harvey Appleman - Autumn, Winter, Spring
 Assistant Instructor R. W. Parkinson - Autumn, Winter, Spring, Summer
 Assistant Instructor Harry C. Brueggeman - Autumn, Winter, Spring
 Student Assistant W. F. Andrews - Autumn, Winter, Spring
 Student Assistant Harold J. Oglevee - Autumn
 Student Assistant William Kearns - Autumn, Winter, Spring, Summer
 Student Assistant James Tilberry - Autumn, Winter, Spring
 Student Assistant Glenn Hoover - Autumn, Winter
 Student Assistant Loren Staker - Autumn, Winter, Spring
 Student Assistant Frank Koran - Autumn, Winter, Spring
 Student Assistant William Long - Autumn, Winter, Spring
 Student Assistant Charles R. Pettis - Autumn, Winter
 Student Assistant John Falconer - Autumn
 Student Assistant C. J. Setzer - Autumn, Winter, Spring
 Student Assistant Jack Wunderly - Autumn, Winter, Spring, Summer
 Student Assistant G. D. Richardson - Autumn, Winter, Spring
 Student Assistant Tom B. Smith - Autumn, Winter, Spring
 Student Assistant David C. Ekey - Autumn, Winter
 Student Assistant Keith Jacobs - Autumn, Winter
 Student Assistant Dallas Dupre - Autumn, Winter, Spring, Summer
 Student Assistant Alvin G. Cooper - Autumn, Winter
 Student Assistant Norman Gatsch - Autumn, Winter, Spring
 Student Assistant Lewis Hullinger - Autumn, Winter, Spring
 Graduate Assistant Paul E. Rowe - Winter, Spring
 Assistant Instructor Paul Dunson - Winter, Spring

1946 - 1947 (Cont'd)

Student Assistant Martha Merwine - Winter, Spring
 Student Assistant Paul T. Yarrington - Winter, Summer

1947 - 1948

Professor & Chairman R. S. Paffenbarger - Autumn, Winter, Spring
 Professor C. D. Cooper - Autumn, Winter, Spring, Summer
 Professor W. B. Field - Autumn, Winter, Spring, Summer
 Professor Allen McManigal - Autumn, Winter, Spring
 Professor Robert Meiklejohn - Autumn, Winter - Spring
 Professor O. E. Williams - Autumn, Winter, Spring
 Professor C. J. Vierck - Autumn, Winter, Spring
 Associate Professor P. E. Machovina - Autumn, Winter, Spring
 Associate Professor A. J. Philby - Autumn, Winter, Spring
 Associate Professor H. W. Shupe - Autumn, Winter, Spring
 Associate Professor F. E. Watkins - Autumn, Winter, Spring
 Instructor (Part time) H. M. Appleman - Autumn
 Instructor W. H. Brown - Autumn, Winter, Spring
 Instructor H. W. Goard - Autumn, Winter, Spring
 Instructor R. I. Hang - Autumn, Winter, Spring, Summer
 Instructor (Part time) Don A. Hindman - Autumn
 Instructor C. H. Kearns - Autumn, Winter, Spring
 Instructor (Part time) H. M. McCully - Autumn, Winter, Spring
 Instructor R. W. Parkinson - Autumn, Winter, Spring
 Instructor E. O. Reed - Autumn, Winter, Spring
 Instructor S. E. Rickly - Autumn, Winter, Spring
 Instructor P. W. Rowe - Autumn, Winter, Spring, Summer
 Instructor Matthew A. Sutton - Autumn, Winter, Spring
 Assistant Instructor H. C. Brueggman - Autumn, Winter
 Assistant Instructor Robert M. Eastman - Autumn, Winter, Spring
 Student Assistant - A. M. Crawford - Autumn, Winter
 Student Assistant Dallas D. Dupre - Autumn
 Student Assistant Norman E. Gatsch - Autumn, Winter, Spring
 Student Assistant W. H. Kearns - Autumn, Winter, Spring
 Student Assistant Max Puderbaugh - Autumn, Winter, Spring
 Student Assistant Dick Richardson - Autumn, Winter
 Student Assistant Tom B. Smith - Autumn, Winter
 Student Assistant Jack Wunderle - Autumn, Winter
 Student Assistant Paul T. Yarrington - Autumn, Winter, Spring
 Student Assistant Carl A. Scheiber - Autumn, Winter
 Student Assistant Forrest K. Poling - Autumn, Winter, Spring
 Student Assistant Henry Falkenstein - Autumn, Winter, Spring

1948 - 1949

Professor & Chairman R. S. Paffenbarger - Autumn, Winter, Spring
 Professor C. D. Cooper - Autumn, Winter, Spring
 Professor W. B. Field - Autumn, Winter, Spring
 Professor A. P. McManigal - Autumn, Winter, Spring
 Professor Robert Meiklejohn - Autumn, Winter, Spring
 Professor H. W. Shupe - Autumn, Winter, Spring
 Professor C. J. Vierck - Autumn, Winter, Spring
 Professor O. E. Williams - Autumn, Winter, Spring
 Associate Professor P. E. Machovina - Autumn, Winter, Spring
 Associate Professor A. J. Philby - Autumn, Winter, Spring
 Associate Professor F. E. Watkins - Autumn, Winter, Spring
 Instructor Robert R. Hagen - Autumn
 Instructor R. I. Hang - Autumn, Winter, Spring
 Instructor C. H. Kearns - Autumn, Winter, Spring, Summer
 Instructor R. W. Parkinson - Autumn, Winter, Spring
 Instructor E. O. Reed - Autumn, Winter, Spring, Summer
 Instructor W. F. Wright - Autumn, Winter, Spring
 Student Assistant Paul T. Yarrington - Autumn, Winter, Spring
 Instructor (Part time) C. J. Setzer - Winter, Spring

1949 - 1950

Professor & Chairman R. S. Paffenbarger - Autumn, Winter, Spring
 Professor C. D. Cooper - Autumn, Winter, Spring
 Professor W. B. Field - Autumn, Winter, Spring
 Professor A. McManigal - Autumn, Winter
 Professor Robert Meiklejohn - Autumn, Winter, Spring
 Professor H. W. Shupe - Autumn, Winter, Spring
 Professor C. J. Vierck - Autumn, Winter, Spring
 Associate Professor P. E. Machovina - Autumn, Winter, Spring
 Associate Professor A. J. Philby - Autumn, Winter, Spring
 Associate Professor F. E. Watkins - Autumn, Winter, Spring
 Instructor R. I. Hang - Autumn, Winter, Spring
 Instructor C. H. Kearns - Autumn, Winter, Spring
 Instructor R. W. Parkinson - Autumn, Spring, Winter, Summer
 Instructor E. O. Reed - Autumn, Winter, Spring
 Instructor W. F. Wright - Autumn, Winter, Spring
 Student Assistant C. D. Richardson - Autumn, Winter, Spring
 Student Assistant P. T. Yarrington - Autumn, Winter
 Instructor (Part time) Paul T. Yarrington - Summer

1950 - 1951

Professor & Chairman R. S. Paffenbarger - Autumn, Winter, Spring
 Professor C. D. Cooper - Autumn, Winter, Spring
 Professor W. B. Field - Autumn, Winter, Spring
 Professor Robert Meiklejohn - Autumn, Winter, Spring
 Professor H. W. Shupe - Autumn, Winter, Summer
 Professor C. J. Vierck - Autumn, Winter, Spring
 Associate Professor P. E. Machovina - Autumn, Winter, Spring
 Associate Professor A. J. Philby - Autumn, Winter, Spring
 Associate Professor F. E. Watkins - Autumn, Winter, Spring
 Instructor R. I. Hang - Autumn, Winter, Spring
 Instructor C. H. Kearns - Autumn, Winter, Spring (Assistant Prof)
 Instructor R. W. Parkinson - Autumn, Winter, Spring
 Instructor E. O. Reed - Autumn, Winter, Spring
 Instructor W. F. Wright - Autumn, Winter, Spring
 Instructor P. T. Yarrington - Autumn, Winter, Spring

1951 - 1952

Professor & Chairman R. S. Paffenbarger - Autumn, Winter, Spring
 Professor C. D. Cooper - Autumn, Winter, Spring
 Professor W. B. Field - Autumn, Winter, Spring
 Professor Robert Meiklejohn - Autumn, Winter, Spring
 Professor H. W. Shupe - Autumn, Winter, Spring
 Professor C. J. Vierck - Autumn, Winter, Summer
 Associate Professor P. E. Machovina - Autumn, Winter, Spring
 Associate Professor A. J. Philby - Autumn, Winter, Spring
 Associate Professor F. E. Watkins - Autumn, Winter, Spring
 Assistant Professor C. H. Kearns - Autumn, Winter, Spring
 Assistant Professor R. W. Parkinson - Autumn, Winter, Spring
 Assistant Professor E. O. Reed - Autumn, Winter, Spring
 Instructor R. I. Hang - Autumn, Winter, Spring
 Instructor P. T. Yarrington - Autumn, Winter, Spring

1952-1953

Professor & Chairman R. S. Paffenbarger - Autumn, Winter, Spring
 Professor C. D. Cooper - Autumn, Winter, Spring
 Professor W. B. Field - Autumn, Winter, Spring
 Professor H. W. Shupe - Autumn, Winter, Spring
 Professor C. J. Vierck - Autumn, Winter, Spring
 Associate Professor P. E. Machovina - Autumn, Winter, Spring

1952 - 1953 (Cont'd)

Associate Professor A. J. Philby - Autumn, Winter, Spring
 Associate Professor F. E. Watkins - Autumn, Winter, Summer
 Assistant Professor C. H. Kearns - Autumn, Winter, Spring
 Assistant Professor R. W. Parkinson - Autumn, Winter, Spring
 Assistant Professor E. O. Reed - Autumn, Winter, Spring
 Instructor R. I. Hang - Autumn, Winter, Spring
 Instructor P. T. Yarrington - Autumn, Winter, Spring
 Instructor (Part time) S. E. Rickly - Autumn, Winter, Spring

1953 - 1954

Professor & Chairman R. S. Paffenbarger - Autumn, Winter, Spring
 Professor C. D. Cooper - Autumn, Winter, Spring
 Professor W. B. Field - Autumn, Winter, Spring
 Professor H. W. Shupe - Autumn, Winter, Spring
 Professor C. J. Vierck - Autumn, Winter, Spring
 Associate Professor P. E. Machovina - Autumn, Winter, Spring
 Associate Professor A. J. Philby - Autumn, Winter, Spring
 Associate Professor F. E. Watkins - Autumn, Winter, Spring
 Associate Professor (p.t.) Robert H. Siegfried - Autumn
 Assistant Professor C. H. Kearns - Autumn, Winter, Spring
 Assistant Professor R. W. Parkinson - Autumn, Winter
 Assistant Professor E. O. Reed - Autumn, Winter, Spring
 Assistant Professor (Part time) Ben J. Lamp - Autumn
 Instructor R. I. Hang - Autumn, Winter, Spring
 Instructor Warren G. Lambert - Autumn, Winter, Spring
 Instructor P. T. Yarrington - Autumn, Winter, Spring
 Instructor H. R. Falkenstein (Part time) - Autumn, Winter, Spring
 Instructor S. E. Rickly (Part time) - Autumn, Winter, Spring
 Student Assistant Billy Crouch - Autumn
 Instructor Floyd Guterba - Winter
 Student Assistant William Pierce - Winter
 Student Assistant Harry Dempster - Spring

1954 - 1955

Professor & Chairman R. S. Paffenbarger - Autumn, Winter, Spring
 Professor C. D. Cooper - Autumn, Winter, Spring
 Professor W. B. Field - Autumn, Winter, Spring
 Professor H. W. Shupe - Autumn, Winter, Spring
 Professor C. J. Vierck - Autumn, Winter, Spring

1954 - 1955 (Cont'd)

Associate Professor P. E. Machovina - Autumn, Winter, Spring
 Associate Professor A. J. Philby - Autumn, Winter, Spring
 Associate Professor F. E. Watkins - Autumn, Winter, Spring
 Assistant Professor C. H. Kearns - Autumn, Winter, Spring
 Assistant Professor R. W. Parkinson - Summer, Autumn, Winter, Spring
 Assistant Professor E. O. Reed - Autumn, Winter, Spring
 Instructor R. I. Hang - Autumn, Winter, Spring
 Instructor P. T. Yarrington - Autumn, Winter, Spring
 Instructor W. G. Lambert - Autumn, Winter
 Instructor F. G. Davis - Autumn, Winter, Spring
 Instructor P. O. Schumann - Autumn, Winter, Spring
 Instructor (Part time) S. E. Rickly - Autumn, Winter, Spring
 Instructor (Part time) H. Falken - Autumn, Winter, Spring

1955 - 1956

Professor & Chairman R. S. Paffenbarger - Autumn, Winter, Spring
 Professor C. D. Cooper - Autumn, Winter, Spring
 Professor W. B. Field - Autumn, Winter, Spring
 Professor H. W. Shupe - Autumn, Winter, Spring
 Professor C. J. Vierck - Autumn, Winter, Spring
 Associate Professor P. E. Machovina - Autumn, Winter, Spring
 Associate Professor A. J. Philby - Autumn, Winter, Spring
 Associate Professor F. E. Watkins - Autumn, Winter, Spring
 Assistant Professor C. H. Kearns - Autumn, Winter, Spring
 Assistant Professor R. I. Hang - Summer, Autumn, Winter, Spring
 Assistant Professor R. W. Parkinson - Autumn, Winter, Spring
 Assistant Professor E. O. Reed - Autumn, Winter, Spring
 Assistant Professor P. T. Yarrington - Autumn, Winter, Spring
 Instructor William J. Blackburn - Autumn, Winter, Spring
 Instructor F. G. Davis - Autumn, Winter, Spring
 Instructor Warren G. Lambert - Summer
 Instructor Albert Romeo - Autumn, Winter, Spring
 Instructor P. O. Schumann - Autumn, Winter
 Instructor Henry R. Falken (Part time) - Autumn, Winter, Spring
 Instructor (Part time) Samuel E. Rickly - Autumn, Winter, Spring

1956 - 1957

Professor & Chairman Ralph S. Paffenbarger - Autumn, Winter, Spring
 Professor Charles D. Cooper - Autumn, Winter, Spring

1956 - 1957 (Cont'd)

Professor Hollie W. Shupe - Autumn, Winter, Spring
 Professor Charles J. Vierck - Autumn, Winter, Spring
 Associate Professor Paul E. Machovina - Autumn, Winter, Spring
 Associate Professor Alfred J. Philby - Autumn, Winter, Spring
 Associate Professor Fairfax E. Watkins - Autumn, Winter, Spring
 Assistant Professor Richard I. Hang - Autumn, Winter, Spring
 Assistant Professor Clyde H. Kearns - Autumn, Winter, Spring
 Assistant Professor Richard W. Parkinson - Autumn, Winter, Spring
 Assistant Professor Eldis O. Reed - Autumn, Winter, Spring
 Assistant Professor Paul T. Yarrington - Autumn, Winter, Spring
 Instructor Frank G. Davis - Summer, Autumn, Spring
 Instructor Alfred B. Devereaux - Autumn, Winter, Spring
 Instructor Donald F. Haskell - Autumn, Winter, Spring, Summer
 Instructor Sameul T. Miller - Autumn, Winter, Spring
 Instructor Albert Romeo - Autumn, Winter, Spring
 Instructor Paul O. Schumann - Autumn, Winter, Spring, Summer (Part time)
 Instructor Douglas A. Stone - Autumn, Winter, Spring
 Instructor (Part time) Thomas B. Smith - Autumn
 Student Instructor Edward I. Stamm - Autumn, Winter
 Instructor (Part time) Norman E. Gatsch - Winter, Spring
 Instructor James L. Spung - Spring

1957 - 1958

Professor & Chairman Ralph S. Paffenbarger - Autumn, Winter, Spring
 Professor Charles D. Cooper - Autumn, Winter, Spring
 Professor Paul E. Machovina - Autumn, Winter, Spring
 Professor Hollie W. Shupe - Autumn, Winter, Spring
 Associate Professor Fairfax E. Watkins - Autumn, Winter, Spring
 Associate Professor Alfred J. Philby - Autumn, Winter, Spring
 Associate Professor Richard W. Parkinson - Autumn, Winter, Spring
 Assistant Professor P. T. Yarrington - Autumn, Winter, Spring - Dean's Office Summer
 Assistant Professor Richard I. Hang - Autumn, Winter, Spring
 Instructor Paul L. Girbert - Autumn, Winter, Spring
 Instructor Ralph C. A'Harrah - Autumn, Winter, Spring
 Instructor William E. Brown - Autumn, Winter, Spring
 Instructor William L. Bell - Autumn, Winter, Spring
 Instructor Alfred B. Devereaux - Autumn, Winter, Spring
 Instructor Harry H. Dempster - Autumn, Winter, Spring
 Instructor Douglas A. Stone - Autumn, Winter, Summer
 Instructor Albert Romeo - Autumn, Winter, Spring
 Instructor Donald F. Haskell - Summer, Autumn, Winter, Spring
 Instructor Samuel T. Miller - Autumn, Winter, Spring

1957 - 1958 (Cont'd)

Instructor Robert E. Otstot - Autumn, Winter, Spring
 Instructor Edward M. Petrushka - Autumn, Winter, Spring
 Instructor Frank G. Davis - Autumn, Winter, Spring
 Instructor Paul O. Schumann - Summer, Autumn, Winter, Spring
 Instructor Samuel E. Rickly - Spring
 Assistant Instructor Edward I. Stamm - Autumn, Winter
 Assistant Instructor Richard J. Gifun - Autumn, Winter

1958 - 1959

Professor & Chairman Ralph S. Paffenbarger - Autumn, Winter, Spring
 Professor Charles D. Cooper - Autumn, Winter, Spring
 Professor Hollie W. Shupe - Autumn, Winter, Spring
 Professor Paul E. Machovina - Autumn, Winter, Spring
 Associate Professor Richard W. Parkinson - Autumn, Winter, Spring
 Associate Professor Alfred J. Philby - Autumn, Winter, Spring
 Associate Professor Eldis O. Reed - Autumn, Winter, Spring
 Associate Professor Fairfax E. Watkins - Autumn, Winter, Spring
 Assistant Professor Alfred B. Devereaux - Autumn, Winter, Spring
 Assistant Professor Richard I. Hang - Autumn, Winter, Spring
 Assistant Professor Samuel E. Rickly - Autumn, Winter, Spring
 Assistant Professor Albert Romeo - Autumn, Winter, Spring
 Assistant Professor Paul T. Yarrington - Summer
 Instructor Kenneth A. Ackley - Autumn, Winter, Spring
 Instructor William D. Ashton - Autumn, Winter, Spring
 Instructor William E. Brown - Autumn, Winter, Summer '59
 Instructor Frank G. Davis - Autumn, Winter, Spring
 Instructor Paul L. Girbert - Autumn--Resigned Jan. 1, 1959
 Instructor Donald F. Haskell - Autumn, Winter, Spring
 Instructor Robert E. Otstot - Autumn, Winter, Spring
 Instructor Edward I. Stamm - Autumn, Winter, Spring
 Instructor Douglas A. Stone - Summer, Autumn, Winter, Spring
 Instructor Richard J. Wethern - Autumn, Winter, Spring

1959 - 1960

Professor & Chairman Ralph S. Paffenbarger - Autumn, Winter, Spring
 Professor Charles D. Cooper - Autumn, Winter, Spring
 Professor Hollie W. Shupe - Autumn, Winter, Spring
 Professor Paul E. Machovina - Autumn, Winter, Spring
 Associate Professor Alfred J. Philby - Autumn, Winter, Spring

1959 - 1960 (Cont'd)

Associate Professor Fairfax E. Watkins - Autumn, Winter, Spring
 Associate Professor Richard W. Parkinson - Autumn, Winter, Spring
 Associate Professor Eldis O. Reed - Autumn, Winter, Spring
 Assistant Professor Richard I. Hang - Autumn, Winter, Spring
 Assistant Professor Samuel E. Rickly - Autumn, Winter, Spring
 Assistant Professor Albert Romeo - Autumn, Winter, Spring
 Assistant Professor Alfred B. Devereaux - Autumn, Winter, Spring
 Instructor Frank G. Davis - Autumn, Winter, Spring
 Instructor Douglas A. Stone - Autumn, Winter, Spring
 Instructor Donald F. Haskell - Autumn, Winter, Spring
 Instructor William E. Brown - Autumn, Winter, Spring, Summer '59
 Instructor Edward I. Stamm - Winter, Spring, Summer '60
 Instructor Kenneth A. Ackley - Autumn, Winter, Spring
 Instructor David L. Hutchins - Autumn, Winter, Spring
 Instructor E. Kenneth Greenwald - Autumn, Winter, Spring
 Instructor William D. Ashton - Autumn

1960 - 1961

Professor & Chairman Ralph S. Paffenbarger - Autumn, Winter, Spring
 Professor Charles D. Cooper - Autumn, Winter, Spring
 Professor Hollie W. Shupe - Autumn, Winter, Spring
 Professor Paul E. Machovina - Autumn, Winter, Spring
 Associate Professor Alfred J. Philby - Autumn, Winter, Spring
 Associate Professor Fairfax E. Watkins - Autumn, Winter, Spring
 Associate Professor Richard W. Parkinson - Autumn, Winter, Spring
 Associate Professor Eldis O. Reed - Autumn, Winter, Spring
 Associate Professor Richard I. Hang - Autumn, Winter, Spring
 Assistant Professor Samuel E. Rickly - Autumn, Winter, Spring
 Assistant Professor Albert Romeo - Autumn, Winter (Engg. Exp. Sta.), Spring (EESS)
 Assistant Professor Alfred B. Devereaux - Autumn, Winter, Spring
 Instructor Frank G. Davis - Autumn, Winter, Spring
 Instructor William E. Brown - Autumn, Winter, Spring
 Instructor Edward I. Stamm - Summer 1960, Autumn, Winter, Spring
 Instructor Kenneth A. Ackley - Summer 1961, Autumn, Winter
 Instructor David L. Hutchins - Autumn, Winter, Spring
 Instructor Edward Kenneth Greenwald - Autumn, Winter, Spring
 Instructor Trent W. Latimer - Autumn, Winter, Spring

1961 - 1962

Professor & Chairman Ralph S. Paffenbarger - Autumn, Winter, Spring
 Professor Charles D. Cooper - Autumn, Winter, Spring
 Professor Hollie W. Shupe - Autumn, Winter, Spring
 Professor Paul E. Machovina - Autumn, Winter, Spring
 Professor Richard W. Parkinson - Autumn, Winter, Spring
 Associate Professor Alfred J. Philby - Autumn, Winter, Spring
 Associate Professor Fairfax E. Watkins - Autumn, Winter, Spring
 Associate Professor Eldis O. Reed - Autumn, Winter, Spring
 Assistant Professor Richard I. Hang - Autumn, Winter, Spring
 Assistant Professor Samuel E. Rickly - Autumn, Winter, Spring
 Assistant Professor Albert Romeo - Autumn, Winter, Spring - Engg. Exp. Station
 Assistant Professor Alfred B. Devereaux - Autumn, Winter, Spring
 Instructor Frank G. Davis - Autumn, Winter, Spring
 Instructor Dale A. Denny - Summer 1962, Autumn, Winter
 Instructor William E. Brown - Autumn, Winter, Spring
 Instructor Edward I. Stamm - Autumn, Winter, Spring
 Instructor Kenneth A. Ackley, Jr. - Autumn, Winter, Spring
 Instructor Trent W. Latimer - Autumn, Winter, Spring

1962 - 1963

Professor & Chairman Ralph S. Paffenbarger - Autumn, Winter, Spring
 Professor Charles D. Cooper - Autumn, Winter, Spring
 Professor Hollie W. Shupe - Autumn, Winter, Spring
 Professor Paul E. Machovina - Autumn, Winter, Spring
 Professor Richard W. Parkinson - Autumn, Winter, Spring
 Associate Professor Alfred J. Philby - Autumn, Winter, Spring - Deceased Spr. Qt.
 Associate Professor Fairfax E. Watkins - Autumn, Winter, Spring
 Associate Professor Eldis O. Reed - Autumn, Winter, Spring
 Associate Professor Richard I. Hang - Autumn, Winter, Spring
 Assistant Professor Samuel E. Rickly - Autumn, Winter, Spring
 Assistant Professor Albert Romeo - Spring
 Assistant Professor Alfred B. Devereaux - Autumn, Winter, Spring
 Assistant Professor Orval J. Baldwin - Autumn, Winter, Spring
 Assistant Professor Kenneth A. Ackley - Autumn, Winter, Spring
 Instructor Frank G. Davis - Autumn, Winter, Spring
 Instructor Dale A. Denny - Autumn, Winter, Summer '63
 Instructor William E. Brown - Autumn, Winter, Spring
 Instructor Trent W. Latimer - Autumn, Winter, Spring

1963 - 1964

Professor & Chairman Paul T. Yarrington, Summer '64
 Professor Charles D. Cooper - Autumn, Winter, Spring
 Professor & Chairman Ralph S. Paffenbarger - Autumn, Winter, Spring
 Professor Richard W. Parkinson - Autumn, Winter, Spring
 Professor Hollie W. Shupe - Autumn, Winter, Spring
 Professor Fairfax E. Watkins - Autumn, Winter, Spring, Summer
 Associate Professor Richard I. Hang - Autumn, Winter, Spring
 Associate Professor Clyde H. Kearns - Autumn, Winter, Spring
 Associate Professor Eldis O. Reed - Autumn, Winter, Spring
 Assistant Professor Kenneth A. Ackley - Autumn, Winter, Spring
 Assistant Professor Orval J. Baldwin - Autumn, Winter, Spring
 Assistant Professor Alfred B. Devereaux - Autumn, Winter, Spring
 Assistant Professor Samuel E. Rickly - Autumn, Winter, Spring
 Assistant Professor Albert Romeo - Autumn, Winter, Spring
 Instructor William E. Brown - Autumn, Winter, Spring
 Instructor David C. Bryenton - Autumn, Winter, Spring
 Instructor Frank G. Davis - Autumn, Winter, Spring
 Instructor Wesley Eugene Gamble - Autumn, Winter, Spring
 Instructor Lester F. Smith - Autumn, Winter, Spring
 Instructor (part time) Trent W. Latimer - Autumn, Winter, Spring
 Student Assistant Donald Dignon - Autumn, Winter, Spring
 Student Assistant Thomas Greaves - Autumn, Winter, Spring

1964 - 1965

Professor & Chairman Paul T. Yarrington - Autumn, Winter, Spring, Summer
 Professor Richard W. Parkinson - Autumn, Winter, Spring
 Professor Hollie W. Shupe - Autumn, Winter, Spring
 Professor Fairfax E. Watkins - Autumn, Winter, Spring
 Associate Professor Richard I. Hang - Autumn, Winter, Spring
 Associate Professor Clyde H. Kearns - Autumn, Winter, Spring, Summer
 Associate Professor Eldis O. Reed - Autumn, Winter, Spring
 Assistant Professor Kenneth A. Ackley - Autumn, Winter, Spring
 Assistant Professor Orval J. Baldwin - Autumn, Winter, Spring
 Assistant Professor William E. Brown - Autumn, Winter, Spring
 Assistant Professor David W. Denning - Autumn, Winter, Spring
 Assistant Professor Alfred B. Devereaux - Autumn, Winter, Spring
 Assistant Professor Samuel E. Rickly - Autumn, Winter, Spring
 Assistant Professor Albert Romeo - Autumn, Winter, Spring
 Instructor David C. Bryenton - Autumn, Winter, Summer
 Instructor Frank G. Davis - Autumn, Winter, Spring
 Instructor Wesley Eugene Gamble - Autumn, Winter, Spring
 Instructor Lester F. Smith - Autumn, Winter, Spring

1964 - 1965 (Cont'd)

Assistant Instructor John B. Molnar - Autumn, Winter, Spring
 Student Assistant Richard Dixon - Autumn

1965 - 1966

Professor & Chairman Paul T. Yarrington - Autumn, Winter, Spring, Summer
 Professor Charles D. Cooper - Autumn, Winter, Spring
 Professor Richard W. Parkinson - Autumn, Winter, Spring
 Professor Fairfax E. Watkins - Autumn, Winter, Spring
 Associate Professor Richard I. Hang - Autumn, Winter, Spring, Summer
 Associate Professor Clyde H. Kearns - Autumn, Winter, Spring, Summer
 Associate Professor Robert D. LaRue - Autumn, Winter, Spring
 Associate Professor Eldis O. Reed - Autumn, Winter, Spring
 Assistant Professor Kenneth A. Ackley - Autumn, Winter, Spring
 Assistant Professor Orval J. Baldwin - Autumn, Winter, Spring
 Assistant Professor David W. Denning - Autumn, Winter, Spring
 Assistant Professor Alfred B. Devereaux - Autumn, Winter, Spring
 Assistant Professor Albert Romeo - Autumn, Winter, Spring, Summer
 Instructor David C. Bryenton - Autumn, Winter, Spring
 Instructor Wesley Eugene Gamble - Autumn, Winter, Spring, Summer
 Instructor Lester F. Smith - Autumn, Winter, Spring
 Teaching Assistant E - Douglas O. Cullen - Autumn, Winter, Spring
 Teaching Assistant G - Dale Denny - Autumn
 Teaching Assistant E - Kenneth Greenwald - Autumn - Teaching Asst D - Winter
 Lecturer James E. Kirtland - Autumn, Winter, Spring
 Teaching Ac A - John B. Molnar - Autumn, Winter, Spring
 Teaching Ac D - James Robert - Autumn, Winter, Spring

1966 - 1967

Professor & Chairman Paul T. Yarrington - Autumn, Winter, Spring
 Professor Richard W. Parkinson - Autumn, Winter, Spring
 Professor Fairfax E. Watkins - Autumn, Winter, Spring
 Associate Professor Richard I. Hang - Autumn, Winter, Spring
 Associate Professor Clyde H. Kearns - Autumn, Winter, Spring - Off Campus
 Autumn, Winter
 Associate Professor Robert D. LaRue - Autumn, Winter, Spring
 Associate Professor Eldis O. Reed - Autumn, Winter, Spring - Off Campus - Autumn
 Assistant Professor William E. Brown - Off Campus Autumn, Winter
 Assistant Professor David W. Denning - Autumn, Winter, Spring
 Assistant Professor Alfred B. Devereaux - Autumn, Winter, Spring

1966 - 1967 (Cont'd)

Assistant Professor Albert Romeo - Autumn, Winter, Spring
Instructor Myron W. Gallogly - Lima Campus - Autumn, Winter, Spring;
OSU Campus - Summer
Instructor W. Eugene Gamble - Autumn, Winter, Spring
Instructor David C. Marsh - Mansfield Campus - Autumn, Winter, Spring
Summer (OSU) campus
Instructor Lester F. Smith - Autumn, Winter, Spring
Teaching Ac D Alan Brunsman - Autumn, Winter, Spring
Teaching AS F Deane H. Kihara - Winter, Spring
Lecturer James E. Kirtland - Autumn, Winter

1967 - 1968

Professor & Chairman Paul T. Yarrington - Autumn, Winter, Spring
Professor Richard I. Hang - Autumn, Winter, Spring
Professor Richard W. Parkinson - Autumn, Winter, Spring
Professor Fairfax E. Watkins - Autumn, Winter, Spring
Associate Professor Robert D. LaRue - Autumn, Winter, Spring
Associate Professor Clyde H. Kearns - Autumn, Winter, Spring
Newark Campus - Autumn, Winter, Spring
Associate Professor Eldis O. Reed - Autumn, Winter, Spring
Marion Campus - Autumn, Winter
Assistant Professor Orval J. Baldwin - Autumn, Winter, Spring
Assistant Professor David W. Denning - Autumn, Winter, Spring
Assistant Professor Alfred B. Devereaux - Autumn, Winter, Spring
Assistant Professor Charles C. Fretwell - Winter
Assistant Professor Albert Romeo - Autumn, Winter, Spring
Instructor David C. Marsh - Autumn, Winter, Spring - Mansfield
Summer - OSU
Instructor Lester F. Smith - Autumn, Winter, Spring
Assistant Instructor Alan R. Brunsman - Autumn, Winter, Spring
Teaching Associate Dale A. Arahood - Autumn, Winter, Spring
Teaching Associate John D. Dennis - Autumn, Winter, Spring
Teaching Associate Deane H. Kihara - Autumn, Winter, Spring
Lima Campus - Autumn, Winter, Spring
Teaching Assistant Raymond J. Braitsch - Autumn, Winter, Spring
Teaching Assistant Eugene I. Odell - Autumn, Winter, Spring
Teaching Assistant Myron W. Gallogly - Autumn, Winter, Spring
Lecturer James L. Dapore - Autumn, Winter, Spring - Lima Campus

1968 - 1969

Professor & Chairman Paul T. Yarrington - Autumn, Winter (Mansfield Campus),
Spring

Professor Richard I. Hang - Autumn, Winter, Spring

Professor Richard W. Parkinson - Autumn, Winter, Spring

Professor Fairfax E. Watkins - Autumn, Winter, Spring

Associate Professor Clyde H. Kearns - Autumn, Winter, Spring
Newark Campus - Autumn, Winter, Spring

Associate Professor Robert D. LaRue - Autumn, Winter, Spring

Associate Professor Eldis O. Reed - Autumn, Winter, Spring
Marion Campus - Autumn, Winter

Associate Professor Albert Romeo - Autumn, Winter, Spring

Assistant Professor Orval J. Baldwin - Autumn, Winter, Spring

Assistant Professor David W. Denning - Autumn, Winter, Spring

Assistant Professor Alfred B. Devereaux - Autumn, Winter, Spring

Instructor David C. Marsh - Mansfield Campus - Autumn; OSU Winter, Spring

Instructor Lester F. Smith - Autumn, Winter, Summer '69
Newark Campus - Winter

Teaching Associate Dale A. Arahood - Autumn, Winter, Spring

Teaching Associate W. Steve Demmy - Autumn, Winter

Teaching Associate John D. Dennis - Autumn, Winter, Spring

Teaching Associate James W. Eyster - Autumn, Winter, Spring

Teaching Associate Billy W. Friar - Winter

Teaching Associate Helmut T. Zwahlen - Autumn, Winter, Spring

Teaching Assistant Raymond Jay Braitsch - Autumn, Winter, Spring

Teaching Assistant Eugene I. Odell - Autumn, Winter, Spring, Summer '69

Lecturer James L. Dapore - Lima Campus - Autumn, Winter, Spring

Lecturer James F. Neuenschwander - Lima Campus - Autumn, Winter