

The Knowledge Bank at The Ohio State University
Ohio State Engineer

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THE COLLEGE OF ENGINEERING

By PRESIDENT GEORGE W. RIGHTMIRE

The law of 1862 which created this University provided for the teaching of the "mechanic arts." Before that time colleges had not been places where mechanic arts were learned, all improvement in such arts and all teaching of any kind being carried on in the factories and in the industries themselves, so that young men who came to know anything about the mechanic arts did so as apprentices. The teaching of mechanic arts in colleges was a new thing and proceeded on the theory that the scientific principles underlying these arts must be carefully taught and illustrated, and this could be done only in college laboratories and classrooms. When these land-grant colleges were established, we began an era of study and teaching by the laboratory or experimental method, a system of study which has spread to practically all branches of learning. Since then we have lived in an experimental age.

Great progress began in the mechanic arts, just as it did in agriculture, with the opening of these land-grant colleges, or, as we call the one in Ohio today, The Ohio State University. Young men and young women pursued their studies in laboratories with apparatus which would demonstrate the application of scientific principles to the arts and would show by experiment how the principles of science operated and could be controlled, and so helped to create in the student an inquiring mind which began to reach out very extensively into the unknown and make great scientific discoveries.

The first professor of physics and mechanics in this institution was Thomas Corwin Mendenhall, who was a great believer in the laboratory method of study, and who was himself one of the foremost experimenters in the field of physics and its applications. His eminence is shown by the fact that the definitions which he proposed for the electric units—the ampere, the volt, and the ohm—were the ones adopted at Chicago at the World's Fair, and thereby rendered possible all around the world the use of fundamental terms in electricity which all would understand alike. His teaching inspired his students, and when he left he was succeeded by Prof. B. F. Thomas who was also very enthusiastic about the developments in electricity, and who was an experimenter of rare ability. Some of the graduates from this University in the late 80's and early 90's achieved fame with the Westinghouse Electric & Manufacturing Company and the General Electric Company by inventing electric machinery for making and utilizing electric power, the use of

which has made possible the electrical age in which we live. Later graduates have likewise maintained a high degree of performance. So, this University from the beginning has justified the hope and expectation upon which it was built, both in agriculture and in the "mechanic arts." In the field of electricity, the names of Lamme, Scott, Skinner, Storer, Lincoln, Feicht, Mershon, Calkins, and other graduates of The Ohio State University have been known for many years, and electrical engineering dates from about the time these young men were being graduated and going into the electrical industry. In later times the names of Kettering and Cooper and Bailey and many another have carried the name of The Ohio State University far into the engineering world. We must not forget some of the foremost engineering teachers and research workers today are our own graduates.

Many of you saw and used the earliest telephones, saw the streets of towns and cities lighted for the first time with the arc light, saw the first Edison incandescent lamps or bulbs used in the homes; also saw the earliest gasoline engines, and the first automobiles; saw the development of telegraphy both with and without wires, the latter of which we now call radio; saw the first airplanes and know that airplaning today is made possible only through the gasoline engine which was so highly developed in the automobile;

two years ago saw Lindbergh take off from New York and a few hours later light in Paris; only recently you saw the great dirigible come from Germany threading its way across the Atlantic to New Jersey, and return; your town or city just now is probably carrying on a great campaign to establish an airport to make travel and transportation by an airplane as safe, as useful, and as common as by railroad; you have seen the tremendous development of highway building in recent years, and the wonderful extension in highway transportation which has resulted; you have seen the rivers of the country spanned by bridges the like of which were not dreamed of when this University was opened; you have seen buildings erected everywhere of such height that they are popularly termed skyscrapers, in which steel and concrete are the great building materials; you have seen water power stored and conserved by great concrete reservoirs; you have seen all the hidden and waste places of the earth, hitherto inaccessible, visited and inspected by airplane; last week you saw Commander Byrd set forth on an elaborate expedition to the antarctic country to spend two years in the exploration of the south



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polar regions; you receive every day mail by air; you are witnessing the applications of chemistry to petroleum to create and develop petroleum products almost without number, and with uses of the greatest importance; you have seen tremendous developments in the mining industry, the metal industry, and the clay or ceramic industries; you have seen manufacturing itself brought to such high state of performance that the thing to be manufactured progresses through the factory at certain speed and we count the number of automobiles turned out in some of the great factories at so many per hour.

All of these phenomena which have become so common that we think little about them, but yet which render this age vastly different from any other that the world has ever seen, are the results of developments in engineering, and an engineering college today must be prepared to train its students in practically every one of these fields. As a result The Ohio State University has developed from the time when it was to teach, according to the law, the "mechanic arts," into an institution where we now enroll over sixteen hundred engineering students, pursuing their studies and laboratory experiments and investigations in the departments of architectural engineering, of ceramic engineering, electrical engineering, civil engineering, industrial engineering, mechanical and chemical engineering, metallurgy, mineralogy, mining engineering and mechanics—and all of these engineering studies are underlaid with careful and extensive study in the fundamental fields of physics and chemistry and mathematics. The engineering college today is an immensely varied college, and it deals with practically everything that makes our industrial world what it is.

You will be interested in the ranking of Ohio in the manufacture of various products, all of which depend to a very great extent upon the advance and the application of engineering knowledge. In pottery, and terra cotta and fire-clay products, Ohio ranks first; it is also first in rubber products—and in the manufacture of tires and tubes it not only ranks first, but produces about 60 per cent of all such articles made in the United States; in the manufacture of tool products Ohio ranks first; in steel works and rolling-mill products Ohio is second among the states of the United States, and in blast-furnace products it is also second; in the manufacture of automobiles and automobile parts, Ohio is second, ranking next to Michigan; in electrical machinery, apparatus, and supplies, Ohio comes out fourth among the states of the Union. And, as compared with the other states in the total value of its manufactured products, Ohio ranks third—with Pennsylvania second and New York first. Many other figures might be given showing the great importance in Ohio of manufacturing in many fields, but these few figures will make plain the great need in Ohio for knowledge of the highest quality in engineering, and will show the important place in Ohio life of the College of Engineering. This college is making an ever-growing contribution to the industrial life of Ohio through its Engineering Experiment Station, of which the Dean of the College of Engineering, E. A. Hitchcock, is the Director, and any inquiry

coming from any industry in Ohio, addressed to him, will receive cordial and prompt attention. The whole purpose is to make the College of Engineering and the Engineering Experiment Station a great service agency in any industry in which engineering knowledge and skill are needed.

Out of these colleges we may expect continuously new developments which can be applied in industry, in commerce, and in business; and at the same time may expect new discoveries of principles of nature which are capable of application in industry and which the engineering college can be expected to apply and perfect. In fact, besides the teaching and the investigation going on in the college of engineering today to discover scientific principles and to apply them and make them useful for industry, we are also receiving many questions from the industries themselves which must be answered if industry is to progress scientifically. We have set up in the College of Engineering an experiment station which busies itself with endeavoring to find the answers to great problems coming in from these numerous industries carried on in Ohio.

The College of Engineering, therefore, is attempting to perform a double service. On the one hand it trains the student on the campus, on the other it reaches out to the industries and gives them expert advice and assistance. In fact, today almost everything going on in the world of business or industry on a large scale is spoken of as "engineering," wherever scientific principles are being applied to actual operations to make human life easier, or safer, or more certain. We speak of sanitary engineering, human engineering, radio engineering, health engineering, and many other kinds, and this word displaces almost completely all terms formerly used to identify the practical arts. It is the one term which is written all over the face of modern life; and the College of Engineering, therefore, carries a tremendous burden imposed upon it by an age which has come to be known as the material, or mechanistic, or industrial age. The laboratory method has worked marvelous achievements in the field of industry and in all the arts, and it is commonly said by scientists and engineers that they are just beginning to scratch the surface of things to which engineering technique and knowledge may be applied. We have seen many astonishing changes in the last fifty years, and the scientists and engineers constantly tell us that we are now only beginning and that the generation occupying our places fifty years hence will live under conditions and with accessories, utilities, and conveniences which are as much beyond those we have today as ours are beyond those which our grandparents knew. In this great field of human progress the College of Engineering is the center, is the source of discovery, of application of scientific principles, of daring undertakings, and of inspiration.

We need wonder very little, therefore, at the tremendous growth of engineering colleges, and their division into the numerous departments which I have mentioned, and into others which are being proposed; nor need we be surprised that the graduates of The Ohio State University are found all over Ohio and elsewhere in mining,

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in the ceramic industry, in the electrical industry, in all sorts of manufacturing activities, in railroading and highway building, in radio activities, in sanitary engineering for our great cities, in civil engineering, and in chemical engineering; indeed, the Ohio State service and knowledge to the industries throughout the State and the bond between the industries of Ohio and the College of Engineering here is complete and vital.

In all branches of engineering the State University is serving the public and must prepare to render a larger and more varied service in the industrial life of Ohio.