EDITORIAL

EYESIGHT PRESERVATION

The subject of eyesight conservation is one that concerns all of us but to which very few pay enough attention. Because adequate illumination has only been attainable within the past 50 years, a majority of people do not appreciate the importance of the proper kind of lighting and its relation to good vision. This fact was emphasized by Prof. F. C. Caldwell, head of the department of electrical engineering, in a recent lecture when he said, 'Students in classes in illumination have shown that very bad conditions frequently exist in study rooms. The light intensities vary from values too low to values higher than are required. There is no objection to high intensities themselves but in the case of study tables they generally mean concentration of light on the desk. The bad feature of this is that it produces a violent contrast with the low illumination generally existing throughout the rest of the room."

When one stops to consider that we, as students, are using our eyes for fine detail work or reading a large part of the time, we should make every effort to obtain the best possible conditions for them. The following suggestions may prove helpful to you:

1. Use rough paper whenever possible. Glazed paper is glaring and produces a very bad effect on the eyes.
2. Yellow paper is preferred to white paper. Try it.
3. Avoid violent contrasts. Always have some general illumination in the room.
4. Do not read or study for a long period of time without resting. Eyestrain will result. A good rule is to rest five minutes each hour.
5. Have adequate illumination. Do not save light at the expense of your eyes. By obtaining a foot-candle meter from the electrical engineering department you can determine whether you have sufficient light on your working plane. The range for studying or reading is from 8 to 12 foot-candles and for drawing is 15 to 25 foot-candles.

Statistics show that 60 percent of the 42,000,000 working people in the United States and that 25 percent of the 24,000,000 school children have defective vision. A glance at these figures will show the necessity for eyesight preservation. The sense of sight is the most important of all. If once lost it can never be replaced; hence, it behooves us to take the best possible care of our eyes.

—C. C. K.

THE ENGINEERING PYRAMID

How many of us have a clear mental picture of the engineering profession? Sooner or later we shall be called upon to decide the field we wish to enter and if we know the opportunities that are before us, the choice will be much easier. Mr. C. S. Coler in an address before the senior class in Electrical Engineering has likened the profession of engineering unto a rectangular pyramid with the base as the different branches and the apex as the ultimate goal of every ambitious engineer. The college graduate, as a rule, starts at the bottom for two good reasons. First, it is necessary for him to prove to the workmen that he is more capable than the untrained man and more able to handle a bigger and better job. Second, he must have a solid foundation and a broad background to enable him to decide any question that may come to his attention.

One dimension of the base of this pyramid has been divided into six parts, namely; power, land transportation, marine transportation, industrial, domestic, and communication. Most important among these is power. It is a measure of the civilization of a nation and wages are directly proportional to the power consumed by that country. Land and marine transportation are concerned with moving people and things from one place to another. Perfection in transportation is essential to the development of a country. Next, industries may be divided into three parts; prdoucing raw material, semi-finished products and finished products. Domestic engineering involves the production of labor saving devices for the household. So much progress has been made along these lines that it is rumored an electric baby spanker has been perfected. Lastly, communication presents three fields of interest to the engineer in the telephone, telegraph and radio.

Under any of the aforementioned departments fall the following ten branches which make up the second dimension of the base of the pyramid; commercial, consulting, application, design, research, manufacturing, service, operating, personnel, and executive. In commercial work the main point of interest is sales engineering. The sales engineer extends the boundaries of his field and becomes not merely a peddler but an ambassador of service. Consulting, application, design and research go hand in hand. The consulting and application engineers are selling ideas while the design and research engineers are developing them. All of these require a keen analytical mind as evidenced by an interest in mathematics or physics. In manufacturing the engineer must understand the placing of equipment and know something of cost accounts. Service and operating are closely related. The service man is responsible for the proper functioning of the machine and has a variety of jobs while the operating man runs the machine. The personnel manager is interested in people and preserves harmony among the men in his plant. Lastly, we have the executive. More and more industry is requiring that its executives be college trained men. Your ultimate goal should be the executive position.

While Mr. Coler's discussion pertained to electrical engineering, the analogy can be extended to any branch of the profession. The height of the pyramid is a measure of success and the distance ascended is entirely up to the individual. Among those men who have reached the apex we might mention, C. P. Steinmetz, B. G. Lamme, T. H. Hammond and Herbert Hoover.

The fourth dimension of the pyramid is faith which is the basis of the engineering profession. It is this quality in ourselves and our jobs that brings success. When the Moffat tunnel was completed, faith had moved a mountain. We must have faith to the nth degree to expect any great amount of success in the profession of engineering.—C. C. K.

THE CURRICULUM IN ENGINEERING PHYSICS

The curriculum in Engineering Physics offers students in the College of Engineering an opportunity to devote the greater part of their time to a study of chemistry, mathematics and physics rather than to the engineering applications of these subjects. Frequently students with analytical minds find that after all they get greater pleasure in the study of the fundamental principles of chemistry, physics and mathematics than in the application of these principles to concrete engineering problems. It is clear that such students should avail themselves of every opporunity to master as fully as possible the essential principles of physics and chemistry and the technique of mathematical analysis, because the opportunities in the industries for men with that type of training are rapidly increasing. Moreover it is well known that the university offers a student the best opportunity for becoming thoroughly familiar with such fundamental subjects as chemistry, mathematics and physics and if this opportunity is neglected, there is little chance that it will ever be found in later life.

The Curriculum for Engineering Physics in the Freshman year is the same as it is in the other curricula in the College of Engineering, and in the Sophomore year it differs only slightly from these curricula. With the Junior year there begins to be a differentiation which naturally becomes still more evident in the Senior year. In the Junior and Senior years students who elect this curriculum are required to take advanced courses in chemistry, physics and mathematics in place of the customary technical subjects of the other curricula. The general result of this requirement is that students who have completed the Curriculum in Engineering Physics will have had at least 60 quarter hours of mathematics, including mechanics, 45 quarter hours of physics and 30 quarter hours of chemistry. The electives provided for in the curriculum make it possible for the student to still further increase the work in chemistry, mathematics and physics. In addition to the work in these fundamental subjects the student has had a sufficient training in Engineering Drawing, Mechanical Engineering and Electrical Engineering to make him familiar with some of the more important applications of physics, chemistry and mathematics in the industries. A sound basis has thus been laid for a scientific growth and development which should extend throughout the life of the student. It has not been found possible to do more in an undergraduate program extending over four years.

When a student has completed this curriculum, he is confronted with one of two possibilities. He may find that he is not interested in continuing further his formal studies in mathematics, phys-

(Continued on Page 22)

ENGINEERING PHYSICS

(Continued from Page 15)

ics and chemistry in some university. In such an event he can secure employment in a research laboratory of some of the larger industries. There is a constant demand from these laboratories for men well trained in physics and mathematics to take a part in research and development work. The following is a suggestive list of industries maintaining research laboratories in which there are excellent opportunities for physicists; Taylor Instrument Co., Rochester, N. Y.; Eastman Kodak Co., Rochester, N. Y.; Bausch and Lomb Optical Co., Rochester, N. Y.; Bell Telephone Laboratories, New York City; General Electric Co., Schenectady, N. Y.; Westinghouse Mfg. Co., Pittsburgh, Pa.; General Motors Research Corporation, Detroit, Mich.; Bureau of Standards, Washington, D. C.; U. S. Naval Research Laboratory, Washington D. C.; Pittsburgh Plate Glass Co., Pittsburgh, Pa. The list could be increased almost indefinitely. The demand increases from year to year as the industries become better organized and developed and depend more and more on the research work done in their own laboratories. Men who enter these laboratories immediately after completing an undergraduate curriculum are at first set to work on minor problems and advanced as rapidly as their capacity and development seem to justify.

The second possibility open to a student who has completed the Curriculum in Engineering Physics is an opportunity to continue as a graduate student the work he has already begun as an undergraduate student. He has had such a thorough training in physics and mathematics that he is in a position to continue these subjects in the Graduate School and earn an A. M. degree at the end of one year of graduate study. If his intellectual interests carry him still further he can, of course, continue his graduate work and ultimately complete the work for a Ph. D. degree in physics with a minor in mathematics. At the end of this graduate study there are still better opportunities in the research laboratories of the industries. These research laboratories want well-trained physicists for their work. The better training the greater the compensation at the start and the greater the opportunities for promotion. By far the best policy is to remain in the university for some graduate work in physics and mathematics after the completion of this curriculum and thus be better prepared for research work and able to insure greater opportunities for continuous scientific growth through life. Most of the students who have elected this curriculum have decided to remain for graduate work after its completion and in so doing have shown excellent foresight and judgment.