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In Charge of This Issue:

R. E. Dorr '24

THAT CHRISTMAS SPIRIT

THE TECH takes this opportunity of conveying to its readers, to all of the Faculty, to the officials of Technology, and to all others in any way connected with Technology, its wishes for a Merry Christmas. It hopes they will enjoy a prosperous New Year.

Though Christmas Day is over, the Christmas Spirit endures throughout our vacation. It first appeared a month or so ago in the form of more or less predatory illusions. If we wanted something not entirely necessary at the time, we left it go until someone could give it to us and thus excused our pocketbooks from one other worrisome drain. Next we were counting the days which had yet to elapse before we should see our home friends again. Then came the examinations. For a while we forgot everything else but studies, but even in between our nightly reviews we had to pack our trunks and buy our tickets home.

We have suffered the ominous crushings of the crowds of shoppers. We have trimmed trees, sent out and received gifts, and we are still wishing our friends a "Merry Christmas." We have learned once again, moreover, the meaning of Christmas; we have interpreted its spirit, perhaps the more sensually through the tolling of Church bells.

How long will this spirit persist? How long shall we live up to the resolutions we have in mind for the New Year? The answers to these questions will be found only in the forcefulness of our will power. Let us treat the matter with that scientific method so continuously instilled into our minds.

We think too constantly of our Self. After all, it is not our own success, but the value of our service to Humanity and society in general which will determine our ultimate success. Let us clothe ourselves in this atmosphere of Christmas and wear it the year round, not only for the ten days when we are relieved of the more material duties of our intensive study, but while we are engaged in this study as well.

THE BLAME FOR FLUNKS

REPORTS will soon be out and we shall then know the fates we have shared during the past term. There will be flunks and there will be the more dreaded votes.

The instructors always bear their burden of criticism and unjust condemnation. Is it because we are poor losers? Or is it because we hate to admit failure? Sometimes, it is true, there may be some justification for our complaints, but on the whole this is rare. Laying the blame on the instructor is but a coward's way out of it. It is a habit which grows from what at first purports to be harmless joking. That it is the result of a biased opinion can be seen from the fact that with but few exceptions it is practiced only by those who flunk on whoever has flunked them.

New Years bring resolutions. One good resolution would be to be fair in your judgment. Too often such prejudiced criticism reflects to the detriment of its utterer, instead of harming him for whom it was intended. Be a good loser and take defeat like a man should.

"MIXERS" AND SCHOLARS

FIGURES recently published regarding a group of university of Michigan graduates, suggest that the men who gained most prominence in social and campus activities are earning a good deal more money today than those who went in for scholarship. That does not necessarily mean that the good scholars are incapable of business success. Many of them prefer occupations that are not very profitable financially.

"Financial success is a crude way to estimate the real worth of men, their service to the world, or the satisfaction they get out of life.

"Probably no class of people get better real rewards than college professors, but they can not usually earn as much money as successful business men. They find their gains in the affection of a great body of former students and in their power to help mould the thought of the younger generation."

Congratulations are due Dr. Connors on his speedy recovery from what threatened to be a serious accident. It is unfortunate that his holidays should be spent as they were, but we are glad he has recovered so rapidly and is with us again.

WHAT ENGINEERING IS AND WHAT IT IS NOT

By E. J. Mehren

Editor, Engineering News-Record
We are commonly told that we live in an engineering age. And as evidence we are referred to the engineering works that contribute to our comfort and convenience, such as the electric light, the telephone, fast and luxurious railroad trains, the airplane, and radio.

But how do these conveniences, without which our whole mode of life would be thrown back to primitive conditions, come into existence? What manner of men bring forth these astonishing accomplishments? I shall endeavor to answer briefly these questions, in order that our appreciation of the engineering devices we enjoy may be increased, and that we may give a due share of credit to the men who have developed them.

Engineering is the process by which, through application of scientific principles, forces and materials are made useful. Coal as it lies in the ground is valueless. In the hands of the engineer it becomes a source of power, relieves men of labor, and ministers to their comfort and convenience. Iron ore likewise is valueless as ore. Torn out of the earth by the mining engineer, put through the blast furnace, the Bessemer converter, and other heat processes by the metallurgical engineer, it becomes in the form of steel, the metal of a million uses. So does the engineer use other forces for the benefit of mankind. So does he take other minerals from the earth and through one engineering process or another turn the useless rock into useful metal.

But note, my friends, that this is no hit or miss process. The engineer works in accordance with scientific principles. Through long and painstaking study he has discovered the laws of nature governing forces and materials. He knows how much heat will be developed by a pound of coal, a gallon of oil, or a cubic foot of gasoline vapor. He knows what work steam will do when it expands in an engine cylinder. He knows how much power is needed to haul a railroad car on the rails. He knows what energy will be developed by the fall of a pound of water through any height. He has weighed the amount of water a floating body will displace. He can tell how much weight a bar of steel will carry. He knows the electrical energy required to produce heat and light and power.

With information such as this he proceeds to design the most complicated machines, structures and processes with assurance that the machine or structure or process, when completed, will do what is expected of it. With his knowledge of steam he can tell in advance of construction what a given engine will do. He can guarantee that an automobile motor will give certain power, and drive the car at a given speed. He can tell how much power a certain waterfall will develop. He can design a ship, built entirely of steel, that will not only float but carry an enormous and definite cargo besides. He can plan a bridge with assurance that it will go together accurately when it reaches the bridge site and support the size of locomotive and the weight of railroad car that may be required.

He can take crude ore and tell how to recover the valuable elements, and how much metal can be secured from a ton of a given ore.

He derives his assurance, my friends, and he accomplishes the results he sets out to secure because he works with scientific data and by scientific methods. Hit and miss have no place in his work and mere skill would not by itself be sufficient to solve the problem. Without scientific principles, therefore, there is no engineering—or to put it another way, engineering is a science.

What Engineering Is Not
Before going further let us make note here of some occupations that are not engineering, though some people think they are. Unfortunately, we have some well-meaning persons who are usurping the title of engineer. *Engineering News-Record* has made a collection of absurd

T. C. A. CLEANS HOUSE DURING XMAS HOLIDAY

(Continued from Page 1)

no market for them. To the men who own these books the T.C.A. sent a letter asking that they be removed at once.

These letters, which were mailed December 31, went to about 165 men. It gives them a list of the books which they have left in the office and which are no longer in use. An offer is made to mail these to the man and let him know the amount of postage.

The books will be held for one month and if they are then still uncalled for they will be sent to the students of colleges in Central Europe. Some men have as many as five or six books left in the office and they should feel them worth calling for.

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uses of the name. We find, for example, that one dairyman calls himself a milk engineer, that a correspondence school claims to train exterminating engineers who are, without doubt, sworn enemies of rats, mice, bedbugs and cockroaches; we find that a department store has a window-shade engineer; that a tourist bureau employs a travel engineer; that a plumber has now become a sanitary engineer.

I am sure, my friends, that you are smiling at these absurd misuses of the title "engineer." These occupations evidently do not rest on the painstaking use of scientific principles and, therefore, cannot properly be called engineering occupations. How silly these borrowers of other men's titles appear when compared with such real engineers as Edison, Marconi, Dr. Steinmetz, General Goethals, Herbert Hoover and John Hays Hammond. The attempt at deception deceives only the deceiver and the window-shade engineer will probably get fewer windows to shade because the public suspects him of being incompetent or a faker. No man who really knows his business needs to steal the title of another craft or calling.

Now that we have had this short excursion into the field of what engineering is not, let us return to our main theme, namely, what engineering is.

The Engineer An Administrator
The engineer as we well know and as this brief talk has recalled is responsible for the great material comforts we enjoy. In addition, his work has made possible the great industries of the day, for they are built on the use of power and machinery. Who, therefore, is more competent than the engineer to conduct these enterprises? As a matter of experience we find thousands of engineers in responsible managerial posts in the railroads, in the electric light companies, in mining companies, manufacturing plants and municipal enterprises. We might cite as examples of great executives who are engineers: Samuel Rea, president of the Pennsylvania R.R., E. J. Pearson, president of the New Haven, and W. B. Storey, president of the Santa Fe; John W. Lieb, vice-president of the New York Edison Co., and W. C. L. Eglin, president of the Philadelphia Electric Co.; D. C. Jackling, president of the Utah Copper Co.; Adolph Lewisohn, president of the Miami Copper Co., and E. M. Herr, president of the Westinghouse Electric & Mfg. Co. Moreover, it is common knowledge that where cities have adopted the city manager form of government, the city manager in many cases is an engineer. The engineer, then, is not only a designer and builder, but an administrator and manager of the works built on his achievements.

But the engineer's work is not finished. He has brought our material civilization to a very advanced position. He has developed for us great comforts and conveniences. But his eye is fixed on the future with an even greater vision of service to mankind. He dreams of the day when man's burdens shall be lighter than they are even now. In research laboratories, in engineering offices all over the country, he is delving deeper into nature's secrets and, with the aid of the new scientific principles he is discovering, he will fashion new machines, new labor-saving devices, new ways of forcing power to do the bidding of man. Scientific investigation is the tool with which he works and, with this tool, the engineer will lay the pub-

lic under heavier tribute to him in the future than he has in the past. That the power extracted from the earth and falling waters may shift heavy loads from the backs of men, that communication may be made swifter, that life may be made comfortable are the purposes to which the engineer is dedicated.

Preparing for Business?

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