

## The Knowledge Bank at The Ohio State University

### Ohio State Engineer

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## TECHNICAL TRAINING vs. EXPRESSION

WHAT is wrong with the training of the technical graduates turned out by our Universities? This question was presented to a group of our foremost employers of technically trained men including directors of research, industrial executives, and consulting engineers. The results were very interesting and many of the replies stressed similar fundamental weaknesses.

Foremost among the points repeatedly stressed was that technical graduates lack the power of expression, either oral or written. Robert E. Wilson, President of the Pan American Petroleum & Transport Company stated that one of the glaring weaknesses that he observed in recent graduates was their inability to assemble a "good, clearcut, persuasive, well organized report." Many of those interviewed shared this view. One Director of Research made the statement that not five per cent of his technical employees could get up on their feet and deliver an effective, forceful, understandable speech to either the plant executives or labor.

This is indeed a severe indictment. We cannot minimize its importance when brought by the leaders of Industry, the men whom the technical graduates must please.

Another important criticism was that the graduate should have more training in the fundamentals. A sounder fundamental understanding of mathematics, physics, and chemistry and less undergraduate specialization. However, this does not necessarily imply the mere memorization of additional facts. To the contrary, many decried the fact that memorization had been substituted in many cases for reasoning and common sense. The facts must be coordinated. The average graduate, it was claimed, possesses an insufficient understanding of broad principles and systems. Many declared themselves for more material application and practical laboratory work.

There were other points stressed outside of weaknesses in the formal education of the applicant. A popular accusation was aimed at the graduates' alleged lack of ability to cooperate with others; his intolerance of non-academically trained technical men, his inability to speak the "language of labor." As M. F. Taggart, Director of Research for the O'Brien Varnish Company, so expressively stated the point, "it takes the graduate from six to nine months to lose his cap and gown."

One other important point was brought out. The  
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### TECHNICAL TRAINING vs. EXPRESSION

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average technical graduate has a very poor understanding of costs. For one thing he does not realize what it costs in actual gross sales to underwrite a technical man's salary. He does not realize that he must earn his salary and advancement. Too many graduates are time clock workers.

These are indeed damaging accusations. These are the faults that our future employers may at some future date find with us. Shall we sit back, and take a personal inventory? We can still do something about it; it is not too late.

—Chemical Industries.

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PRESIDENT

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**1. To make telephone apparatus of high quality.**

This in itself is not unusual. What *is* unusual is that every item of equipment in the vast network of the Bell System must coordinate so perfectly that from any Bell telephone you can talk clearly with any one of the millions of others. Can you think of any other product which must meet such an extraordinary test?

**2. To work for efficiency and lower costs.**

Whether it be in purchasing materials—or in manufacturing the 43,000 items of telephone apparatus—or in distributing all this equipment to the Bell companies, Western Electric is always seeking the better way. As a result it

has a progressive record of methods developed, products improved, economies effected, and costs lowered.

**3. To keep prices at the lowest possible level consistent with financial safety.**

Western Electric furnishes most of the telephone equipment used by the operating companies of the System. By combining their requirements it is able to manufacture more economically; and it eliminates selling expenses and credit losses. The resulting savings it passes along to its telephone customers in the form of lower prices.

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This policy of voluntarily limiting profits is reflected in the Company's financial record. In recent years it has earned on its investment a rate of return only about half as large as that of a representative group of comparable manufacturers, and over a period of twenty years this rate has averaged less than 7%.



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