Hugo Diemer (1870-1939) studied engineering at Ohio State University and subsequently worked as a production engineer, consulting engineer, and production manager. He was later a professor of industrial engineering at Pennsylvania State College.

Diemer published many books and articles on management subjects, but of particular interest to us is his book, *Factory Organization and Administration*, published in 1910. In it he discussed many subjects which would be of interest to factory managers today. His chapter entitled "Industrial Engineering," and his opening remarks in that chapter could well serve as advice to today's industrial engineer, as well as to the engineer of 1910.

**Industrial Engineering**

It is now some twenty years since Mr. Henry R. Towne presented to the American Society of Mechanical Engineers a paper on "Gain Sharing," in which he assumed that everything connected with successful factory management constituted a part of the work of the engineer. From time to time papers have been presented on similar topics before that society and in the *Engineering Magazine*, which publication was early and alone among engineering publications to realize the inevitable passing of the work of industrial management into the hands of the engineer. In the early discussions of these topics there were engineers who were opposed to the introduction of discussions of this character into engineering societies or publications, holding that these fields should be reserved for strictly technical discussions of problems dealing directly with pure mechanics. Among the early opponents to the introduction of

these discussions there were some who argued that the ques-
tions involved were matter for bookkeepers and accountants
and not for engineers. If a mechanical engineer dabbled
in works management, his fellow brothers in the profession
began to think it necessary to suspect his technical ability
as an engineer. On the other hand, a cry arose from book-
keepers, auditors, and statisticians that the problem was
not one of engineering at all, but of "system", and that
shop men or engineers were incapable of mental attitudes of
processes of auditors. How these conditions have given
way to a more enlightened view is indicated by the enthu-
siasm and unanimity with which Mr. Fred Taylor was elected
to the presidency of the American Society of Mechanical
Engineers. Mr. Taylor stands today as the earliest and
foremost advocate of modern business or industrial engineering.

As early as 1889, Mr. Taylor earnestly pleaded that shop
statistics and cost data should be more than mere records,
and that they in themselves constituted but a small portion
of the field of investigation to be covered by the industrial
engineer. While he did not so express himself, the gist of
his treatment of factory management is this: He considers
a manufacturing establishment just as one would an intricate
machine. He analyzes each process into its ultimate, simple
elements, and compares each of these simplest steps or
processes with an ideal or perfect condition. He then makes
all due allowances for rational and practical conditions
and establishes an attainable commercial standard for every
step. The next process is that of attaining continuously
this standard, involving both quality and quantity, and the
interlocking or assembling of all of these prime elements
into a well-arranged, well-built, smooth-running machine.
It is quite evident that work of this character involves
technical knowledge and ability in science and pure engineer-
ing, which do not enter into the field of the accountant.
Yet the industrial engineer must have the accountant's keen
perception of money values. His work will not be good
engineering unless he uses good business judgment. He
must be in close enough touch with the financial management
to be able to impress upon them the necessity of providing
sinking funds to provide for the more perfect installations
and organizations which future demands of a more educated and
enlightened public will necessitate.

The industrial engineer today must be as competent to give
good business advice to his corporation as is the skilled
corporation attorney. Upon his sound judgment and good advice
depend very frequently the making or losing of large fortunes.