

many instances been supplemented by appeals from general agents in the field, a very small portion of the desired \$100,000 has thus far been obtained.

THE WHY OF THE FAILURE.

As to the cause of the failure, the following is given by the *New York Commercial*:—

"The trouble with the plan in the eyes of the officers of the companies appears to be that the total amount allowed under the law is now being spent in various forms of advertising. Each company appears to have a separate plan of publicity. The larger companies which spend an appreciable amount in advertising believe in not only spreading the gospel of life insurance but in presenting their own claims as well. Other companies appropriate varying amounts for the use of their agents locally and still others make their agents pay for all or part of the advertising. A scheme of general publicity applying to all the life companies might have the effect of arousing bigoted legislators, and also would be as likely to benefit companies whose agents are not represented in the National Association and which might be selling unsound insurance. Other life men point to the fact that there has been a more or less successful effort to sell life insurance by mail on the part of a company which has been vigorous in its attacks on the whole agency system. General advertising which would attract prospects might be likely to supplement the direct advertising of this company and thus divert business which would otherwise go to the agents. Summed up, the attitude of a number of the company officers appears to be that the institution of life insurance has received much publicity since 1905 and that the public is pretty well grounded in the elemental principles and essential solidity of the business."

FACTORS OF SAFETY IN ENGINEERING AND INSURANCE.

(William H. Boehm, *Fidelity & Casualty Co., N.Y.*)

Factors of safety in engineering is the ratio of breaking strength to safe load. Correspondingly, factors of safety in insurance is the ratio of underwriting profit to premium income. A successful engineering structure must have a fair factor of safety, and likewise a successful line of insurance must produce a fair underwriting profit.

In engineering a hazardous structure demands a high factor of safety, and likewise in insurance a hazardous line demands a high margin of profit.

The underlying reason is the same in both instances. In engineering the factor of safety takes care of variations in the supposed strength of the material, variations in workmanship, and conditions unforeseen at the time the structure was designed.

In insurance the margin of profit takes care of variations from the general average for that particular hazard, incomplete or misleading information given to the underwriter, and conditions unforeseen at the time of rating the risk.

An assured factor of safety in engineering is composed of two parts, a real factor of safety, and a pure factor of ignorance. An assumed factor of safety in insurance is likewise composed of these two parts.

INSURANCE FACTORS OF SAFETY.

The insurance factors of safety in liability risks, in Workmen's Compensation risks, in Steam Boiler risks, and in Fly-Wheel risks are largely dependent

upon the engineering factors of safety. For if a roof falls, or a boiler explodes, or a fly-wheel disrupts, the engineering factor of safety is wiped out and likewise the resultant property loss and personal injury damages may be sufficient to wipe out the insurance factor of safety. The insurance factor of safety is also largely dependent upon the number of risks in force, because the premium income from a small number of risks might not contribute enough in the lifetime of a company to pay for a single disastrous loss. I need not add that the factor of safety in insurance also depends upon many other things, most important of which is a well devised system of accident prevention, and not the least important of which is efficiency of management. All of these several factors must be taken carefully into account by the underwriter if we are to provide our policyholders with stable rather than speculative insurance protection.

BOILER AND FLY-WHEEL INSURANCE FACTORS OF SAFETY.

Let us see to what extent my remarks are applicable to these two lines of insurance. Compared with other lines the volume of boiler insurance written is small, the annual income of all companies combined being only \$2,568,000—and the engineering factor of safety is high. Correspondingly then the insurance factor of safety should be high. It is, however, now so low that it is exceedingly difficult for even the larger volume companies to show an underwriting profit. That smallness of volume seriously affects its factor of safety is shown by the interesting experience of a company that has a volume of boiler insurance approximating only \$20,000 annually. During one year it had a loss ratio of only one per cent., and during another year it had a loss ratio of nearly one hundred and forty per cent. That is to say it paid out for losses alone forty per cent. more than it received in premiums.

The total volume of fly-wheel insurance written annually is even less than the total volume of boiler insurance written annually; and the engineering factor of safety for fly-wheels is greater than the engineering factor of safety for boilers. Correspondingly then the factor of safety for fly-wheel insurance should be higher. This is confirmed by the fact that the combined loss ratio of all companies on fly-wheel insurance is higher than their combined loss ratio on boiler insurance. That smallness of volume seriously affects its factor of safety is shown by the experience of a company that has a volume of fly-wheel insurance approximating only \$4,000 annually. During one year it had a loss ratio of nothing, while during another year it had a loss ratio of over three hundred per cent. That is to say it paid out for losses alone three times as much as it received in premiums.

Another company having an annual income of only \$1,000 from fly-wheel insurance, during one year had a loss ratio of nothing, and during another year had a loss ratio of nearly one thousand per cent. That is to say, it paid out for losses alone nearly ten times as much as it received in premiums. It is interesting to note in passing that even the larger volume companies are sometimes hard hit. For during the first three weeks of this year a company that writes a very large volume of boiler insurance sustained losses from three boiler explosions that aggregated nearly \$200,000. It is readily seen from this how easy it would be for a single disastrous explosion