ABSTRACT OF THE DISCUSSION OF PAPERS READ AT THE PREVIOUS MEETING

THE FUNCTIONS AND PLACE OF THE STATISTICAL DEPARTMENT IN A MULTIPLE LINE CASUALTY COMPANY—JOSEPH LINDER VOL. XIV, PAGE 27

WRITTEN DISCUSSION

MR. ALBERT E. WILKINSON:

One cannot read Mr. Linder's paper without a feeling of disappointment that none of the practical problems relating to the gathering, analyzing and compiling of statistical data have been touched upon. The paper presents some valuable suggestions to the prospective organizer or efficiency expert and I understand that there are some, perhaps very few, companies whose chief executives might do well to give serious consideration to this subject, although Mr. Linder states that "it is no longer necessary to argue that statistics represent the fundamental basis of good insurance management." The author has proven his case for a statistical department in the organization of a multiple line casualty company, and I believe his argument might apply with equal force to any casualty company.

We read "For the most part the mechanism seems to have had an evolutionary growth . . . . rather than by any formulated plan." Here the author has pronounced himself a fundamentalist with regard to insurance organization. Is it desirable that in its initial organization every insurance company should be equipped with a statistical unit functioning as an independent department in its responsibility to the management? The question of placing the responsibility for the various duties pertaining to statistical analysis is surely an internal one and is bound to develop with the growth of the company.

Mr. Linder treats this aspect of his subject fairly when he says that in every company a statistical nucleus should be created though it may not at first have the status of a coordinate department.

The degree of importance given to the statistical unit of an insurance company is in large measure dependent upon the

extent to which its chief executives are endowed with minds for analytical analysis. Companies whose chief executives have risen from the rank of actuary will be foremost in recognizing the high value of the statistical department and in developing it to its highest degree of efficiency. No matter how disinterested insurance executives may be in the matter of statistics, there are few companies that do not feel the compelling influence of insurance departments and kindred bodies, and sooner or later find that a statistical department is the logical answer.

The author has given us a bird's eye view of the basic or major operations of a casualty company and has pointed out how some of their collateral functions have to do with statistical analysis. He has indicated very clearly and concisely the principal requirements of the various units for such analytical data as will assist them in the proper functioning of their own departments. He has called attention to the fact that special investigations of an analytical nature must be carried on from time to time and that executives must be furnished with data for the purpose of administrative control. He has also made brief reference to the very large and increasing amount of detail demanded by the various state boards and bureaus.

It is not strange, in view of the vast amount of detail made necessary by the complications incident to the proper conduct of a casualty company, that the author impresses upon all concerned the advisability of having an independent department where all of this work may be done and its responsibility centralized.

May we not feel perfectly justified in leaving this matter where it logically belongs, *viz.*: to the good judgment of the executives, upon whom rests the responsibility for developing their respective organizations?

Mr. Linder has made a very intelligent presentation of his subject, a portion of which might well be used as an introduction to what should be a very interesting paper for the Society, *viz.*: The Characteristic Procedure of a well organized Statistical Department in a Multiple Line Casualty Company. It is recognized that only the high spots could be touched upon, otherwise such a paper might well assume the proportions of a text book.

I venture the opinion that the members of this Society are not so much interested in a statistical department *per se* as they would be in a presentation of its most approved methods of procedure.

THE POSITION OF THE REINSURANCE COMPANY IN THE CASUALTY BUSINESS—WINFIELD W. GREENE
VOL. XIV, PAGE 36

WRITTEN DISCUSSION

MR. H. O. VAN TUYL:

Reinsurance is a topic which ordinarily makes slight appeal to the imagination. Mr. Greene, in his paper, has not only made a contribution to the literature of our proceedings which will be of real value to the student of the subject but he has succeeded in putting flesh on the dry bones of reinsurance facts so that the vital part which reinsurance plays in the distribution of risk becomes clearly apparent.

In the first part of his paper Mr. Greene cites the rapid growth of casualty insurance in this country (1926 premiums being 100 times the 1890 total) and draws attention to the fact that in the decade ending with 1925 the volume of reinsurance premiums increased 2⅓ times as fast as the growth in net writings. In view of the fact that there were four strictly reinsurance companies in the field in 1925 as compared with one "admitted" reinsurance company in 1915, it is rather surprising to learn that this increase in reinsurance consisted mainly of transactions between direct writing companies and that the proportion of reinsurance written by strictly reinsurance companies had increased very slightly, being only about one-fifth of the total reinsurance volume.

In presenting figures to show the growth of companies transacting reinsurance exclusively it would appear that the premiums ceded to the Munich Reinsurance Co. during 1915 have been omitted. This company was a leading factor in casualty reinsurance prior to 1917. Its withdrawal from the field during the war deprived companies of needed reinsurance facilities and doubtless led to the organization of new companies and a decided increase in cessions to companies then operating. Since the Munich was not authorized in New York State, it is probable that the figures showing reinsurance in force as compiled by the author do not include any premiums ceded to that company. If the premiums ceded to the Munich in 1915 were added to the premiums ceded to the one admitted company, the total reinsurance ceded to reinsurance companies in 1915 might be found to have been *relatively* greater than in 1925. This would afford still

greater justification for the opinion expressed in this paper that casualty reinsurance companies have not fully realized their opportunity.

The list of reinsurance arrangements now in current use as described by the author is a commentary on the demand for some method of distributing losses so as to prevent excessive financial shock. We are inclined to agree that these methods cannot be equally efficient although the different requirements of the various lines of insurance which have brought about their use will doubtless continue to exert an influence toward diversity of practice. The association formed by workmen's compensation insurance carriers for the purpose of sharing catastrophe losses is a unique example of a form of reinsurance which is extremely simple and yet fully effective.

Mr. Greene's paper, deals primarily with the function of the reinsurance company and he is rather inclined to characterize facultative reinsurance among direct writing companies as a "swapping contest." The individual submission and acceptance of reinsurance on particular risks is likened to the "stone age" in the development of reinsurance and the use of the open treaty as an intermediate epoch. The fixed treaty with a reinsurance company providing definitely for the cession of agreed portions of all risks coming within the limits of the treaty is held up as the goal. There is no denying the utility of the fixed treaty and Mr. Greene ably demonstrates the numerous advantages of this method of reinsurance. The actual practice of reinsurance companies is well illustrated by accounting and bordereau forms which are shown and the uses of which are described in detail.

The suggestion is made that when a fixed treaty is in force the use of a detailed bordereau list can be eliminated and that a summary or tabulator list be furnished instead. This proposal is very interesting but there is a question as to whether this will result in a real saving of effort. It is true that at the present time the preparation of a bordereau with numerous columns involves considerable clerical labor. However, in the past both the reinsurer and the ceding company have required an analysis of the premiums ceded and cancelled by terms and expiration for premium reserve purposes, by policy year for liability and compensation loss reserves and by location of risk by states for tax purposes. Some companies also desire an analsyis by agents of

premiums reinsured. Because of these demands it is essential that individual statistical records be prepared for each item whether a bordereau is prepared or not. The question then is whether the typing of a bordereau or list of reinsured items is not the simplest way of arranging the data for the punching of cards. If, however, the names and precise locations of assureds are not required by the reinsuring company, a tabulator list made direct from the punch cards might serve every purpose as well as a bordereau.

In fixed treaty reinsurance, the cession of risks is automatic and correspondence regarding risks and losses is cut to the minimum. In view of the economy of effort and other inherent advantages of this system it is rather remarkable that it has not been adopted more generally. The author expresses the conviction that the reinsurance company has an important function to fill in the realm of casualty insurance and he outlines a program whereby through fixed treaty arrangements it would occupy a much larger place in the reinsurance field than holds true at the present time.

As a part of a complete reinsurance program, Mr. Greene suggests that reinsurance companies effect retrocessional arrangements with direct writing companies. This is desirable since credit cannot be allowed by the various state departments for retrocessions to unauthorized foreign companies and the use of American direct writing companies for this purpose affords a solution of this problem. The novelty of this suggestion, however, is such that it will require time for the general acceptance of the proposal. Yet in no line of insurance is it so true as in casualty that "the world moves."

AUTHOR'S REVIEW OF DISCUSSION

MR. WINFIELD W. GREENE:

Mr. Van Tuyl is right in his conclusion that the figures as to casualty reinsurance in 1915 as shown in this paper relate only to "admitted" (that is, admitted to New York State) reinsurance and, therefore, take no account of the Munich Reinsurance Company. As he states, it is possible that in 1915 a greater proportion of casualty reinsurance premiums went to strictly reinsurance companies, than in the year 1925.

In connection with the relative volume of reinsurance going to direct-writing companies and to reinsurance companies, the following may be of interest.

In 1927, direct-writing stock casualty companies doing business in the United States enjoyed a net premium income of at least $750,000,000. The indication is that the reinsurance premiums ceded by these same companies during that year were at least $60,000,000, omitting such premiums ceded to reinsurers not admitted to the United States. The combined premium income of all stock casualty reinsurance companies admitted to the United States in 1927 was only $18,434,000 including considerable revenue from sources other than stock casualty companies. It is, therefore, apparent that last year, the stock companies placed about three-fourths of their reinsurance with other direct-writing companies and only one-fourth with reinsurance companies.

On the point of the elimination of bordereaux, it is a fact that in many cases, such a step has been found to be an actual economy. Needless to say, bordereaux can be eliminated only where the treaty is "fixed" to such a degree that the reinsurer's liability may be determined from the treaty provisions alone without regard to the pecularities of the individual policy. In doing away with bordereaux, it is needful to outline a reporting procedure which will care for the statistical requirements mentioned by Mr. Van Tuyl. This step frequently requires some study on the part of the reinsurance company in co-operation with the officials of the direct-writing company. The present indication is that through such investigations, substantial further economies remain to be accomplished.

HAS THE INDUSTRIAL ACCIDENT RATE DECLINED SINCE 1913?—LEWIS A. DEBLOIS

VOL. XIV., PAGE 84

WRITTEN DISCUSSION

MR. CHARLES N. YOUNG:

Mr. DeBlois' analysis of the limitations of our statistical sources provides ample warning against rash attempts to generalize from insufficient data. However, his use of United States Census statistics for the Registration Area and his caution in

drawing conclusions are ample evidence that he has heeded this warning.

It is of interest to note the downward trend of the accident mortality rate of Figure No. 1, even during the twelve years ending with 1912. The dependence of these curves upon the business cycle is clearly evidenced, and had it not been for the marked depressions of 1908 and 1921, the slope of all three curves would be appreciably reduced. However, the panic of 1907 will not account for the average saving of more than two hundred lives annually during the first twelve year period. Probably the answer is found in the pioneer efforts of the steel and railroad industries rather than in the somewhat inchoate realization on the part of the rest of us that "something ought to be done" to check the rising tide of accidents. It may be said that no such thing as a "safety movement" was in existence at that time.

But in 1912 something happened. That year saw the beginning of what is now the National Safety Council. The following year marked the beginnings of compensation laws—the greatest single factor in establishing safety on a sound economic basis. Profiting by the early experience of railroad and steel industries, the Universal Analytic Schedule and all of its successors recognized the power of organized effort by a credit on the rate. It took and is yet taking years for the safety consciousness to filter through the industrial fabric to the man on the job. But organized safety now has attained the status of a recognized human institution.

Let us turn the chart of Figure No. 1 upside down and view the developments of the last twelve years as the growth of a human institution. Mr. DeBlois, in the interests of simplification, has shown a linear trend. He points out that a projection of the twenty-four year trend would bring the millenium of no accidental deaths in A. D. 2065, only to brush the suggestion aside as "absurd since the rate does not and never will follow a straight line." Other attempts to describe human progress mathematically have variously resulted in sine waves, ascending spirals or some other form depending as much on the optimism or pessimism of the sponsor as upon his mathematical ingenuity. A former guest speaker of this Society, Count Alfred Korzybski, has developed the thesis that the growth of human institutions

is best represented by the compound interest law.* It may be worth while to test the safety movement by that law.

Trend B (1900-1912) intercepts the year 1912 at Y = 81.669, which we have taken as our starting point. The annual decrement of .236, established by twelve years experience has been assumed to continue unchanged—at least, a more probable assumption than that it suddenly disappeared. Using then the formula for the summation of one per year at interest i, we have:

$$S_{\overline{n}|} = \frac{(1+i)^n - 1}{i}$$

where $n = 12$ and i is the annual rate of increment to be determined. The trend A intercepts the year 1924 at $Y = 73.796$. Subtracting this from 81.669 we obtain 7.873 as a conservative estimate of the gain for the twelve-year period under consideration. Substituting in the above equation, we find the annual rate of increment to be 17.3%. Substituting this value again and solving for n:

$$\frac{(1.173)^n - 1}{.173} = 81.669$$

we have $n = 38.6$. This means that if the law of growth applicable to the first twelve years of organized safety continues to apply with undiminished vigor in the future, we may reach the millenium of no accidental deaths in 1951! At least, this is an interesting confirmation of the views of Mr. Benjamin Kidd as to the possibilities of changing the thinking of a nation within a single generation.†

Improbable as is the realization of such a sanguine suggestion, it may be worth while to examine some of the factors which are likely to prevent its fulfillment, either in A. D. 1951 or 2065.

1. Lack of faith by safety engineers themselves that an approach to that goal is possible, and that the adjustments necessary to attain it are infinitely worth while. If they do not believe mightily in their mission they will most certainly fail to sell it to an indifferent world.

2. The possibility that safety work may fail to attract a sufficient number of men having the right combination of salesmanship, executive ability, technical training and engineering experience. This will certainly happen if the

*Manhood of Humanity.

†The Science of Power.

responsibility, the power which is linked thereto, or the financial reward is less for this than for other work requiring a similar combination of qualities. Closely allied to this aspect of the problem is the possibility too often demonstrated in the past, that men well qualified and of long experience in safety may abandon it at a time when their leadership would be of greater actual value than it could possibly be in any other field.

3. The time lag between the application of new industrial processes, means of transportation, etc., and the growth of an appreciation of the hazards thereby introduced. It appears probable that the pioneer spirit of invention and discovery will always result in some cost of human life. However, this only emphasizes the fact that the counsel of the safety man should be sought and his approval obtained in advance of inaugurating such changes.

Regardless of these and many other factors which may postpone indefinitely the era of no accidental deaths, it is clear that progress is being made, at least among the plants which are large enough to realize that insurance distributes but does not eliminate loss, and that the indirect loss not borne by insurance may be several times the direct cost. One of the most encouraging features of the safety movement is the splendid example of those plants which have made long-continued operation without accidents a reality. They have shown that "it can be done," and the story of that achievement may well be made the central message of the safety gospel. The Society is to be congratulated upon having the facts presented by one who, as the responsible head of the safety activities in one of our largest industrial corporations, has succeeded in no small measure in bringing to pass the things which justify his cautious affirmative to the question under discussion.

PREMIUMS AND RESERVES FOR DEFERRED PAYMENT PROTECTION—JOHN M. POWELL

VOL. XIV., PAGE 64

WRITTEN DISCUSSION

MR. ARMAND SOMMER:

Mr. Powell's paper very adequately covers the technical background of the rating and rating factors.

In computing rates on deferred payment insurance we are

dealing with a subject, which even more than most insurance rating, combines the mathematical and actuarial rating with the judgment factors that must temper the rate. Mr. Powell has wisely left out several minor refinements which from a strictly technical standpoint might be considered essential, but it would be fool-hardy to consider the exact mathematical factors when we are, to a great extent, purely estimating the class of risk that we are writing. We have taken the ordinary classification as applying, but for all we know, the medium class or possibly the extra preferred class would more nearly be justifiable.

Mr. Powell has arbitrarily loaded the rates for the unusual features of deferred payment insurance as compared to the coverage from which the rate making data were obtained. This loading should by all means be imposed and if anything the loading should be increased as there are many trends and tendencies that will reflect against the company.

The moral hazard of deferred payment insurance is not at the present time important, but as the coverage becomes wide spread we can imagine characteristics and circumstances which might involve a moral hazard. The coverage deals with three parties in a basic two party coverage in that the insurance is taken out by the creditor and, although the benefits are payable to the creditor, he in turn gives the debtor the claim payment. Indirectly this procedure might contribute a small amount of pressure on the part of the assured toward the payment of doubtful claims. In theory deferred payment insurance is given to mitigate the financial loss of a man who has mortgaged his future income and thus is economically sound and is added on the purchase price or absorbed by the seller the same as taxes or other expenses. In practice however, deferred payment insurance is taken by the assured or seller of the article with the main thought in view of increasing his sales and giving his salesman an additional talking point. We can rather shudder with fear when we think of the household appliance salesmen or other specialty salesmen using an insurance policy as part of his selling talk. The coverage will certainly not be understood by the buyer of the article and this too will play its small part in the adverse experience of this type of insurance.

We could enumerate many more peculiarities of deferred payment insurance, all of which will result unfavorably to the com-

pany. The physical condition of the risk insured will be far from the normal of the basic data, and even the 5% loading of Mr. Powell's rate may not offset the lack of selection of the risk.

The whole thought behind this brief discussion is that we should go slowly and conservatively on deferred payment insurance. Each particular risk should be analyzed carefully with the idea in view that any special hazard or condition of the risk must require an additional rate.