COMPENSATION RESERVES

Description of a Method Experimented With by the Liberty Mutual Insurance Company to Make an Approximate Check of the Company Estimate Reserve for Workmen's Compensation Insurance

BY

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Statement of the Problem

The subject under discussion is the loss reserve liability for workmen's compensation insurance. It is obvious that there is need for as great an accuracy as possible in the amount of this reserve, because of the many interests involved, including the injured employees, the policyholders, the state, the stockholders where that form of organization prevails, and so on. The problem is to find some way to check, or to prove, the figures set forth as the workmen's compensation reserve, and such method should be as simple as possible, be reasonably easy of application, and obtainable from current data.

Present Methods of Calculating the Reserve

The present methods of calculating the loss reserve for workmen's compensation insurance are two in number—(1) the statutory, or that method prescribed by the convention blank as obligatory for all companies, and (2) the company estimate. The statutory method is to set aside 65% of the earned premium for the particular policy year, at latest reporting, minus the losses and loss expense paid to date. This is an arbitrary formula, applied to all companies, young and old alike, interstate as well as intrastate, in regulated states as well as in unregulated territory, and the result is not always the correct story!

The company estimate is that method by which each company ascertains the reserve on its own business through a valuing of all the outstanding cases, one by one, and summing up the total. This plan depends upon the personal experience and judgment of those who do the estimating, and of course there will be variations in individuals, and even in the same individual at different times. Judgment must be exercised as to the seriousness or otherwise of the many forms of accident, and allowance made for special rules in valuation, such as for the New York cases. A factor has to be added for the accidents which have

occurred but which have not been reported, and another factor for the re-opened cases.

Both the statutory and company estimate calculations are made for each and every year of issue. For all years, except the last three, the individual estimates must be used; for each of the last three years of issue the reserve used must be that which is larger, whether statutory or company estimate. The total of the reserves for all years of issue will give the complete reserve for the company. An interest-discount factor is introduced to reduce the final reserve to a present value figure.

Defects in the Present Methods

Workmen's compensation insurance has no such certain basis for actuarial calculations as has life insurance; in the latter phase of the profession there is a very definite contingency—death—and one that can be forecast, in the general sense, with great accuracy. (The features of accident and disability insurances are probably not so certain, but they form only a small part of the total premiums involved.) In workmen's compensation, on the other hand, the contingency is an industrial accident—death is death, and there is no argument about it, but an industrial accident varies all the way from the pinprick of a sales ticket to a serious explosion. What would be an accident, to be reported as such, in one plant, will be handled at the first-aid station and not reported, in the next plant. Therefore, there is no permanent universally similar event around which to build ratios and averages which can be used to predict losses and the costs thereof, and, consequently, the methods in vogue to compute loss reserves are make-shifts, the best that have so far been devised, and intended, so far as possible, to err on the side of absolute safety, as of course they should do.

In any method of figuring the loss reserve, which uses earned premium as the base, there are two weaknesses—the first is, that the recent years' earned premium is not complete; the current policy year is particularly short in this regard, because the statutory earned premium does not include the audits which have been earned but not received; there might be a considerable amount of premium if the recent trend of business had been upward, or the reverse might be true. The second weakness is, that to assume losses to be a definite proportion of the earned premium

is to beg the question, for experience might have been better or worse than the prescribed ratio. The difficulty with the individual estimates has already been referred to.

Some Suggested Means of Proof.

For some time, therefore, actuaries have sought for means of checking the reserves—and the recent committee on this question has submitted at least two detailed plans to the members of the Society, which plans are still in the testing. These plans consist of a projection of actual loss ratios of the individual company on the basis of the development of these loss ratios in the previous policy years; and also a method of developing the loss incurred from the losses paid in previous years.

Another Possible Plan of Check

The plan herein described carries out a somewhat similar method of projection to that already suggested by the committee, but bases it on the amounts paid and the accidents happening in a given month. In tackling this problem we felt that the actual loss payments constituted a definite fact which might be made to serve as a basis of forecasting the ultimate incurred, and hence the reserve. It is certain that payments are made only when an accident has happened and responsibility has been determined. Therefore, if these payments, at various points along the way, could be found to have a consistent relationship with the ultimate incurred, a method of check would be available; and, an additional support would be available if the loss payments were found to have a consistent relationship to the number of accidents reported.

An analysis of the loss payments will show that, in each month's payments there are three main divisions: for weekly indemnity, for medical, and on death cases. Each of these three groups can be split into the month of accident, the industry and classification, and the state in which the accident happened. For our immediate purpose let us consider the three main divisions of loss (indemnity, medical, and death) by month of accident, and by month of payment. With these data cut on punch cards, tabulations will be available from which to make reports as shown on the several exhibits herewith. It will be found that the indemnity payments give the most consistent regularity, with medical next, and death least of all.

In securing the "per accident" figures we use accidents reported, although the payments are for the accidents actually happening in the given months. Our reason for this is that the "accidents reported" figure is very promptly available, whereas the final figure as to accidents actually happening is somewhat delayed by late reporting; it is assumed that the lag is fairly uniform.

The Plan

We record the payments as they are made, month by month, by the month of accident, and keep continuous records. As the accidents of a given month are closed out, we can compute definite relationship between the payments of the first two months, the first three months, etc., and the final incurred loss. With a number of such ratios established, an average or base can be established, and the final incurred for the more recent months can be estimated by projecting the payments made to any given date. Again, by fixing an average loss incurred per accident from the same figures already mentioned, and an average paid per accident at all points along the way, we can project, on the basis of the number of accidents, for the more recent months.

We mentioned, earlier in this paper, the fact that "accidents reported" were not of sufficient definiteness to form the same dependable actuarial base for casualty insurance as is provided by death in life insurance actuarial work. However, within the same insurance company, and assuming no radical changes in administrative procedure, it is quite possible that workmen's compensation "accidents reported" will form a means by which to measure the loss incurred, and thus to test the reserve. It is on that theory that we have used the "accidents reported" in the work currently described.

Nevertheless, in considering this measure of the loss incurred, there should be borne in mind the fact that changes in the manner of reporting accidents will perhaps have their effect in showing a larger or smaller sum per accident. Again, changes in the law to give increased benefits will alter the average, putting more expense in the latter end and thus showing the first four months as a smaller proportion of the total. Shortening the waiting period would throw more expense into the earlier months, and tend to make a higher average amount paid per accident.

Distribution of business is another point of possible variation. Further, it is probably a fact that this method would be justified only by a substantial exposure. As already mentioned, we have worked separately with the indemnity, death, and medical. Without doubt, if we were to refine the indemnity still more by taking out the serious cases and treating them separately, a still closer correlation would be found. Changes in the law could perhaps be valued and a factor allowed in the computation: this would complicate the procedure, but would make for still greater accuracy.

Chart I

We found that the payments for the first two and the first three months bore a somewhat steady ratio to the final incurred, but that the ratio of the first four months' payments was considerably steadier. Chart I illustrates this, for the indemnity only—and, incidentally, it indicates that the cases are costing more, because the amount paid in the first four months is becoming a smaller part of the final incurred. The spreading which is seen in more recent months tells, also, that the reserves are sufficient, since the increasing cost would hardly grow at such a rapid pace in a 12-months-ending series of figures, in view of the preceding regularity. It will be obvious, of course, that the incurred is found by the ordinary procedure of estimating the reserve and adding the payments: as already pointed out, this present plan is used merely as an additional check.

Exhibits 1 and 1-A, and Chart II

These forms are designed to show the amount of money paid out month by month for the accidents happening in each of the several months. A cumulative figure is inserted, to give the amount paid out in one, two, three, four, etc., months. No. 1-A is similar to No. 1, but it groups the figures (accidents as well as payments) into 12-months-running totals, to make a smoother series. Separate sheets are kept for indemnity, death, and medical. In Chart II is emphasized the point that the Indemnity paid for accidents happening in the given month does vary almost exactly with the accidents. It will be noticed that the lines on the chart showing the payments made in the first two, the first three, and the first four months follow very closely the line recording the accidents reported. This similarity

is found, whether the number of accidents dips as a result of business depression, or rises with prosperity and added business.

Exhibits 2 and 2-A

The amounts paid as recorded on Exhibits 1 and 1-A are actual dollars, and these will vary in accordance with the number of accidents, which, again, are dependent upon change in general industry and in the particular company's business. From the data given in the previous Exhibits, bases, or 100% marks may be established, both for the individual months and for the 12-months ending. For example, suppose that the Indemnity for the base month or average of months is a loss incurred of $5,000, with $2,000 paid in the first four months. Then, if, for the recent month for which we wish to know the final incurred, we have four months' payments totalling $2,200, it might be assumed that since this amount is 10% higher than the base, then probably the final incurred will be 10% higher than the base, or $5,500. Exhibits 2 and 2-A are worksheets for these data. These same comparisons may be made with the preceding month, or a year ago, and so forth.

Exhibits 3 and 3-A, and Chart III

Along the same line of comparison as the preceding, Exhibits 3 and 3-A record the ratio of the amount of loss paid at various points, to the final incurred—that is, using the final incurred as 100%, what percentage is paid in the first month, the first two months, the first three months, etc.? Given the base, we can project the more recent months to a probable incurred for each month, and for each 12-months period; these results can be compared with the reserves secured from Exhibits 2 and 2-A. For indemnity only, Chart III illustrates this, showing ratios of the payments, at various points along the way, to the final incurred. The more recent months and years have, naturally, the larger reserves, and if the reserves are more than sufficient there will be a tendency to make the earlier payments appear to be a smaller proportion of the final incurred. But there will be other factors at work, as mentioned earlier in this paper.

Exhibits IV and IV-A, and Charts IV and V

These worksheets are designed to record the amount of loss paid, and the final incurred, for each accident reported—by

separate months and for periods of 12-months-ending. Chart IV shows the payments by months, and Chart V for 12-months-ending. In Chart IV it will be noted that the variations in loss per accident are quite marked, and are seasonal, reflecting the increased cost during the winter months. When smoothed out, as in Chart V, the variation is much smaller.

Exhibit V

Carried to a final sheet, in report form, the data may be displayed as in Exhibit V—using an agreed year as 100% or the actual figures may be inserted if preferred. There is opportunity, in such a report, to tie the whole story together, and to enable any desired action to be taken. You will see that the losses paid, losses incurred, loss reserves, and earned premium, with ratios, are lined up, allowing a general survey to be made. If all indices point in the same direction, that is one thing—if there are contrary indications, then a study may be made to determine the causes.

Conclusion

In all the foregoing, the company as a whole has been dealt with, but, obviously, greater accuracy will result if the records be split by districts or by states. This would call for more records and more detail, but the procedure would be similar.

Naturally the reader will say—"If the payments per accident reported prove to be steady, and if the relationship between the first few months' payments and the final incurred is also steady, then why not fix on a definite amount of 'incurred per accident reported,' and let it go at that, computing therefrom the total incurred, deducting the paid, and so establishing a reserve?" As a matter of fact, some such system as that *could* be used for the recent months when there is very little upon which to base estimates, and these tentative figures could be reviewed later, when more payments have been made.

We are finding this system an aid in our own work, and if other companies experiment with it, the Society's Committee on Compensation Reserves will doubtless be glad to know the results, so that experience with this and the other plans may be grouped, and a report issued.

EXHIBIT NO. 1

TOTAL AMOUNT OF INDEMNITY PAID EACH MONTH FOR THE ACCIDENTS REPORTED IN THE SEVERAL MONTHS AS SHOWN

(Entered from machine tabulations. Separate similar sheets for Medical and Death.)

	Month in which Accident was Reported—Year 192											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Number of Accidents	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
Month of Payment 192												
January	$											
February	$	$										
Cumulative	$	$										
March	$	$	$									
Cumulative	$	$	$									
April	$	$	$	$								
Cumulative	$	$	$	$								
May	$	$	$	$	$							
Cumulative	$	$	$	$	$							
June	$	$	$	$	$	$						
Cumulative	$	$	$	$	$	$						
July	$	$	$	$	$	$	$					
Cumulative	$	$	$	$	$	$	$					
August	$	$	$	$	$	$	$	$				
Cumulative	$	$	$	$	$	$	$	$				
September	$	$	$	$	$	$	$	$	$			
Cumulative	$	$	$	$	$	$	$	$	$			
October	$	$	$	$	$	$	$	$	$	$		
Cumulative	$	$	$	$	$	$	$	$	$	$		
November	$	$	$	$	$	$	$	$	$	$	$	
Cumulative	$	$	$	$	$	$	$	$	$	$	$	
December	$	$	$	$	$	$	$	$	$	$	$	$
Cumulative	$	$	$	$	$	$	$	$	$	$	$	$
192												
January	$	$	$	$	$	$	$	$	$	$	$	$
Cumulative	$	$	$	$	$	$	$	$	$	$	$	$
February	$	$	$	$	$	$	$	$	$	$	$	$
Continued Until The Final Incurred	$	$	$	$	$	$	$	$	$	$	$	$

EXHIBIT NO. 1-A

(Compiled from data in Exhibit No. 1)

TOTAL AMOUNT PAID (INDEMNITY ONLY) FOR EACH 12-MONTHS-ENDING PERIOD—

That is, add together the money paid for the first month payments made in Jan. to Dec. inclusive for the accidents reported in the same months, then the cumulative first and second months payments on the same group of accidents; then the cumulative first and second and third months payments on the same group of accidents, and so on. Then take the first month payments made in Feb. to Jan. inclusive for the accidents reported in the same months; then the cumulative for first two months, first three months, etc.

(Separate similar sheets for Medical and Death)

	12-Month-Ending Periods in which Accidents were Reported											
	Jan. to Dec.	Feb. to Jan.	Mar. to Feb.	Apr. to Mch.	May to Apr.	June to May	July to June	Aug. to July	Sept. to Aug.	Oct. to Sept.	Nov. to Oct.	Dec. to Nov.
Number of Accidents Reported	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
12-month period of payment												
First Month	$	$	$	$	$	$	$	$	$	$	$	$
Second Month	$	$	$	$	$	$	$	$	$	$	$	$
Cumulative	$	$	$	$	$	$	$	$	$	$	$	$
Third Month	$	$	$	$	$	$	$	$	$	$	$	$
Cumulative	$	$	$	$	$	$	$	$	$	$	$	$
Fourth Month	$	$	$	$	$	$	$	$	$	$	$	$
Cumulative	$	$	$	$	$	$	$	$	$	$	$	$
Fifth Month	$	$	$	$	$	$	$	$	$	$	$	$
Cumulative	$	$	$	$	$	$	$	$	$	$	$	$
Sixth Month	$	$	$	$	$	$	$	$	$	$	$	$
Cumulative	$	$	$	$	$	$	$	$	$	$	$	$
Seventh Month	$	$	$	$	$	$	$	$	$	$	$	$
Cumulative	$	$	$	$	$	$	$	$	$	$	$	$
Eighth Month	$	$	$	$	$	$	$	$	$	$	$	$
Cumulative	$	$	$	$	$	$	$	$	$	$	$	$
Ninth Month	$	$	$	$	$	$	$	$	$	$	$	$
Cumulative	$	$	$	$	$	$	$	$	$	$	$	$
Tenth Month	$	$	$	$	$	$	$	$	$	$	$	$
Cumulative	$	$	$	$	$	$	$	$	$	$	$	$
Eleventh Month	$	$	$	$	$	$	$	$	$	$	$	$
Cumulative	$	$	$	$	$	$	$	$	$	$	$	$
Twelfth Month	$	$	$	$	$	$	$	$	$	$	$	$
Cumulative	$	$	$	$	$	$	$	$	$	$	$	$
Continued Until the Final Incurred	$	$	$	$	$	$	$	$	$	$	$	$

EXHIBIT NO. 2

(Compiled from Data in Exhibit No. 1)

The Total Amounts Paid (Indemnity only) Shown as a Ratio to a Selected Base as 100%

100% for first month's payments $
100% for first two months' payments $
100% for first three months' payments $
100% for first four months' payments $
etc. until
100% for Final Incurred $

(Separate similar sheets for Medical and Death)

	Month in Which Accidents Were Reported—Year 192											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
First month's payments.....	%	%	%	%	%	%	%	%	%	%	%	%
First two months' payments...	%	%	%	%	%	%	%	%	%	%	%	%
First three months' payments..	%	%	%	%	%	%	%	%	%	%	%	%
First four months' payments...	%	%	%	%	%	%	%	%	%	%	%	%
First five months' payments...	%	%	%	%	%	%	%	%	%	%	%	%
First six months' payments....	%	%	%	%	%	%	%	%	%	%	%	%
First seven months' payments..	%	%	%	%	%	%	%	%	%	%	%	%
First eight months' payments..	%	%	%	%	%	%	%	%	%	%	%	%
etc. until												
Final incurred.....	%	%	%	%	%	%	%	%	%	%	%	%

EXHIBIT NO. 2-A

(Compiled from Data in Exhibit No. 1-A)

The Total Amounts Paid (Indemnity Only), for 12-months ending periods, shown as a ratio to a selected base as 100%

100% for first month's payments $
100% for first two months' payments $
100% for first three months' payments $
100% for first four months' payments $
etc. until
100% for Final Incurred $

	12-Months' Periods in Which Accidents Were Reported											
	Jan. to Dec.	Feb. to Jan.	Mar. to Feb.	Apr. to Mar.	May to Apr.	June to May	July to June	Aug. to July	Sept. to Aug.	Oct. to Sept.	Nov. to Oct.	Dec. to Nov.
First month's payments.....	%	%	%	%	%	%	%	%	%	%	%	%
First two months' payments...	%	%	%	%	%	%	%	%	%	%	%	%
First three months' payments..	%	%	%	%	%	%	%	%	%	%	%	%
First four months' payments...	%	%	%	%	%	%	%	%	%	%	%	%
First five months' payments...	%	%	%	%	%	%	%	%	%	%	%	%
etc. until Final Incurred.....	%	%	%	%	%	%	%	%	%	%	%	%

(Separate similar sheets for Medical and Death)

EXHIBIT NO. 3

(Compiled from data in Exhibit No. 1)

RATIO OF LOSS PAID (INDEMNITY ONLY) EACH MONTH, TO THE FINAL INCURRED

(Separate similar sheets for Medical and Death)

	Month in which accident reported—year 192												The base month as per Exhibit No. 2
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
Paid in first month.	%	%	%	%	%	%	%	%	%	%	%	%	%
Paid in first two months.....	%	%	%	%	%	%	%	%	%	%	%	%	%
Paid in first three months.....	%	%	%	%	%	%	%	%	%	%	%	%	%
Paid in first four months.....	%	%	%	%	%	%	%	%	%	%	%	%	%
etc. to the													
Final Incurred.....	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

EXHIBIT NO. 3-A

(Compiled from data in Exhibit No. 1-A)

RATIO OF LOSS PAID (INDEMNITY ONLY) EACH MONTH TO THE FINAL INCURRED FOR PERIODS OF 12-MONTHS-ENDING

(Separate similar sheets for Medical and Death)

	12-Months-Ending periods in which Accidents were Reported												The base period as per Exhibit No. 2-A
	Jan. to Dec.	Feb. to Jan.	Mar. to Feb.	Apr. to Mar.	May to Apr.	June to May	July to June	Aug. to July	Sept. to Aug.	Oct. to Sept.	Nov. to Oct.	Dec. to Nov.	
Paid in first month.	%	%	%	%	%	%	%	%	%	%	%	%	%
Paid in first two months.....	%	%	%	%	%	%	%	%	%	%	%	%	%
Paid in first three months.....	%	%	%	%	%	%	%	%	%	%	%	%	%
Paid in first four months.....	%	%	%	%	%	%	%	%	%	%	%	%	%
etc. to the													
Final Incurred.....	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

The percentages shown in these Exhibits will in large measure depend upon the reserves. In comparison with the ratios shown for the base month, and with the recent trends, a check will be available as to the correctness or otherwise of the reserve.

EXHIBIT NO. 4

(Compiled from data in Exhibit No. 1)

AMOUNT OF LOSS PAID (INDEMNITY ONLY) PER ACCIDENT REPORTED

(There would be separate similar sheets for Medical and Death)

	Month in which accident reported—Year 192												The base month, as per Exhibit No. 2
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
Average amounts:—													
Paid in first month.	$	$	$	$	$	$	$	$	$	$	$	$	$
Paid in first two months.....	$	$	$	$	$	$	$	$	$	$	$	$	$
Paid in first three months.....	$	$	$	$	$	$	$	$	$	$	$	$	$
Paid in first four months.....	$	$	$	$	$	$	$	$	$	$	$	$	$
etc. up to													
Final Incurred.....	$	$	$	$	$	$	$	$	$	$	$	$	$

EXHIBIT NO. 4–A

(Compiled from data in Exhibit No. 1–A)

AMOUNT OF LOSS PAID (INDEMNITY ONLY) PER ACCIDENT REPORTED

On 12-Months-Ending Basis

(There would be separate similar sheets for Medical and Death)

	12-Months-Ending Periods in which Accidents were Reported												The base month, as per Exhibit No. 2-A
	Jan. to Dec.	Feb. to Jan.	Mar. to Feb.	Apr. to Mar.	May to Apr.	June to May	July to June	Aug. to July	Sept. to Aug.	Oct. to Sept.	Nov. to Oct.	Dec. to Nov.	
Average amounts:–													
Paid in first month.	$	$	$	$	$	$	$	$	$	$	$	$	$
Paid in first two months.....	$	$	$	$	$	$	$	$	$	$	$	$	$
Paid in first three months.....	$	$	$	$	$	$	$	$	$	$	$	$	$
Paid in first four months.....	$	$	$	$	$	$	$	$	$	$	$	$	$
etc. up to													
Final Incurred.....	$	$	$	$	$	$	$	$	$	$	$	$	$

EXHIBIT 5

FINAL SUMMARY

COMPENSATION EARNED PREMIUM, ACCIDENTS, AND INCURRED LOSSES

For 12-Months-Ending Periods—Based on Review of Reserves Dated 192

*These two columns figured to the base of Calendar Year 1923=100%

Period	No. of Accidents	Total Incurred	Incurred per Accident	4 Months' Payments		% 4 Mos. Paid to Total Incurred	Earned Premium	Loss Ratio
				Per Accident	Total			
Indemnity			*	*				
Dec. 31, 1923			100.00	100.00		42.05		
Dec. 31, 1924			104.46	99.91		40.25		
Dec. 31, 1925			104.72	100.00		40.19		
Dec. 31, 1926			106.45	100.53		39.73		
June 30, 1927			107.60	98.69		38.60		
Dec. 31, 1927			112.72	98.95		36.94		
June 30, 1928			118.14	101.31		36.09		
Medical								
Dec. 31, 1923			100.00	100.00		53.18		
Dec. 31, 1924			105.39	108.32		54.68		
Dec. 31, 1925			107.89	118.21		58.29		
Dec. 31, 1926			110.39	115.68		55.73		
June 30, 1927			107.63	117.01		57.83		
Dec. 31, 1927			107.70	127.38		62.86		
June 30, 1928			126.62	135.95		57.08		
Death								
Dec. 31, 1923			100.00	100.00		2.46	The Death losses and payments are figured here per total accident—they may be worked out, also, on the "per death" basis.	
Dec. 31, 1924			84.63	150.00		4.10		
Dec. 31, 1925			72.13	121.43		3.76		
Dec. 31, 1926			107.43	128.57		2.77		
June 30, 1927			97.13	121.43		2.76		
Dec. 31, 1927			107.09	164.29		3.57		
June 30, 1928			108.11	214.29		4.74		

EXHIBIT 5—*Continued*

COMPENSATION EARNED PREMIUM, ACCIDENTS, AND INCURRED LOSSES
FINAL SUMMARY

For 12-Months-Ending Periods—Based on Review of Reserves Dated 192

*These two columns figured to the base of Calendar Year 1923=100¢

Period	No. of Accidents	Total Incurred	Incurred per Accident	4 Months' Payments		% 4 Mos. Paid to Total Incurred	Earned Premium	Loss Ratio
				Per Accident	Total			
Total			*	*				
Dec. 31, 1923.....			100.00	100.00		40.80		
Dec. 31, 1924.....			102.34	103.78		41.38		
Dec. 31, 1925.....			101.77	107.76		43.20		
Dec. 31, 1926.....			107.83	107.06		40.50		
June 30, 1927.....			106.33	106.50		40.85		
Dec. 31, 1927.....			110.43	111.29		41.11		
June 30, 1928.....			119.64	116.58		39.76		

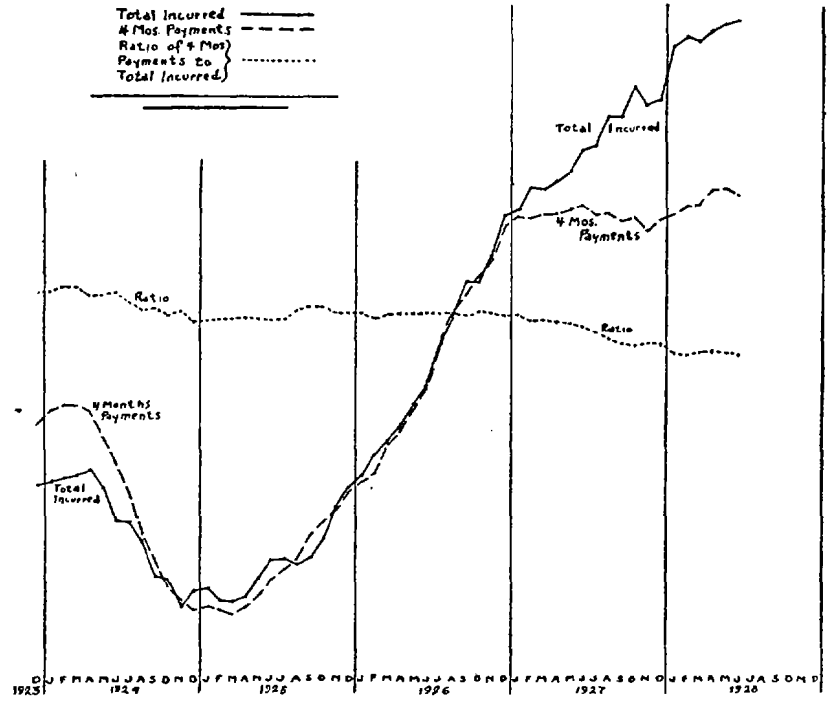
LOSS PAYMENTS, AND RESERVE BALANCES RESULTING FROM THE ABOVE

Period	Total Payments for 12-Mo-Ending				Reserve Balance end of Period				Reserve + Payments			
	Indem.	Med.	Death	Total	Indem.	Med.	Death	Total	Indem.	Med.	Death	Total

This latter section is for the purpose of comparing the payments, on all years of issue, in any given 12-months period, with the reserve, on all years of issue, outstanding at end of the same period. There seems to be a degree of constant relationship, although closer in the Indemnity than in the Medical and Death.

FOR ACCIDENTS HAPPENING IN THE GIVEN MONTHS,—
TOTAL INDEMNITY LOSSES INCURRED; AND
PAYMENTS MADE IN FIRST FOUR MONTHS
12 Months Ending Figures

Chart I



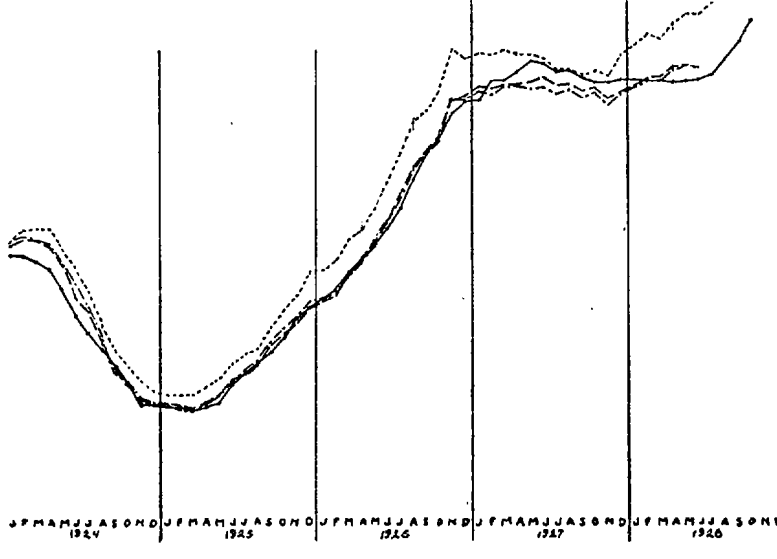
LOSSES PAID (INDEMNITY ONLY) ON COMPENSATION ACCIDENTS
COMPARED WITH ACCIDENTS REPORTED

Chart III

Indemnity Losses Paid for 2, 3, and 4 Months for Accidents happening in the given Month,— to illustrate, Payments made in January and February; in Jan. Feb. and March; and in Jan. Feb Mar. and April, for Accidents happening in January.

BY 12 MONTHS ENDING OR 12 MONTHS RUNNING PERIODS

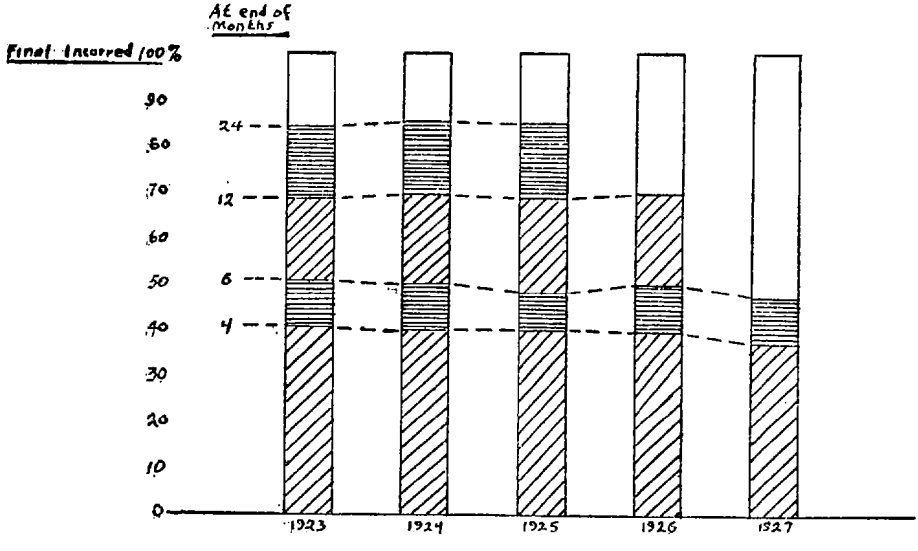
ACCIDENTS REPORTED ———
PAYMENTS IN 4 MONTHS – – – –
PAYMENTS IN 3 MONTHS —·—·—
PAYMENTS IN 2 MONTHS ·····



COMPENSATION LOSSES PAID — INDEMNITY ONLY

To Show the Ratio of Losses Paid to Final Incurred at Various Points

Chart III



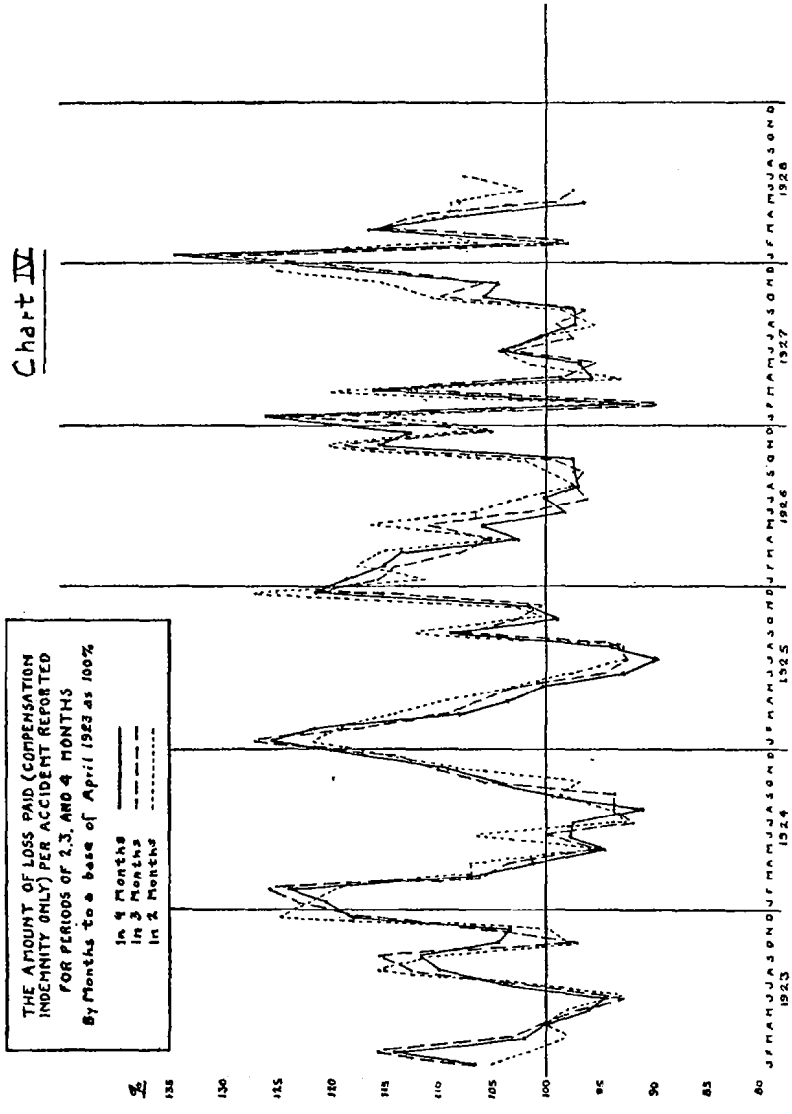


Chart IV
THE AMOUNT OF LOSS PAID (COMPENSATION INDEMNITY ONLY) PER ACCIDENT REPORTED FOR PERIODS OF 2, 3, AND 4 MONTHS
By Months to a base of April 1923 as 100%
In 4 Months
In 3 Months
In 2 Months
%
1923
1924
1925
1926
1927
1928

Chart V

THE AMOUNT OF LOSSES PAID (COMPENSATION INDEMNITY ONLY) PER ACCIDENT REPORTED
FOR PERIODS OF 2, 3, AND 4 MONTHS
By 12 Months Ending or 12 Months Running Periods
To a Base of the Calendar Year 1924 as 100%