SOME DEVELOPMENTS IN SCHEDULE RATING SINCE THE ADOPTION OF THE INDUSTRIAL COMPENSATION RATING SCHEDULE, 1923

BY

H. F. RICHARDSON*

SECRETARY-TREASURER, NATIONAL COUNCIL ON COMPENSATION INSURANCE.

The theory underlying the "Industrial Compensation Rating Schedule-1923" which is the schedule rating plan now in use for rating workmen's compensation insurance risks has been previously discussed before your Society. At the Spring meeting in 1921, (*Proceedings*, Vol. VII, page 225) Prof. Whitney outlined the mathematical theory which had been approved by the Joint Actuarial and Engineering Committees of the then National Council on Workmen's Compensation Insurance, as the basis which should be used for building up a new Schedule for compensation insurance purposes, and at the Fall meeting of 1922, (*Proceedings*, Vol. IX page 11) a paper was presented by Messrs. Perkins and Wheeler describing how the theoretical formula had been adapted for practical use, and how it was proposed to apply the theory to the various accident causes that were retained in the schedule rating plan. They also described the methods that were used, and the data available, to place the new schedule upon a statistical basis.

Both of these papers were prepared and presented before the Industrial Compensation Rating Schedule—1923 had been put into effect or even approved for use by the various rating organizations having rate administrative authority. In fact the new Schedule was not put into general operation until July 1, 1923, when it became effective in most states. Shortly after all other states where private carriers are permitted to write compensation insurance (except Pennsylvania and Delaware) adopted the new plan, so that we can say that the present system of schedule rating has been in effect for about three years.

It is the writer's purpose to review briefly the work which has been done since the original adoption of the plan to keep it abreast with the times and to discuss certain questions now under dis-

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cussion by the Engineering Committee of the National Council on Compensation Insurance, which is responsible for the technical details of the Schedule. Before taking up these matters in detail, however, it may be well to recall some of the basic principles underlying this Schedule and to describe in a not too technical way the manner in which it operates.

1.   The Schedule is divided into items which may be allocated into groups as follows:

a.   "Physical items." These are accident producing causes which in most manufacturing plants are capable of physical measurement. The 1923 Schedule includes the following Items:—

I.   Elevators.

II.   Power transmission.

III.   Dangerous machine parts (other than point of operation).

Note: This item is a recent consolidation of two separate types of machine hazards.

IV.   Point of operation of machines.

V.   Protection of feet, legs and eyes from molten metals. (This item is applicable only in classifications where foundry operations are normal and important).

b.   "Residue." Included in the "residue" are all accident producing causes not specifically included among the physical items. They comprise, among many others, such accident producers as "falls of persons," "falling objects," "hand tool accidents," etc.

c.   "Morale items." These items do not cover specific accident producing causes but comprise certain elements to prevent accidents or to reduce their seriousness. The "morale items" include:

I.   Safety organization.

II.   First aid and hospital equipment.

2.   The application of the several items is as follows:

a.   Percentages of the total rate for each classification are established showing what part of the rate is designed to cover each of the physical items and the residue. These percentages are termed "pure premiums" and indicate the relative importance of the several items as loss producing factors. They are based upon loss costs and vary from industry to industry depending upon the nature of the operations involved and the type of equipment used.

b.   In applying the Schedule to a particular risk, the

"residue" pure premium is not modified. This is not because the importance of the causes included in this Item is held lightly, or because it is believed that they actually operate in the same degree in all risks within a classification, but because no satisfactory or practical method of measuring them has presented itself. Therefore the residue pure premium is established for the classification and is applied to all risks within the classification without change.

c. The "physical items," however, are modified. By determining the degree in which the physical condition of the risk departs from the average physical condition, we determine the degree in which the average pure premium must be modified to obtain the proper pure premium for the risk in question. The basic formula underlying the application of each of the physical items may therefore be expressed as follows:

$$\frac{\text{Risk pure premium}}{\text{Average pure premium}} = \frac{\text{Risk physical condition}}{\text{Average physical condition}}$$

whence it follows that

$$\text{Risk pure premium} = \frac{\text{Average pure premium}}{\text{Average physical condition}}$$
$$\times \text{Risk physical condition}$$

It should be noted that if the Schedule is to be accurate as a rating instrument, and if it is to maintain a balance of credits and charges, it is essential that:

I.   The pure premiums accurately represent the relative importance of each Item.   If a pure premium value is too low the corresponding risk premium will be lower than should be the case.   Conversely, the "swing" of any item will be too great if the pure premium for that item is higher than it should be.

II.   The "index" representing average physical condition for the classification must be correct if the condition of balance is to be attained.   If the average "index" is too high there will be a preponderance of credits, whereas the charges will outweigh the credits if the average "index" is too low.

In practice the fraction $\dfrac{\text{Average pure premium}}{\text{Average physical condition}}$

is computed for each physical item in each classification. These computations give a series of so-called "schedule rating factors."   In rating an item from an inspection report

the "index" of the risk condition is multiplied by the schedule rating factor to determine the risk pure premium.

d. The "morale items" provide for flat percentage credits based upon the compliance of the risk with certain standard requirements. Such credits are justified upon the premise that the prevention of accidents and prompt medical treatment tend to reduce loss costs.

With the foregoing *resumé* of the Schedule structure as a basis let us see what steps have been taken to improve the statistical basis underlying the schedule rating factors since the plan was first introduced and what further changes have been made or proposed in the Schedule.

PURE PREMIUMS

When the Industrial Compensation Rating Schedule—1923 was first prepared the volume of statistical data available for the determination of the "pure premiums" which indicate the relative seriousness of the accident causes corresponding to schedule items, was comparatively limited. Although a volume of losses reaching almost $8,000,000 seems large, it should be remembered that it was necessary to divide these losses among more than 400 classifications and so it can be seen that for many classifications analogies and assumptions were necessary.

In the Fall of 1924 the National Council laid out a statistical program with a view, among other things, of more accurately determining the pure premium values of the Schedule. As a result of this call, accident loss data in the form of punch cards and hand tabulations were received from nearly forty carriers as compared with ten carriers reporting in the original preparation of the Schedule. A considerable proportion of the new data had been coded in accordance with the revised "Workmen's Compensation Statistical Plan"—which superseded the former statistical plan shortly after the new Schedule became effective— the remainder of the cards had been punched under the old plan but a co-relation of the data punched in accordance with the two plans was comparatively simple.

Realizing that even with an increased volume of data there would be many classifications for which only a small volume of losses would be reported, it was decided to concentrate the filings on the larger and more typical classifications. With this in mind 93 classes were selected—consideration being given the

volume of business in the class; the geographical distribution of the business; and the nature of the operations. Preference was, of course, given to the classes having the largest payrolls and those in which the operations were uniformly distributed over the country. Also, because many of the smaller and localized classes would derive their pure premiums by analogy, the selection of classes in which the manufacturing operations were varied and typical was essential.

A tabulation of the data filed was made in March of this year and the grand total of losses involved reached nearly $30,000,000 or over four times the volume reported in the previous tabulation for the same classes. The data tabulated included losses incurred in policy years 1920 to 1923 inclusive, although they do not represent all of the losses incurred during those years for some of the carriers reporting.

The results of this tabulation indicated that the pure premiums originally selected were not far out of line although in certain individual classifications the new data did show notable differences. The following tables show the original pure premiums and those indicated by the last tabulation. Table I shows a comparison of the old and new indicated pure premiums for all items—the 93 selected classifications having been segregated into 9 industry groups. In Table II, 15 representative classifications have been shown with the original selected pure premiums for point of operation and the residue, and the pure premiums indicated by the new data. Pure premiums for the less important Items are not shown because, even with the large volume of data available, the losses had to be split so fine that the results could not be considered dependable. For that reason the pure premiums for the less important items were selected by groups of analogous classifications rather than from each individual class.

A study of the two tables shows that there have been, apparently, certain factors which have been producing changes in the distribution of accident costs. There has been a slight increase in accidents due to the driving mechanism of machines, but there has been a consistent reduction in the proportion of losses due to "other moving parts." Also the percentage of "residue" losses has shown a considerable increase. It would probably be difficult to put one's finger on the cause of these

TABLE I

Industry	Elevators		Power Transmission		Driving Mechanism		Dangerous Moving Parts		Point of Operation		Foot and Leg Protection		Residue	
	Old	New	Old	New	Old	New	Old	New	Old	New	Old	New	Old	New
Chemicals.......	1.4	2.5	.8	2.4	.4	0.7	5.5	0.5	14.5	6.3			77.2	87.6
Food Products	4.1	3.7	1.5	3.0	.7	1.0	5.9	1.1	18.1	17.8			69.7	73.4
Leather Goods	.9	3.5	1.9	.9	1.6	1.9	1.6	1.8	35.8	33.7			58.2	58.2
Metal Products	.8	1.2	.8	.9	.6	1.2	4.0	.8	28.0	30.5	3.8	3.7	62.0	61.7
Paper & Printing	6.3	2.4	1.7	2.5	.8	.8	5.8	3.1	34.8	27.2			50.4	64.0
Rubber & Composition Goods	.2	3.6	.5	.5	.5	1.1	8.0	2.1	35.5	33.7			55.0	59.0
Stone, Clay & Glass Products	2.4	.5	4.6	2.7	.4	1.6	9.4	1.6	9.9	7.5			73.3	86.1
Textile Products	1.8	3.4	2.0	1.8	2.2	3.1	8.0	5.0	28.6	24.1			57.4	62.6
Wood Products	1.4	1.1	3.1	2.1	1.1	1.6	6.8	1.3	44.8	47.0			42.5	46.9
Grand Total	2.0	2.1	1.6	1.7	.8	1.6	5.3	1.9	28.7	28.8			59.8	62.6

TABLES II

COMPARISON OF "PURE PREMIUMS" BY CLASSIFICATIONS

Code No.	Classification	Point of Operation		Residue	
		Old	New	Old	New
2000	Bakeries........................	40.	35.8	50.0	56.0
2222	Cotton Spinning and Weaving....	30.	20.0	56.0	64.3
2501	Clothing Mfg...................	20.	22.0	63.5	69.7
2581	Laundries......................	40.	39.2	46.5	54.4
2623	Tanning........................	25.	29.4	69.0	62.2
2660	Boot and Shoe Mfg.............	50.	33.5	42.5	58.0
2710	Saw Mills......................	40.	38.8	44.3	52.0
2730	Sash, Door and Assembled Mill-work Mfg......................	50.	51.6	39.9	40.7
2883	Furniture Mfg..................	55.	51.1	34.0	44.8
3081	Iron Foundries.................	10.	7.7	67.0	66.2
3400	Metal Goods Mfg...............	65.	62.5	28.4	32.5
3632	Machine Shops.................	30.	26.5	62.8	67.9
3808	Automobile Mfg................	20.	18.4	71.5	76.0
4239	Paper Mfg.....................	45.	20.7	45.2	69.2
4304	Newspaper Publishing..........	25.	26.5	64.5	65.0

changes in accident distribution. It might be argued that the credits allowed under the 1918 Schedule Rating Plan have offered sufficient incentive to bring about a reduction of machine accidents thereby increasing the residue percentage. The former Schedule did not stress the point of operation of machines (which may account for these accidents remaining approximately uniform) but did give large credits for guarding the other machine parts. The reduction in the percentage for "dangerous moving parts" accidents would seem to support such a theory; but it is hard to understand why there should have been an increase in the accidents due to driving mechanism. We shall probably have to wait for a later tabulation to see if the present trends are continued before a satisfactory explanation can be made of these changes.

When the tabulations were being made, the data were sorted by state or region to determine whether there were substantial differences in the indicated pure premiums in different sections of the country. In most of the classifications the losses were not sufficiently distributed about the country to lead to any definite conclusions. A few classes did give some interesting results, showing that the territorial values do not vary materially from the national averages. Table III shows the point of operation pure premium for a few classifications by regions—the volume of losses being shown in thousands of dollars.

TABLE III
POINT OF OPERATION PURE PREMIUM BY REGIONS

	Code No. 2000 Bakeries		Code No. 2883 Furniture Mfg.		Code No. 3400 Metal Goods Mfg.		Code No. 3632 Machine Shops	
	Losses	Pure Prem.	Losses	Pure Prem.	Losses	Pure Prem.	Losses	Pure Prem.
National Average........................	..	35.8	..	51.1	..	62.5	..	26.5
New York..............................	$313.	34.9	$319.	51.5	$266.	54.7	$597.	27.6
Massachusetts..........................	56.	26.0	55.	49.4	43.	63.0	246.	21.6
New Jersey............................	32.	34.8	10.	58.7	35.	84.3	59.	37.2
Wisconsin.............................	39.	35.9	59.	54.0	68.	47.4	197.	28.3
California.............................	38.	37.6	24.	60.2	..	..	53.	21.4
Southeastern States....................	29.	29.8	101.	51.2	27.	53.0	145.	28.4
Mich., Ill., & Ind......................	76.	33.0	356.	47.5	297.	71.5	495.	33.1

The figures indicate that apparently there is little difference in accident distribution in different sections of the country and, inasmuch as the pure premiums do not affect the balance of the Schedule, the use of national figures was decided upon.

The actual selection of the pure premiums to be used was a straight forward proposition. Analogies based upon types of operation and equipment used were relied upon for the selection of pure premiums for classifications where no data were available; also for the less important items, which produced only limited volumes of losses, combinations of classifications were made to secure adequate exposures.

In connection with the selection of the pure premiums the Committee gave serious consideration to the idea of eliminating from the Schedule those items which were producing only a small proportion of the loss cost—particular attention being directed to those showing percentages of less than 2%. The only change in items that was adopted was the combination of the "driving mechanism" and "moving parts" of machines into a single item, thus cutting down the machine items from three to two, *viz.,* "machine parts" and "point of operation." In addition to the considerations of economy and simplicity in application, the combination of the two machine items was decided upon because of the difficulty encountered in coding accidents to "driving mechanism" or "moving parts." One of the chief reasons for retaining the other items was the fact that even the latest accident reports did not represent experience developed under the present plan of schedule rating, and it was felt that no items should be entirely eliminated until data based upon the operation of the new schedule was available.

Physical Indices

The indices indicating the "average physical condition" within any classification play a very important part in the rating of every risk in that classification because a direct comparison of the risk condition is made to the "average" condition. If the "average" values are too high large credits will be prevalent and the charges on debit risks will be too low. Similarly if the values are too low charges will predominate and what credits there are will be curtailed to less their correct amounts. The balance of the Schedule, at least so far as the physical items are

concerned, is therefore dependent upon the accurate determination of these indices.

When the new schedule was originally prepared the physical indices were obtained from information taken from a large number of inspection reports of risks inspected and rated by the several independent rating bureaus. In view of the fact that these inspection reports had been prepared for use in connection with a Schedule of somewhat different form numerous assumptions had to be made;—in the machine items particularly it was difficult to determine the proper information necessary for an absolute calculation of the proper indices. Because of the lack of complete dependability of values based upon these data, immediate steps were taken, after the introduction of the new Schedule, to secure new reports based upon inspections made in accordance with the new plan. Two tabulations of these new reports have been made: the first in the Fall of 1924 covering inspection data collected during the first year the revised Schedule was in operation; the second in the Spring of the present year covering inspections made in the twelve months ending in November 1925. Approximately 12,000 reports covering risks employing nearly 800,000 workers were summarized for the first revision of the indices—the second involved the tabulation of 27,000 new reports on risks with 1,700,000 employees.

Both these tabulations were conducted along the same general lines and so only the more recent one will be discussed. The principle underlying the determination of the "average" index is to combine all of the data from all the inspection reports for a classification and then calculate an index from this combined data in exactly the same way we would calculate the index for an individual risk,—in other words we consolidate all the individual risks into one huge risk from which we obtain an index representing the "average" condition.

Data sheets (see Fig. 1) were prepared for each classification. The information on risks located in Massachusetts, New Jersey, and New York was compiled by the independent bureaus in these states and sent to the National Council in summarized form,—the data for other states were tabulated in the Council direct from inspection reports filed there from time to time as inspections were made. Although the data for each state covering elevator, transmission, driving mechanism (item 363 D. M.) and moving

parts (item 364 M. P.) were collected, these data were not separately recorded because of the limited volume in any one state and because of the relative unimportance of these items. The totals for these items were therefore used as the basis of the indices for all states. For the point of operation item, which carries the greatest weight in the present Schedule, the data were recorded for each state separately and individual state indices were calculated where the volume of data were sufficient to justify it. The P. O. index is calculated by the following method:—

$$\frac{\text{Total unguarded weights} - \text{Total weights eliminated}}{\text{Total points of operation}} = \text{P. O. index}$$

It will be recalled that for measuring the point of operation hazard, weights of varying amounts are assigned to each machine depending upon their respective hazards. If a hazardous machine is guarded, however, a part of the total weight is "eliminated," the amount of the deduction depending upon the effectiveness of the guarding. It will therefore be seen from the above formula, that the P. O. index is really the "average net weight per point of operation."

In the upper right hand corner of the data sheet (Fig. 1) you will notice a series of calculations under the general heading of "balance calculations." In these calculations the current schedule rating factor for each item was applied to the indices developed from the "grand total" data reported on other parts of the data sheet. The results of these calculations were called "balance pure premiums" which when compared with the current "class average pure premiums" showed how far the Schedule was out of balance for the classification, item by item.

With the information shown in the data sheets it was a comparatively simple matter to determine for which items and classifications changes should be made in the physical indices to bring about a balance of the plan, and for the point of operation item, where state exceptions were desirable. In selecting the indices the principle of making as few state exceptions and as few changes in values was adopted in so far as this course could be followed and still maintain a satisfactory balance of the plan. After new pure premiums and physical indices had been selected

revised schedule rating factors were calculated by dividing the first by the second. Although numerous changes in schedule rating factors were made at both revisions on account of revised indices, most of these changes were in classifications where the volume of experience is small. Moreover, in the second revision the number and the amount of the changes were decidedly less than at the first revision, and it is confidently hoped that the changes will be reduced in number at succeeding revisions. A review of the indices, particularly those for point of operation, does not show any decided trend indicating an improvement in the average physical condition of the risks reviewed. Perhaps it is still too early to expect a reduction in the average indices as a result of the application of the new schedule.

Morale Items

As stated earlier the morale items, which cover safety education, supervision and inspection service, first aid and hospital equipment, are applied by granting credits for the fulfillment of certain standard requirements. No charges are levied on risks which do not maintain these services. The original basic formula as outlined by Prof. Whitney provides that every risk would be rated by comparison to the average risk condition (so far as morale items are concerned) and that the ratio be applied multiplicatively to the results of rating the physical items. For certain practical reasons the provisions of the basic formula were not introduced into the plan and so up to the present time the Schedule has been producing a preponderance of credits largely due to the flat credits allowed in many risks for the morale items.

The question of how these items should be balanced has been the subject of serious consideration ever since the new schedule was introduced and it may be well to briefly outline the methods of balancing these items that have been considered.

With the former Schedule the question of balancing for all items was taken care of by inserting a loading factor in the manual rates for all classifications to which the Schedule applied. This method was discarded, however, with the introduction of the 1923 Schedule because (a) the Schedule itself, except for the morale items, provided ways and means for balancing, and (b) because such a loading in the manual rate, when applied to the

small risks unable to qualify for Schedule treatment, seemed unjustifiable. It, therefore, was decided that the balance of the plan should be accomplished within the Schedule itself and early in the discussions on the subject, some adjustment of the "residue" values suggested itself as the most practical solution. The exact form that this adjustment should take has been carefully considered: should it be a uniform factor; should it vary by state, by classification, or by size of risk; should it apply to all risks or only those not fulfilling the standard requirements of the morale items; should it include the off balance due to credits based upon the "loss cost test." All these were considered.

The outcome of these studies has been the adoption of a loading which shall be added to the residue value—the loading to vary by classifications but to be uniform so far as states are concerned. These loadings are to apply to all schedule rated risks and include provision for balancing all the morale items including the loss cost test. Two or three states have adopted values which are exceptions due to unusual conditions but, in general, the loadings are national in scope.

Dating from the late Fall of 1923, numerous separate tabulations of the effect of the morale items have been made. All of these tabulations have consistently shown that the average credit due to these items amounts to approximately 3%. The tabulations have also shown that the amounts of these credits do not vary to any considerable extent by states, except for those states where the credits allowed are greater than normal or where some other unusual conditions apply. The desirability of having uniform factors for all states, particularly for carriers writing business upon a countrywide basis, is of course apparent, and the fact that the off-balance did not vary materially was decidedly advantageous.

It was found, however, that by size of risk and by classification there were quite decided differences in the amount of loading required to balance the morale items. Table IV shows a tabulation of over 7,000 risks so divided as to show the net credit being developed in risks of different sizes.

TABLE IV

VARIATION IN MORALE ITEM CREDITS BY SIZE OF RISK

Size of Risk (Employes)	Number of Risks	Aver. Safety Organization Credit	Aver. Loss Cost Credit	Aver. Hospital Credit	Average Total Credit
1 to 10	1271	.29	.01	.48	.78
11 to 25	2166	.34	.05	.49	.88
26 to 50	1588	.75	.22	.60	1.57
51 to 100	1107	.88	.20	.68	1.76
101 to 500	1009	1.91	.53	1.18	3.62
501 to 1000	92	2.47	.66	2.86	5.99
over 1000	39	3.21	1.04	4.19	8.44

Table V shows a similar tabulation but divided among certain typical classifications.

TABLE V

VARIATION IN MORALE ITEM CREDITS BY CLASSIFICATION

Classification	Number of Risks	Average Employees Per Risk	Average Total Morale Credit
2000 Bakeries....................	398	19	2.23
2150 Ice Mfg......................	110	10	1.04
2222 Cotton Spinning and Weaving	168	495	5.98
2501 Clothing Mfg................	569	86	1.76
2660 Boot and Shoe Mfg..........	332	168	4.48
3632 Machine Shops..............	425	33	2.38
3808 Automobile Mfg.............	47	147	5.29

It is probable that the variation of the net credits by classification is due in considerable measure to the average number of employes per risk, although the manner in which the operations in any particular classification are conducted undoubtedly has a great deal to do with the final result. Numerous difficulties in connection with the application of different loading values by size of risk led to the abandonment of such a plan in favor of one providing distinct values for each classification. The latter plan does to a certain extent recognize the size of risk and at the same time takes into account other peculiarities of each industry such as differences in superintendence, character of labor, nature of operations, etc. Having reached the decision to vary the loading by classification it was noted that the volume of information available in many classifications was too small to be entirely depended upon and so a plan was adopted whereby both the indications of the particular classification and those of the industry group in which the classification fell, were both taken into

consideration,—greater credibility being assigned to individual class data as its volume increased. The actual formula used was:

$$x = G + (C - G) \frac{P}{P + 20,000}$$

where

x = the proposed increase in "r" value for the individual classification.

G = the "morale" credit shown for the group of analogous classifications.

C = the "morale" credit for the particular classification.

P = the premium volume for the particular classification.

It will be noted that this method of selecting the "x" or loading values is similar to that used in experience rating and in selecting pure premiums for manual rates where individual state experience is used. It was also decided that in no case should the value exceed 6% because this is as much as a small risk could reasonably be expected to offset through the installation of a safety organization and first aid equipment. A minimum value of 1% was agreed upon as it seemed reasonable to expect that every risk should have first aid facilities. A similar plan of balancing the morale credits has been in effect in Massachusetts and New York for some time and appears to be working satisfactorily.

POSSIBLE FUTURE DEVELOPMENTS

The foregoing outlines briefly the major developments of the Industrial Compensation Rating Schedule—1923 from the time it was introduced down to the present. No attempt has been made to describe technical changes in standards or rules of application as it has been felt that they would be of no particular interest to you. It may be well to point out, however, that the statistical work in connection with the Schedule has not ended—in fact we are in a better position now than ever before to satisfactorily record data relating to pure premiums, physical indices, and morale loading values, statistical data are coming in and are being recorded in such ways that future revisions of the several values can be conducted on a routine basis instead of requiring many of the laborious processes necessary in the past. Moreover these data are coming in in greater volume than in the past and so

future revisions will produce results of even greater dependability.

At this point it may be well to mention a study that is now under way for the purpose of eliminating one of judgment items of the Schedule.   In the paper by Messrs. Perkins and Wheeler, and also previously in this discussion, mention has been made of the weights which are used to measure the comparative hazards of different machines.   Although the "weights" have considerable statistical foundation based upon the original loss data, it is a fact that a goodly portion of engineering judgment had to be applied on account of the paucity of data available.   With the decidedly greater volume of loss material at hand, and with better facilities for determining the relative exposure to machines of different types, it is hoped that a more satisfactory statistical basis for these weighting values will result.

Another study, although not of a statistical nature, that is under way relates to the method of applying the safety organization items.   At the present time it is the practice to grant a flat credit for the installation of organized safety measures in accordance with certain standards, and to offer, in addition, further credits under the loss cost test if the experience of the risk (using data compiled under the experience rating plan) has been favorable.   The difficulty of determining whether a safety organization is functioning in accordance with the spirit of the safety idea or whether it is being maintained in a perfunctory way merely for obtaining the alluring credit, has long been one of the objections to retaining the safety organization items in the Schedule.   Moreover, the fact that the credits allowed under the loss cost test may have developed from experience collected at periods when the safety organization was not functioning has led to considerable dissatisfaction to its use.   In Wisconsin, where the loss cost test has only recently become available with the advent of experience rating, and where flat credits double those ordinarily allowed for safety organizations, have been in force, the difficulties resulting from the perfunctory or "paper" organizations reached proportions where some corrective measures were imperative.   The Wisconsin Compensation Rating and Inspection Bureau, with the cooperation of the National Council, has developed a plan that it hopes will improve the situation surrounding the application of these Items.   Briefly the plan provides that after a safety organization has had a chance to

really get into operation, the amount of credit will be dependent upon the results produced. The underlying principles provide:

(a) The guaranteed credit for safety organization is gradually reduced when the loss cost test becomes available to prove the effectiveness of the organization.

(b) The credit for loss cost test, on the other hand, gradually increases until it becomes the major determinant of the safety organization credit. Moreover, the loss cost test does not become available until experience which has developed under the safety organization is available.

(c) Provision is made whereby a lapse in a safety organization does not permit the risk to again qualify for full guaranteed credits until after a lapse of five years. This prevents a risk having poor experience under the loss cost test to disband the organization temporarily and then reestablish it in order to obtain the full guaranteed credit.

This plan has received favorable comment and is being studied for national adoption,—it is too early to say now if this or some other similar practice of applying the safety organization items will be introduced but in our opinion, some amendments to improve the present conditions are highly desirable.

Before closing, it may be of interest to point out that the experience of the National Council in its rating offices has found the new Schedule a reasonably satisfactory rating instrument, and that the comment which we have received from independent rating bureaus leads us to believe that the introduction of the Industrial Compensation Rating Schedule—1923 was a distinct advance in compensation rating methods.

NATIONAL COUNCIL ON COMPENSATION INSURANCE

CLASS. BAKERIES   CODE 2000

States	Number of Risks	Employees	ITEM 170—ELEVATORS							Number Elevators	Risks with Elevators	
			173A	173B	Number Entrances	174	Number Landings	177	181		No.	Total Emp.
Alabama	9	257										
Georgia	21	433										
Illinois	11	513										
Indiana	28	680										
Kentucky	14	358										
Louisiana	15	472										
Maine	12	322										
Maryland												
Michigan	7	241										
Oklahoma	8	451										
Region #8												
Region #9	18	329										
R.I.&Conn.	7	143										
Tennessee	16	501										
Virginia	12	310										
Vt.&N.H.	15	160										
Wisconsin	136	1232										
Sub-Total	327	6412	370	61	669	504	580	29	21	179	148	4554
Mass.	113	3257	91	4	286	227	250	56	66	71	53	
New Jersey	87	1573	117	8	223	165	174	27	46	56	43	
New York	274	4184	189	4	210	395	428	91	104	134	110	
Grand Total	801	15426	767	77	1388	1291	1432	213	237	440	354	4555

BALANCE CALCULATIONS

Series or Item	Index × S.R.F. = Balance P.P.	Class Ave. P.P.	State Exceptions
170	20. × .036 = .72	1.5	
320	.5*(.03×12.9)= 1.15	1.5	
363	.550 ×1.30 = .73	1	
364	.524 ×10.50 = 5.50	6	
370	1.46 ×26.1 = 38.10	40	
405	× =		
407	× =		
f	— — 50.00	50.0	
Total P.P.	96.20	100.0	

States	Number of Power Machines	ITEM 320—TRANSMISSION			ITEM 363 DM	ITEM 364 MP	SECTION 370—POINT OF OPERATION				Risks with low F drive		405-Y (Standard)		407-F (Standard)	
		322	324,5	326 (Unsa)			Total P. of O.	Unguarded Works	Weighted Line	Index	No.	Total Emp.	No.	Total Emp.	No.	Total Emp.
Alabama							163	247	—							
Georgia							362	524	3	1.48						
Illinois							261	365	23							
Indiana							535	753	14	1.38						
Kentucky							235	345	1							
Louisiana							214	313	—							
Maine							250	364	1							
Maryland																
Michigan							179	252	13							
Oklahoma							231	337	9							
Region #8																
Region #9							363	527	15	1.41						
R.I.&Conn.							91	155	—							
Tennessee							333	491	42							
Virginia							249	357	2							
Vt.&N.H.							197	267	—							
Wisconsin							1537	2156	10	1.37						
Sub-Total	4354	63	68	15	2792	3027	5240	7443	125	1.40						
Mass.	1392	—	7	1	1096	1119	1405	2227	151	1.48						
New Jersey	1179	42	46	12	393	465	1184	1367	24	1.54						
New York	2767	250	90	13	1033	1218	2798	4326	14	1.53						
Grand Total	9692	355	211	44	5334	5769	10626	15323	326	1.46						