

A DISCUSSION OF GROUP ACCIDENT AND HEALTH INSURANCE

BY

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During the past few years Casualty Insurance Companies have shown a growing interest in the Group Accident and Health field. In recognition of the resulting interest of casualty actuaries and actuarial students, it is the intent of this paper to outline a possible statistical plan for carriers newly entering the field. Because the *Proceedings* at present lack any article dealing with the principle types of Group Accident and Health coverage and with the development of this comparatively new line of insurance, a brief discussion of these subjects, with particular reference to temporary disability legislation, is also included as a prerequisite to any examination of a possible statistical plan.

I. PRINCIPAL TYPES OF COVERAGE.

Ordinarily Group Accident and Health insurance excludes coverage for disabilities resulting from work or for which the employee is entitled to Workmen's Compensation benefits. Any major exceptions to this statement will be noted in the descriptions of the various types of coverage.

The most important Group Accident and Health sublines are described in the following paragraphs.

A. *Weekly Indemnity Insurance* provides a specified weekly indemnity if the employee becomes totally disabled as a result of bodily disease, injury or pregnancy. The insurance is written with various waiting periods for accident and sickness disabilities. Four maximum indemnity paying periods are common; 13, 26, and 52 weeks, for disabilities resulting from bodily injury or disease, and 6 weeks for disabilities resulting from pregnancy. In most cases, plans are classified, first, according to the day from which benefits are payable and, second, to the maximum indemnity paying period. For example, a 1-4-26 plan would pay weekly indemnity from the first day for disabilities resulting from injuries, from the fourth day for disabilities resulting from disease, and for a maximum of 26 weeks.

Infrequently weekly indemnity coverage is written to provide benefits for occupational disabilities. Such coverage is usually furnished so as to provide benefits during the waiting period stipulated by the Workmen's Compensation Law, or to provide supplemental weekly indemnity, so that approximately the same amounts of weekly indemnity are payable from the same day of disability for both occupational and non-occupational disabilities when Workmen's Compensation benefits are combined with the supplemental Group Accident and Health coverage.

B. *Accidental Death, Dismemberment, and Loss of Sight Insurance* provides specified amounts of indemnity for loss caused by injuries sustained through accidental means. The specified amount, known as the Principal Sum, is payable for the loss of:

1. Life
2. Both hands
3. Both feet
4. One hand and one foot
5. Sight of both eyes
6. Either hand or foot and the sight of one eye.

One-half the principal sum is payable for the loss of:

1. One hand
2. One foot
3. Sight of one eye.

In only this type of Group Accident and Health insurance is coverage frequently afforded for both occupational and non-occupational accidents.

C. *Employee Hospital Expense Insurance* usually provides the following benefits if the employee becomes confined as a resident patient in a legally constituted hospital upon the recommendation of a physician as a result of a bodily disease or injury:

1. A specified daily benefit for each day of confinement for a maximum number of days (usually 31 or 70 days) during any one period of disability. This benefit is commonly called "The Daily Benefit." This Daily Benefit is sometimes sold on a reimbursement rather than the indemnity basis described here.

2. An Amount equal to the hospital charges for medical care and treatment—other than charges for board and room, nursing care and attendance by a physician—but not more than a specified number of times the Daily Benefit during any one period of disability (generally 5, 10, 15, or 20 times the Daily Benefit). These benefits are usually referred to as "Miscellaneous Benefits."

If, however, the confinement results from pregnancy, the benefit payable is commonly either:

(a) A specified Daily Benefit for each day of confinement for a maximum of 14 days, plus an amount equal to the hospital's miscellaneous charges, but not more than a specified number of times the Daily Benefit (commonly 5, 10, 15 or 20 times the Daily Benefit) or,

(b) An amount equal to the hospital's charges for both room and board, and medical care and treatment (other than charges for nursing care and attendance by a physician), but not more than 10 times the Daily Benefit.

It should be mentioned that benefits for pregnancy confinements following the termination of the insured employees insurance are paid if the pregnancy commenced while the employee's insurance is in force. This benefit, sometimes called "The Extended Term Maternity Benefit," is required by rulings of the New York and Michigan Insurance Departments, and is provided generally. This does not mean, however, that maternity benefits during the first year of an Employee Hospital Expense contract are not payable until the 10th month of the policy period, since in most instances immediate maternity coverage is provided to all employees becoming insured within one month of the contract date. For Employees becoming insured subsequent to this date a nine months waiting period before maternity benefits become payable is usually required. Practices in regard to this matter vary between companies. Occa-

sionally the pregnancy benefit is excluded from the Employee Hospital contract.

In addition, several of the principal Group writing companies provide benefits up to 5, 10, or more times the Daily Benefit if the employee does not qualify for any of the benefits described in paragraphs one and two above and, as a result of a non-occupational accident, incurs hospital charges for emergency medical care and treatment of bodily injuries within 24 hours of the time of the accident. This benefit covers those employees who incur hospital charges without becoming resident patients and is generally described as "The Emergency Accident Benefit."

D. *Dependent Hospital Expense Insurance* provides benefits for board and room and miscellaneous charges on the same basis as employee hospitalization coverage, if hospitalization commences as a result of accident or disease. The Daily Benefit in the case of Dependent Hospital Expense Insurance is usually on a reimbursement basis. If the confinement results from pregnancy, an amount up to 10 or 15 times the Daily Benefit, depending on the policy, is available for both board and room and miscellaneous charges although this coverage may also be obtained on an ex-maternity basis. In contrast to Employee Hospital Expense Insurance the pregnancy benefit is usually provided only for pregnancies commencing while the insurance in respect to the dependent wife is in force, although immediate maternity coverage can be obtained for the initial group on the payment of an additional premium for the first year. The Extended Term Maternity Benefit described in the paragraph on Employee Hospital Expense Insurance applies generally in the case of Dependent Hospital Expense Insurance. The Emergency Accident Benefit is the same as that described for employees.

E. *Employee Surgical Expense Insurance* provides a benefit if the employee is operated upon by a duly qualified surgeon as a result of bodily disease, injury or pregnancy. The Benefit is an amount equal to the surgeon's fee, but not more than the maximum listed for the particular operation in the Schedule of Operations. Various schedules are offered, although a large volume of the business now in force provides benefits under a basic schedule which provides a maximum benefit of \$150.00.

Immediate Maternity coverage is generally provided in accordance with the conditions outlined for Employee Hospital Expense Insurance. An Extended Term Maternity Benefit is also available under Employee Surgical Expense Insurance, provided the operation results from pregnancy commencing while the employee's insurance is in force. The coverage may be written on an ex-maternity basis.

Several State Medical Associations (Rhode Island, Wisconsin, Tennessee and Maine) have sponsored Surgical Plans which may be underwritten by carriers conforming to the specifications prescribed by the Medical Associations. These Surgical Plans have two main features:

- (1) The Medical Associations have themselves established the fees set forth in their various surgical schedules.

- (2) The fees listed in the surgical schedules of the Plans are accepted by the participating physicians in full payment for operations performed, if the annual income of the insured employee is less than a stated amount. If the annual income of the insured employee exceeds the maximum income

stipulated in the Plan, the benefit listed in the surgical schedule is accepted either in full or partial payment for the operation.

These Medical Association Plans almost always include the maternity benefit.

F. *Dependent Surgical Expense Insurance* provides the same benefits as those described in the paragraph on Employee Surgical Expense Insurance, if the Employee, on behalf of his dependent, incurs the expense of a surgical operation performed by a duly qualified surgeon as a result of bodily disease, injury or pregnancy.

Benefits for operations resulting from pregnancy are payable only when the pregnancy commenced while the insurance was in force, although immediate maternity coverage for those becoming insured within one month of the date the policy is initially written can be obtained from most carriers by the payment of an additional premium during the first policy period. The Extended Term Maternity Benefit described for Employee Surgical Expense Insurance also applies to Dependent Surgical Expense Insurance. Dependent Surgical Expense Insurance is, however, sometimes written on an ex-maternity basis.

The Medical Association Surgical Plans described in the paragraph on Employee Surgical Expense Insurance can also be written to cover the dependents of the employee.

G. *Employee or Dependent Medical Expense Insurance* provides a benefit if the employee or the employee's dependent is necessarily treated by a physician. Although at present there are many varieties of Medical Expense Plans, most of them can be put into one of three principal types:

1. The In-Hospital Plan—providing benefits during any period of total disability for which Hospital Expense Insurance is payable.
2. The Total Disability Required Plans—providing benefits during any period of *total* disability resulting from bodily disease or injury.
3. The Total Disability Not Required Plans—providing benefits during treatment.

Medical Expense Plans falling within type (1) commonly provide a benefit in amount equal to the physician's charges subject to a maximum determined by multiplying the amount provided for one day (\$2.00, \$3.00, or \$4.00 for example) by the number of days of hospital confinement, but not more than a specified number of times the Daily Benefit (generally 31 or 70 times, so as to parallel the hospital expense coverage) for all visits during any one period of disability.

Plans falling within type (2) are commonly written with a benefit equal in amount to the physician's charges up to \$3.00 for each home or hospital visit, and \$2.00 for each office visit. Medical Plans of this type provide for various waiting periods. The exclusion of the first two visits in connection with treatment for both injuries and disease, for example, is common. Such plans usually limit the benefits payable during any one disability to a maximum amount (\$150.00 is a maximum amount frequently used) and in some Plans the benefits are payable only when Weekly Indemnity Benefits are payable.

Type (3) Medical Plans have been developed only recently and provide benefits similar to those discussed for type (2) Medical Plans, except that the maximum amount is payable for treatment resulting from any one injury or

disease. Benefits under type (3) Medical Plans are never, of course, restricted to a period during which Weekly Indemnity Benefits are payable.

Ordinarily in all three types benefits are not payable for visits, in connection with surgical operations, post-operative care by the Surgeon, or pregnancy.

H. *Employee or Dependent Laboratory and X-Ray Examination Expense Insurance* provides a benefit if the employee or employee's dependent undergoes a laboratory or X-ray examination on order of a physician as a result of bodily disease or injury. This coverage is still on an experimental basis and practices differ widely between carriers. Most Laboratory and X-ray Expense Plans fall into one of two broad categories:

1. Scheduled plans providing benefits equal to the charge for the examination up to a maximum for the examination shown in the schedule.
2. Non-scheduled plans providing benefits equal to the charges for the examination with a stated maximum for all examinations (for example \$25.00 is common).

In both types a maximum amount (frequently \$25.00 or \$50.00) is usually established for all examinations as a result of injuries sustained in any one accident or as a result of one disease.

II. DEVELOPMENT OF GROUP ACCIDENT AND HEALTH INSURANCE WITH PARTICULAR REFERENCE TO STATE TEMPORARY DISABILITY LAWS.

Since Annual Statement requirements did not require the separation of Group Accident and Health premiums from other Accident and Health premiums until 1942, it is difficult to trace the growth of this line of insurance prior to that year. During 1942, however, Group Accident and Health coverage written by insurance carriers, not including Blue Cross coverage produced \$120,848,000.00 of Statement written premiums. In 1948 the comparable figure was \$383,425,000.00.* Due perhaps principally to the fact that Life Companies could offer Group Life Insurance as well as Group Accident and Health Insurance, the large bulk of this premium volume was written by a few large Life Insurance Companies. In fact 10 Life Companies wrote over 73% of the previously mentioned premium volume for 1948.

The development of Group Accident and Health Insurance prior to World War II was on a purely voluntary basis and, as would be expected, the Employee Coverages for which the demand was greatest expanded steadily. Dependent coverages, even at present, produce only a small part of the total premium volume. During World War II, the first step was taken by a state government to make temporary disability coverage mandatory. In 1942 the Rhode Island legislature passed a Temporary Disability Benefits Law to become effective April 1, 1943, thereby initiating a new legislative trend.

This first successful attempt at temporary disability legislation produced a monopolistic state fund which was to pay benefits to those unable to work because of disability. The fund was to be administered by the Unemployment Compensation Commission.

On the termination of World War II, which had temporarily interrupted the Disability Benefits legislative trend, the legislatures of several states

*Argus Charts 1944 and 1949

became increasingly active in considering this type of legislation. On March 5, 1946, California became the second state to enact a Compulsory Temporary Disability Benefits Law, the benefit provision becoming effective December 1, 1946. New Jersey followed California's lead with similar benefits effective January 1, 1949. The State of Washington legislature passed a Temporary Disability bill to become effective June 10, 1949, but because of a referendum petition this measure will not become effective unless approved by the people in the next general election in November of 1950. The latest and most important of these legislative developments was taken in April 1949, when the New York legislature passed a temporary disability benefits law providing for compulsory Temporary Disability benefits effective July 1, 1950. As a further indication of the increasing interest in this type of legislation it is interesting to note that in 1949 bills for temporary disability legislation were introduced in Alaska, Colorado, Connecticut, Delaware, Florida, Hawaii, Maryland, Massachusetts, Minnesota, Nevada, New Mexico, Pennsylvania, Tennessee, and Wisconsin.

Except for Rhode Island the State laws thus far enacted provide for both State Funds and private plans either self-insured or underwritten by insurance carriers.

In California and New Jersey the State Funds are tax supported on the Unemployment Compensation model and the State Fund administrators supervise the private or voluntary plans. In New York every subject employer must buy insurance. Here the State Fund is a competing insurance company subject, as private insurers are, to the administration of the act by the Workmen's Compensation Board and to premium taxes and assessments.

The California, New Jersey and New York disability laws provide weekly indemnity for those employed who are unable to work because of disability for a limit of 26 weeks in the case of California and New Jersey, and 13 weeks in the case of New York. In all three laws payment of benefits begins after a 7 day waiting period and disabilities due to pregnancy are for the most part not covered. The amount of Weekly Benefits under the California and New Jersey laws is figured on an Unemployment Compensation base period concept, while the New York weekly indemnity is set at 50% of average weekly wages. All three laws provide minimum and maximum weekly indemnities within which the benefit formulas range. All three state plans provide for the payment of benefits during unemployment disabilities. In California and New Jersey these unemployment disability benefits are financed by the interest on funds withdrawn from Federal Unemployment Trust Funds and, if the benefits exceed this interest, by an assessment on private plans limited to .03 of 1% and to .02 of 1% of the taxable wages in California and New Jersey respectively. The New York Act finances unemployment disability benefits, after the initial fund is set up by taxes on the employers and employees, by assessments on Insurance Companies, self insurers and the State Insurance Fund with no limit on the size of the assessment. The difference in the methods of financing unemployment disability benefits, as provided for by the California and New Jersey Laws on one hand, and the New York Law on the other, is assuming greater importance every day. Available figures indicate that the California assessment for calendar year 1949 will

reach the maximum of .03 of 1%. If California had financed these benefits by an assessment without limit on the carriers and state fund without using the interest on the funds withdrawn from Federal Trust Fund monies, the assessment for the relatively prosperous year of 1949 would be considerably higher than the .03 of 1% of taxable wages which constitutes the present limit assessment. Provision for the cost of this benefit in the New York Temporary Disability premium rates, and for the treatment in experience rating of the charges to accumulate the necessary reserves for depression years constitutes a serious problem.

The California law has recently been amended so that, effective January 1, 1950, indemnity at the rate of \$8.00 per day for a limit of 12 days during a period of hospitalization is payable in addition to the basic Weekly Indemnity Benefits. In the event of hospital confinement the unexpired portion of the usual 7 days waiting period for both accident and sickness disabilities is also waived during the continuance of disability.

The California law provides that coverage under the State Fund is automatic unless a private plan with more favorable benefits is elected by the employer and the employees. Employee contributions cannot be higher than the 1% they would pay the State Fund and employers must assume any balance of the cost. Employees not electing private plans are covered by the State. Thus, even if a majority of the employees of the risk elect a private plan, the minority are covered in the State Fund. The New Jersey Law goes one step forward and provides automatic State Fund coverage unless the employer and a majority of the employees elect a private plan with benefits at least equal to the State Fund benefits and contributions of employees no higher than $\frac{3}{4}$ of 1% required for the State Fund. All employees in a risk are, therefore, covered entirely in the State Fund or by a private plan. The recently enacted New York Law requires the employer to choose either a carrier or the State Fund or to self insure.

As to financing, the California benefits are entirely supported by taxes on employees (1% of the first \$3,000.00 of annual wages). New Jersey divides the cost between the employees who pay $\frac{3}{4}$ of 1% of the first \$3,000.00 of annual wages, and the employer who pays the remainder of the cost of the plan (for employers in the State Fund the cost will range from $\frac{1}{10}$ of 1% to $\frac{3}{4}$ of 1% according to the experience rating formula in the law.) The New York benefits are also on a contributory basis with employees paying $\frac{1}{2}$ of 1% of the first \$60.00 of weekly wages and the employers paying the balance of the cost.

One result of the flat 1% tax rate for the State Fund in California is that it is unattractive for a risk which requires a higher rate to insure with an insurance company. The law contains a provision which states in effect that the writing of private plans must not result in substantial "adverse selection" against the State Fund. This has been interpreted by the administrative authorities to mean that each insurance carrier must maintain within its own business a percentage of female exposure at least as high as the percentage of female exposure statewide. In contrast, the New Jersey law makes an attempt to measure the individual risk's hazard by experience rating on a basis similar to that used in experience rating unemployment compensation although the

New Jersey Fund also initially collects 1% of taxable payroll from all risks insured by the fund. Under the New York law the State Fund as well as the private carriers may charge the rate required by the risk.

III. A POSSIBLE STATISTICAL PLAN FOR CASUALTY COMPANIES NEWLY ENTERING THE GROUP ACCIDENT AND HEALTH FIELD

For presentation purposes, this section of the paper has been divided into two parts: (First) a discussion of a possible method of producing policy year experience, and (Second) a discussion of a plan for producing calendar year experience. Both policy year and calendar year figures have proven to be very valuable in conducting the Group Accident and Health business although they have been used for essentially different purposes. The calendar year experience has ordinarily been used to watch current trends of a general nature, while the policy year experience has been utilized for more exacting and detailed research and analysis.

A. Policy Year Statistics:

It might be well to review first the various types of premium accounting generally used throughout the Group Industry, because the accuracy of the policy year exposure depends to a large extent upon the type of premium accounting used. The principal type of premium accounting used to date is sometimes called the "unit rate" method. This type of accounting seeks to obtain an accounting of each unit of exposure for each individual insured as exactly as may be practicable and produces an accurate earned premium when the unit premium rate is applied to the exposure. A second type is a variation upon the first type and might be called the "simplified unit rate" method. Here the exact exposure is figured only at the beginning of the insurance month, by the insured company rather than the carrier, and is assumed to remain constant throughout the month when computing the earned premium for the month. (A further possible variation is a method which makes an accounting of only the number of employees insured as of perhaps the beginning of the insurance month. Of course, such an accounting method is only possible in conjunction with a premium rate per employee.) A third method might be called the "taxable payroll" method, the taxable payroll being the Unemployment Compensation payroll (a payroll consisting of the first \$3,000.00 of each employee's annual wages). In this case the earned premium is produced by applying a rate per \$100.00 of "taxable payroll" to the taxable payroll of the risk, with the employer usually forwarding a copy of the Unemployment Compensation tax form to the carrier quarterly, so that the computation of earned premium can be verified. At present only a relatively small portion of the country wide Group Accident and Health premiums in force is on a taxable payroll basis. Recently an unknown volume of the premium written under the several existent State Disability laws was written on a taxable payroll basis. The only advantage of any importance demonstrated by the taxable payroll method of accounting is its simplicity. To more than counterbalance this feature are the many disadvantages and dangers which this system produces. It is not necessary to dwell on the possibilities of a situation where simultaneously the premium might decline and the exposure remain constant during a period of recession.

For policy year experience purposes, however, use of either of the first two premium accounting bases explained above, the "unit rate" and "simplified unit rate" methods, enables the computation of an almost exact exposure by simply dividing the earned premium of the policy year, before retroactive credits or dividends are deducted, by the annual premium rate per unit of exposure in force during the policy period. At present, computation of any sort of reliable standard exposure from earned premiums obtained from the taxable payroll method of premium accounting is decidedly experimental. This is because it is not known, at present, whether or not the wage distribution used in computing taxable payroll premium rates reflects the wage distribution of the business in force. Considerable study and research on this subject should be conducted and it is perhaps a proper subject for the attention of the Casualty Actuarial Society.

The first step in compiling the policy year experience for any plan of insurance is to produce the exposure for each risk separately by the above method and to transfer the resulting figure to a "unit report" card which shows the name of the insured, the policy number and the coverage, and also has spaces for year by year premiums, premium rates, percentages of female exposure, actual exposures and losses.

The common practice is to express exposures for the various Group Accident and Health sublines in the following units:

<i>Subline</i>	<i>Unit of exposure</i>
Weekly Indemnity	\$10.00 of Weekly Indemnity
Employee Hospital Expense . .	\$1.00 of Daily Benefit
Dependent Hospital Expense . .	\$1.00 of Daily Benefit
Employee Surgical Expense . .	Basic Surgical Schedule (for example \$150.00 maximum Surgical Schedule)
Dependent Surgical Expense . .	Basic Surgical Schedule (for example \$150.00 maximum Surgical Schedule)
Employee Medical Expense . . .	\$3.00 Home or Hospital, \$2.00 Office benefit for all except In-Hospital plans where the unit of exposure is \$1.00 Daily Benefit
Dependent Medical Expense . . .	\$3.00 Home or Hospital, \$2.00 Office benefit for all except In-Hospital plans where the unit of exposure is \$1.00 Daily Benefit
Employee Laboratory and X-Ray Expense	The Employee
Dependent Laboratory and X-Ray Expense	The Employee.

The principal problem in compiling the policy year experience seems to be the accumulation of claim data. Depending on how much information is desired, and to what extent it is desirable to break down the losses, the necessary

claim information can either be recorded from closed claim files or from claim drafts. One large Group insurer has found it advantageous to keep the drafts as simple as possible and to record detailed claim information, such as is needed for policy year experience, from closed claim files.

If claim data was recorded from closed claim files, it is advantageous to record the following data, all of which is not strictly necessary for policy year experience but which is valuable for independent studies, such as continuation, average duration, and special premium rate studies, to name just a few:

- Policy number
- Claim identification number
- Employee or Dependent coverage
- Subline under which claim is paid
- Sex of claimant
- Age of claimant
- State of principal employment of claimant
- Policy month and year
- Disability month and year
- Waiting Period (days)
- Limit of Indemnity Paying Period (weeks)
- Limit of Hospital Benefit Period (days)
- Limit Miscellaneous Benefits (\$)
- Limit Surgical Schedule (\$)
- Cause of Disability
- Number of Days for which benefits paid
- Amount of Payment.

Regardless of the source of the claim information for policy year experience, the claims for the mature policy year can be accumulated by risk separately for each subline. It is also recommended by the writer that a division of the claims to maternity and other than maternity disabilities be made for all sublines with maternity coverage and that hospital claims, in addition, be split to Daily Benefit and Miscellaneous Benefit payments. It is also advantageous, in the case of Dependent coverages, to split the losses to claims incurred by wives and by children. Such an accumulation of losses on an individual risk basis can be accomplished easily and economically by utilizing mechanical transfer-post machines which post the accumulated losses by policy year split as desired to individual risk loss cards. Also a risk loss card affords a ready reference from which to obtain losses for both prospective and retrospective experience rating purposes, if experience rating is to be accomplished prior to the maturity of the policy year, as is generally the practice in the Group Industry at present.

From the risk loss card, the incurred claims of each risk for the policy year under consideration for each subline (separated to maternity and other than maternity disabilities) can be posted to the unit reports.

The next step is to record the policy year data from the unit report on punch cards, so that the experience can be tabulated. At least the following

information ought to be recorded on the policy year experience punch card from the unit report, so that maximum value can be obtained from the experience:

Policy number

Subline

Waiting Period (days)—for Weekly Indemnity or Medical Expense Coverage only

Limit Indemnity Paying Period (weeks)—for Weekly Indemnity or some Medical Expense Coverages

Limit Hospital Benefit Paying Period (days)—for Hospital Expense or type (1) Medical Expense coverage

Miscellaneous Benefit Multiple—for Hospital Expense coverage only Full or Ex-Maternity Coverage

Code to describe Surgical or Laboratory and X-Ray Schedule

Code to describe Maternity Coverage

Indemnity or Reimbursement basis of paying benefits

State

Units of Exposure

Percentage of female exposure

Incurred Losses—For Dependent coverages, the claims should be split to claims incurred by wives and by children; for Hospital Expense coverage the losses should be split to Daily Benefits and Miscellaneous Benefits

Cause of Disability Code—Other than maternity
Maternity

Policy month and year.

The next step is the tabulation, presentation, and utilization of this basic data. The principal and most important function of the policy year experience is that it provides a test of the adequacy of the pure premium underlying the current manual rates. Group Accident and Health basic premium rates are generally quoted for an all male risk (in practice an all male risk is considered to be any risk with less than 11% female exposure). For other than all male risks, the basic premium rate is roughly loaded by the percentage of female exposure to the total exposure of the risk. Therefore, an integral part of testing the pure premium underlying the manual premium rates is to check also the female loading practice. This female loading procedure assumes that the claim cost per unit of female exposure is twice that per unit of male exposure. By tabulating the actual exposures and losses by percentage of female exposure, an all male exposure for risks in each percentage of female exposure can be obtained by increasing the actual exposure by an amount equal to the ratio of female to total exposure times the actual exposure. In other words, an all male exposure for each percentage of female exposure can be obtained by doubling the female exposures. Thus, a pure premium can be obtained for risks falling within each percentage of female exposure on an actual and on an all male basis. If the assumption underlying the female loading procedure is correct, the all male pure premiums for risks falling within each percentage of

female exposure should be practically equal. In practice, rather than tabulate the experience for each percentage of female exposure, brackets of female exposure are used (0%, 1% but less than 11%, 11% but less than 21%, etc.).

If, on examination of the pure premiums on both an actual and all male exposure basis, the assumption underlying the female loading procedure (that the claim cost per unit of female exposure is twice that per unit of male exposure) is found to be incorrect, various statistical procedures can be utilized to obtain an all male claim cost reflecting a more accurate assumption as to female morbidity. For example fitting a "least squares" line or a second degree curve to the data are common methods of determining an all male pure premium. The decision as to which of these two methods would be used depends on whether or not female morbidity is assumed to be proportional to the percentage of female exposure.

Different assumptions, however, as to female morbidity rates must be made if the experience is that of a plan on an ex-maternity basis (female morbidity equal to 150% of male morbidity is a frequent assumption which at present has not been tested too thoroughly). In the case of Dependent coverage, the percentage of female exposure has, of course, no bearing on the pure premiums and as a result the pure premiums are shown on an actual basis.

It is common practice to express the pure premiums on a monthly rather than an annual basis for easy comparison with the manual premium rates which are almost universally shown on a monthly basis. Direct comparison with current manual rates can be obtained by simply loading the monthly pure premiums by the percentage of gross premium needed by each company for expenses.

B. Calendar Year Statistics:

The method of producing calendar year statistics outlined in this section is that of one of the large Group writing companies and is only one of the various methods in use in the industry at present. This carrier compiles its calendar year experience by producing for each Group Accident and Health subline a loss ratio on an "incurred losses-earned premium" basis. The incurred losses for the calendar period under consideration can be produced in several ways. One method which can be used incorporates the principle of the so-called "notice average" basis of determining claim reserves (described in Chapter IX page 251 of "Casualty Insurance Principles" by Thomas F. Tarbell). Another possible procedure for obtaining incurred losses is based upon the maintenance of an exhibit of the development, month by month, of the paid losses for each accident month. The paid losses for each accident month of the experience period being considered can be projected to an ultimate basis by using the experience of past calendar years. The valuation date should be at least three months subsequent to the last accident month of the experience period if accuracy is to be expected. It might be well to mention that the month by month development of accident-month paid losses for past calendar years can at times be misleading. The occurrence of epidemics, for example, can invalidate to some degree the indications of past experience in the development of losses, especially in regard to weekly indemnity experience. This and other variable factors should be observed and considered when projecting the claims to an ultimate basis.

The use of "Statement" earned premiums, however, poses a difficult problem. Because of "adjustment premiums" and premiums which for various reasons enter the accounting records late, statement earned premiums, produced by combining the written premium and the increase or decrease in the unearned premium reserve, are frequently not a measure of the actual exposure. One method of smoothing the earned premiums so that they are a reasonable measure of exposure is to assign all premiums, regardless of charge date, to the months during which the premiums were actually earned rather than assigning all expired premium to the months in which charged. The earned premiums produced by this type of procedure must be given sufficient time to mature to a reasonably ultimate basis.

Because drafts rather than closed claims are commonly used when producing this experience, a breakdown of the experience in more detail than has been described (a loss ratio for each Group Accident and Health subline) is not feasible. If, however, closed claims are utilized to compute incurred losses, a more detailed development of the experience could be attempted.