

CASUALTY ACTUARIAL SOCIETY

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EXAMINATION FOR ENROLLMENT AS ASSOCIATE

PART I

May 11, 1948

Time 9:30 to 12:30 o'clock

1. (a) Prove that the sum of the squares of the deviations of any set of variates from their arithmetic mean, is less than the sum of the squares of their deviations from any other point.
- (b) Prove that if M_x be the arithmetic mean of observed values of X and M_y be the arithmetic mean of the corresponding observed values of Y , then the point (M_x, M_y) is on the line of regression of Y on X .
2. State the principle upon which curve-fitting by the Method of Moments is based. Then use that Method to fit a curve to the following data. Give the reason for your choice of the form of the curve.

$w:$	1	2	3	4	5
$R:$.983	.986	.992	1.000	1.011

3. (a) From the following data, determine the value of r_{xy} .

Year	X	Y	Year	X	Y
1907	11	11	1912	14	12
1908	13	9	1913	15	12
1909	10	14	1914	16	7
1910	12	14	1915	11	12
1911	16	9	1916	12	20

- (b) Outline three methods which are used in weighting prices in the construction of price index numbers, and state the advantages and disadvantages of each of them.

4. Ω is an infinite class of cases in each of which a certain continuous variable, X , has a unique value. In 100,000 cases drawn at random from Ω , the values of X have been observed, and the characteristics of their distribution support the hypothesis that the cases in Ω are normally distributed with respect to X . The first and second moments of the observed values about $X = 100$, computed by grouping them in class intervals of width $w = 1.00$, were found to be -1.120000 and 101.3377 , respectively.

- (a) Estimate (to the nearest .01) the probability that if a single case were drawn at random from Ω , the value of X in that case would be found to lie within the interval $M - 1$ to $M + 1$, where M is the arithmetic mean value of X for the entire class Ω . Set forth the assumptions involved in your estimation.

Given: $\frac{1}{\sqrt{2\pi}} e^{-\frac{t^2}{2}} = \phi(t) = .399$ for $t = 0$; $.397$ for $t = .10$

- (b) Estimate (to nearest 100) the minimum number of cases which would have to be included in a random sample drawn from Ω in order that the probability that the arithmetic mean value of X for the sample will lie outside the aforesaid interval, shall be not greater than .01.

Given: $A_{\phi} \Big|_{2.58}^{\infty} = \int_{2.58}^{\infty} \phi(t) dt = .005$

5. (a) Prove that $a_{\overline{m+n}} \equiv a_{\overline{m}} + v^m a_{\overline{n}}$

- (b) A man proposes to deposit D dollars in a savings bank on the last day of each month for k years, and to withdraw W dollars on July 1 of each year for t years, the first such withdrawal to be made six months after the last deposit. On each deposit the savings bank pays ordinary simple interest at the rate of $x\%$ per year from the first day of the month following the month in which the deposit is made; and in the account of every depositor, accrued interest is converted to principal as of the close of business on June 30 and December 31 of every year. Write a formula express-

ing in terms of x , k , t and W , the value which D must have in order that the balance in bank after the last withdrawal shall be exactly zero.

6. The values of $(1 + i)^n$ required in solving problems (a) and (b) in this question, are to be obtained by expanding the function in a binomial series.
- (a) Find the present value (to the nearest dollar) of an annuity of \$120 per annum payable in equal monthly installments for 5 years, if money is worth 3% effective and the first payment is to be made 61 months after the date of valuation.
- (b) A perpetuity providing for the payment of \$1000 at the end of every fifth year is to be converted exactly two years after the date of the last such payment, to an annuity due payable annually for 6 years. If money is worth 3% effective, what should be the annual rent of the annuity? Express your result in the form $(a \times b) \div (c \times d)$ in which a , b , c and d are numbers expressed to four significant figures. Do not take time to perform the operations of multiplication and division therein indicated.

NOTE: The following values, each of which is stated for $i = .025$, will be useful in solving problems 7 (a) and 8 (a).

$$\frac{1}{a_{\overline{40}|}} = .039836$$

$$v^{10} = .78120$$

$$v^{20} = .61027$$

$$v^{30} = .47674$$

7. (a) What price shall be paid for a 5% non-callable bond of \$1,000 par value redeemable at \$1,070 on May 15, 1958, with interest payable on May 15 and November 15, purchased May 15, 1948, to yield exactly 5% nominal, convertible semiannually?
- (b) For the purchaser of the bond, outline a schedule for determining the book values thereof as of the dates upon which interest is

payable, and complete the entries in the schedule for such dates through May 15, 1950.

8. A building just completed has cost \$300,000. It is estimated that its life will be 40 years; that at the end of each decade thereof, except the last, \$20,000 will be required for renovation; and that at the end of its life, the building will have a salvage value of \$20,000.
- (a) Determine (to the nearest dollar) the sum which must be invested at the end of each year of its life, in a fund earning interest at an effective rate of 2½%, to cover the estimated requirements for renovation and to provide for replacement of the original cost less the estimated salvage value.
- (b) Write a formula expressing the amount in the fund at the end of the 25th year of the building's life, if withdrawals therefrom for renovations have been made exactly in accordance with the estimated requirements.

PART II

May 11, 1948

Time 1:30 to 4:30 o'clock

1. (a) The curve $x^2y + 12y = 144$ has one maximum point and two points of inflection. Find the area of the triangle formed by the tangents to the curve at these three points. Sketch the curve, showing the triangle.

- (b) Find the limit of $\frac{x^3 - 3x + 2}{x^3 - x^2 - x + 1}$ as x approaches 1.

2. (a) Find the function, $f(x)$, satisfying the following conditions:

$$D_x f(x) = \sec^3 x \quad \text{and} \quad f(0) = 0$$

(b) Evaluate:
$$\int_0^1 x^2 \sqrt{1-x^2} dx$$

(c) Prove that if $\theta < 1$, then
$$\int_0^{\infty} e^{\theta x} \cdot e^{-x} \cdot dx = \frac{1}{1-\theta}$$

3. (a) Find the length of the spiral of Archimedes, $\rho = a\theta$, from the origin to the end of the first revolution.

(b) Expand $\cosh x$ into an infinite power series in x . What proposition would one have to demonstrate in order to prove that the series converges to $\cosh x$ for every real value of x ?

4. (a) Prove that if $z = y^{\sin \phi}$, then
$$\frac{\partial^2 z}{\partial y \partial \phi} = z(1 + \log_e z) \frac{\cos \phi}{y}$$

(b) Evaluate:
$$\int_0^1 \int_{y^2}^1 \int_0^{1-x} x dz dx dy$$

5. (a) Given that $U_x = 2x^4 - 12x^3 + x^2 - 4x - 15$, find $\Delta^2 U_x$.

(b) Find the polynomial, $P(x)$, of lowest degree for which $P(0) = 1280$; $P(1) = 189$; $P(4) = 0$; $P(5) = 465$; $P(8) = 0$; and $P(10) = 0$.

6. (a) Given: $\rho(1000) = .474$; $\rho(2000) = .390$; $\rho(3000) = .338$; and $\rho(4000) = .305$. By interpolation, determine a value for $\rho(2500)$ and state the reason for your choice of the formula employed in your computation.

(b) Given the following table of values of $U_{x;y}$, determine by interpolation a value for $U_{3;2}$

	$y = 0$	$y = 5$	$y = 10$
$x = 0$:	0	75	300
$x = 5$:	25	200	525
$x = 10$:	100	375	800

7. (a) Find the sum of the first n terms of the series in which the x th term is

$$\frac{1}{(3x-2)(3x+1)(3x+4)}$$

If the series be infinite, to what value does it converge?

- (b) Find the sum of the first n terms of the series:

$$2 + 8 + 24 + 64 + 160 + \dots$$

8. (a) Prove that $\Delta^n o^m \equiv n(\Delta^{n-1} o^{m-1} + \Delta^n o^{m-1})$

- (b) On the assumption that third and higher differences of the function $p(x)$ are negligible, develop a formula for approximate evaluation of $\int_0^1 xp(x)dx$ in terms of $p(0)$, $p(1)$, and $p(2)$.

PART III

May 12, 1948

Time 9:30 to 12:30 o'clock

1. (a) One bag contains 5 white and 3 red balls, and another bag contains 4 white and 5 red balls. From one of them, to be chosen at random, 2 balls are to be drawn. Compute the probability that they will be of different colors.
- (b) A set S containing mn members has been divided into m subsets, each contain n members. Find the probability that k specified members of S are in the same subset, after r subsets have been examined and found not to contain any of the k specified members. ($1 < k \leq n$ and $0 \leq r < m$)
2. (a) If the value of x is to be chosen at random from the first one hundred positive integers, find the probability that $x + \frac{100}{x}$ will be greater than 50.
- (b) Of two purses, one originally contained 3 dimes and 1 penny, and

the other contained 3 pennies and 1 dime. A coin was drawn from one and dropped into the other, but it is not known from which purse the coin was taken. Then from each purse, a coin is drawn, and each of the drawn coins is found to be a penny. If neither of them be replaced, what are the odds against obtaining two pennies in a second drawing of coins, one from each purse? Set forth the assumptions upon which your answer is based.

3. If $6n$ tickets numbered $0, 1, 2, 3, \dots, 6n - 1$ be placed in a bag, and three of them be drawn out simultaneously, show that the probability that the sum of the numbers on them will be exactly $6n$, is

$$\frac{3n}{(6n - 1)(6n - 2)}$$

4. (a) Prove that in an indefinite series of independent trials in each one of which the probability of success is a certain constant $p > 0$, the expectation (i.e., the probable value) of the number of failures preceding the first success is $\frac{1-p}{p}$.
- (b) A and B propose to play a sequence of games. Of any single game of the sequence, the probability that A will be the winner is $\frac{1}{2}$ and a drawn game is impossible. The loser in each game is to pay one dollar to the winner; and the sequence is to continue until one or the other has lost all of his money. A has m dollars and B has n dollars. Find the probability that A will win all of B's money.
5. (a) Express in commutation symbols the net level annual premium for each of the following policies issued at age 30 for a face amount of \$1000.
- (i) Ten year term insurance;
 - (ii) Ten payment twenty year endowment insurance;
 - (iii) Whole life insurance providing for the return, without interest, upon the death of the insured, of all net premiums paid prior thereto, in addition to the face amount of the policy.

- (b) A certain life insurance policy provides for the payment of \$10,000 in event of death between the date of issue and age 41, \$9,700 in event of death between ages 41 and 42, \$9,400 in event of death between ages 42 and 43, and so on, the amount of insurance decreasing \$300 each year until it reaches \$1000 at age 70, after which it remains constant. Premiums are payable annually from date of issue to age 64, inclusive. Show that the net level annual premium for this policy issued at age x may be expressed as follows:

$$\frac{10,000M_x - 300(R_{41} - R_{71})}{N_x - N_{65}}$$

6. (a) Develop by the retrospective method an expression in commutation symbols for the 35th terminal reserve for a twenty payment life insurance policy issued at age 30 providing \$2000 in event of death before age 60 and \$1000 in event of death after age 60; and show that the result is equivalent to the expression for the same reserve obtained by the prospective method.
- (b) Define the three groups into which all life insurance policies are divided under the New Jersey Standard system of reserve modification. What modification determines the minimum reserves by that Standard for policies in each group?
7. From the equation which expresses the Gompertz-Makeham law of mortality, derive the formula:

$$l_x = ks^x g e^{cx}$$

Prove that if l_x be determined in accordance with this formula, and if w be defined by the equation: $2c^w = c^x + c^y$, then: ${}_n p_{xy} = ({}_n p_w)^2$

8. The symbols $l_x^{(r)}$ and $m_x^{(r)}$ are defined as follows:

$l_x^{(r)}$ = the number of widows living unmarried at beginning of age x ;

$m_x^{(r)}$ = the number of widows remarrying during age x .

Develop a formula in terms of v , $l_x^{(r)}$ and $m_x^{(r)}$ for the present value (W) of an annuity due of one dollar per annum payable annually so long as a widow now of age x shall live and remain unmarried, together with a provision that B dollars shall be paid immediately upon her

remarriage. Define symbols for the commutation columns which would facilitate computations of such present values, and then express W in terms of such symbols.

PART IV

May 12, 1948

Time 1:30 to 4:30 o'clock

1. (a) Discuss briefly the special considerations involved in the underwriting of non-cancelable accident and health policies.
(b) Explain the difference in coverage between a Primary Commercial Blanket Bond and a Blanket Position Bond.
2. (a) Distinguish between the following residence theft coverages:
 - (i) Divided Coverage;
 - (ii) 50% Blanket Coverage;
 - (iii) 100% Blanket Coverage;
 - (iv) Specific Coverage.(b) The XYZ Lumber Company receives shipments of lumber by rail and the freight cars are unloaded at a platform on the premises. Deliveries to customers are made by the company's trucks. The company also operates a retail hardware and farm equipment store located on the same premises. List the coverages, and the hazards which each insures against, which you think should be included in a complete program of liability insurance protection for this risk.
3. (a) Outline the basic steps in the determination of the premium for a policy of boiler insurance including bodily injury liability coverage.
(b) Of the factors relative to individual private passenger automobile risks which influence the judgment of underwriters in the selection of such risks for liability insurance, name the three which you consider to be the most important, and give the reasons for your answer.
4. (a) Distinguish between paragraphs One (a) and One (b) of the

insuring agreement in the Standard Workmen's Compensation and Employers' Liability Policy.

- (b) What are the meanings of the terms "Ex-Medical Coverage" and "Full Medical Coverage" as they are used in Workmen's Compensation Insurance?
5. (a) What are the desirable characteristics of a premium basis?
- (b) How is allocated claim expense treated in the making of premium rates for insurances of the following forms: Burglary; Glass; Automobile Liability; Workmen's Compensation; Boiler and Machinery?
6. (a) Why are loss and expense constants included in premiums for Workmen's Compensation Policies?
- (b) How are revised manual premium rates for "non-reviewed" classes determined in the course of any state-wide rate revision under the present procedure of the National Council on Compensation Insurance?
7. (a) Discuss the problems involved in using experience on policies written in accordance with the Automobile Fleet Plan in the making of manual premium rates for automobile liability insurance on commercial vehicles.
- (b) A large percentage of automobile owners have always been uninsured. Discuss the possibility of developing a low-limits automobile liability policy, to be offered at rates lower than present rates for insurance under the basic limits of \$5,000/10,000 for bodily injury and \$5,000 for property damage, as a means of attracting some of the uninsured automobile owners.
8. In periods of general price and wage increases, such as those we have witnessed in 1946 and 1947, the natural lag in the experience available for premium rate making is of serious consequence. As a means of correcting the effects of the lag, discuss:
- (a) the possibility of including a wage level factor in formulae for the

determination of manual rates for Workmen's Compensation Insurance; and

- (b) the possibility of including a general price index factor in formulae for the determination of manual rates for such lines as automobile property damage liability and glass insurance.

EXAMINATION FOR ENROLLMENT AS FELLOW

PART I

May 11, 1948

Time 9:30 to 12:30 o'clock

1. Discuss the comparative attractiveness of industrial securities as an investment for casualty insurance companies and explain what tests may be used to determine their desirability.
2. (a) Discuss the effect of government finance on monetary stability.
(b) Describe the position of the government in the credit system.
3. (a) Under what circumstances does speculation create security from the standpoint of the economic theory of risk?
(b) What was the threefold aim accomplished by the adoption of Workmen's Compensation Acts?
4. (a) Name three objects of the legal requirements of insurable interest.
(b) What are the five elements of insurance coverage?
5. (a) Name three mandatory provisions in the New York Law which must be included in an automobile policy.
(b) Discuss the powers of the New York Superintendent of Insurance with respect to rates for various lines.
6. (a) State the provisions of the All Industry Casualty and Surety Rate Regulatory Bill relating to the making of rates.
(b) The All Industry Bill contains certain provisions intended to preserve competition and independent operation for the various insurers. Name three of these provisions relating to

- i) Independent insurers
 - ii) Members or subscribers of rating organizations
7. As a result of the McCarran Act, many states have enacted rate regulatory laws which are intended to prevent the application of certain Federal anti-trust laws after the expiration of the present moratorium on July 1, 1948. Name these anti-trust laws, state briefly what they prohibit and explain the effect they have had on the drafting of state rate regulatory laws.
 8. The stated purpose of the All Industry Bill and similar bills is to promote the public welfare. Do you believe the regulation of the casualty insurance business resulting from the adoption of these bills by the various states will be more beneficial to the public than the regulation in effect prior to the Supreme Court decision in the South Eastern Underwriters case? Discuss.

PART II

May 11, 1948

Time 1:30 to 4:30 o'clock

1. (a) Contrast the New York Automobile Liability and Public Liability Experience Rating Plans in their treatment of excess limits coverage.
- (b) Why is it necessary to place a limitation on the size of each loss to enter the rating in a "no-split" experience rating plan?
2. Under the National Council experience rating plan for Workmen's Compensation, it is possible for a risk having a 40% loss ratio year after year to produce a substantial debit modification. How would you justify this result to a policyholder?
3. (a) Explain the purpose and calculation of expected loss rates in the National Council experience rating plan for Workmen's Compensation.
- (b) The experience rating plan of the National Council for Workmen's Compensation produces an off-balance. Explain why this occurs, the effect it has from a rate-making viewpoint, and what steps are taken, as a result, in the rate-making procedure.
4. The Workmen's Compensation experience rating plan of the National

Council is now available on an interstate basis in a number of states and provides for a single modification applicable to all the states included in the rating.

Discuss the advantages and disadvantages of having a different modification for each state and indicate one way in which such modifications might be calculated.

5. (a) The excess pure premium ratio table used in developing the Workmen's Compensation Retrospective Rating Plans A, B and C is keyed to an expected loss ratio of 59.8%. Why was it necessary to make an adjustment before entering the table for the determination of the insurance charges for states with different expected loss ratios and how was this adjustment made?
 - (b) Discuss briefly the advantages and disadvantages of combining Workmen's Compensation with other third party liability lines under a single retrospective rating plan.
6. (a) Name and describe briefly four types of voluntary medical or hospital insurance plans in use in this country.
 - (b) Discuss the advantages and disadvantages of cash as opposed to service benefits in a program of health insurance.
7. (a) Compare the provisions for financing and administration in the Social Security Act for old age insurance with those for unemployment benefits.
 - (b) The Federal Old Age Insurance Tax is frozen at the 1.1% level until 1950. Do you believe this is preferable to having it increase in accordance with the schedule originally set up? Discuss.
8. State the essential features of a complete social insurance scheme. What are the three outstanding characteristics of existing American programs for relief and social security that constitute major issues today and how can insurance carriers help in settling these problems?

PART III*May 12, 1948**Time 9:30 to 12:30 o'clock*

1. (a) A common method of computing the unearned premium reserve on Workmen's Compensation business is to set up the deposit premium with a term of one year and then apply the semi-monthly unearned premium factors. In view of the fact that many policies in this line are on a periodic audit basis, do you think this method produces a proper unearned premium reserve? Discuss.
- (b) Discuss the requirements of Schedule P with respect to the following items:
 - i) Allocated loss expense reserve
 - ii) Unallocated loss expense reserve
 - iii) Incurred but not reported loss reserve
2. (a) Give a brief summary of subdivision 2 of Section 326 of the New York Insurance Law concerning reserves for outstanding losses and loss expenses for lines of insurance other than Liability and Workmen's Compensation.
- (b) Under what circumstances may the provisions of subdivision 2 of Section 326 be modified?
3. (a) Describe three methods of testing the adequacy of case reserves prospectively.
- (b) A 1948 amendment to the New York Workmen's Compensation Law provides that the maximum monthly wage to be used in computing death benefits shall be increased to \$227.50. In addition, the percentages payable to dependents are increased in the case of children, widow without children, orphans, parents, brothers and sisters, grandparents and grandchildren. Discuss the effect of this law on Special Bulletin No. 207 and outline the necessary steps to be taken.
4. (a) What is the "equity" in the unearned premium reserve and what is its approximate size for a multiple line casualty company?

- (b) What effect does the change in the "equity" in the unearned premium reserve have on the "true" surplus of an insurance company during a period of rising premium volume?
5. (a) Discuss the advantages and disadvantages of statistics on a calendar year written-paid basis, a calendar year earned-incurred basis and a policy year basis for:
- i) Automobile Bodily Injury liability insurance
 - ii) Glass insurance
- (b) Why is the method used in Automobile rate making for developing policy year experience reported as of twelve months to an ultimate basis not suitable for Workmen's Compensation rate making?
6. (a) What type of experience is the Burglary, Theft and Robbery Statistical Plan, which became effective on January 1, 1948, designed to develop? Explain briefly how the desired results can be obtained from the information required by the plan.
- (b) A casualty company doing a nationwide business decides to make a classification and size of risk analysis of its Workmen's Compensation experience by punching the unit report information. Design the necessary premium and loss cards and make such comments as you believe essential to describe the method that should be followed.
7. The current high level of wages is being given considerable attention by state supervisory authorities in their consideration of proposed rate revisions for Workmen's Compensation. What external statistics are available on this point and do you believe they provide an adequate answer? Discuss.
8. (a) Demonstrate that the number of accidents in casualty insurance is distributed in accordance with the Poisson Distribution.

- (b) Describe briefly a method that might be used to test classification relativities.

PART IV

May 12, 1948

Time 1:30 to 4:30 o'clock

1. (a) In order to prepare the Casualty Insurance Expense Exhibit, how would you allocate the following expenses by line of insurance for a small casualty company?
- (i) Inspection
 - (ii) Allocated Claim Expense
 - (iii) Unallocated Claim Expense
 - (iv) Individual Risk Rating
 - (v) Policy Writing
- (b) Outline briefly a method of handling premium collections on punch cards.

2. From the following data taken from the records of a casualty insurance company, prepare the income and disbursement pages of the annual statement blank of the National Association of Insurance Commissioners. The information given refers to transactions in 1947 and assets and liabilities as of December 31, 1947. In your answer you may use the number of each item rather than the description to conserve time:

1. Net premiums written	\$ 60,000,000
2. Interest, dividends and real estate income	3,000,000
3. Gross profit on sale of ledger assets	100,000
4. Gross increase by adjustment in book value of ledger assets	20,000
5. Losses paid	20,000,000
6. Paid for investigation and adjustment of claims	6,000,000
7. Underwriting expenses paid (prior to deduction of $\frac{1}{2}$ of 1% of mean invested assets)	23,090,000
8. $\frac{1}{2}$ of 1% of mean invested assets	90,000
9. Investment expenses paid	200,000
10. Dividends to stockholders	1,000,000
11. Gross loss on sale of ledger assets	50,000
12. Gross decrease by adjustment in book value of ledger assets	500,000

13. Book value of real estate	2,000,000
14. Book value of bonds	69,000,000
15. Book value of stocks	20,000,000
16. Cash	7,800,000
17. Premiums in course of collection less than 90 days due	10,000,000
18. Premiums in course of collection over 90 days due 12/31/47	100,000
19. Interest, dividends and rent accrued 12/31/47	200,000
20. Market value of stocks over book value 12/31/47	1,000,000
21. Book value of bonds over amortized value 12/31/47	200,000
22. Reserve for losses 12/31/47	40,000,000
23. Reserve for investigation and adjustment of claims 12/31/47	1,000,000
24. Reserve for unearned premiums 12/31/47	30,000,000
25. Underwriting expenses unpaid 12/31/47	4,000,000
26. Capital 12/31/47	5,000,000
27. Surplus 12/31/47	29,800,000
28. Unearned premiums 12/31/46	25,000,000
29. Unpaid losses 12/31/46	35,000,000
30. Unpaid loss expense 12/31/46	900,000
31. Unpaid underwriting expense 12/31/46	3,500,000
32. Interest, dividends and rents accrued 12/31/46	300,000
33. Market value of stocks over book value 12/31/46	1,500,000
34. Surplus 12/31/46	28,770,000
35. Capital 12/31/46	5,000,000
36. Ledger assets (as per balance) 12/31/46	96,620,000
37. Premiums in course of collection over 90 days due 12/31/46	150,000
38. Book value of bonds over amortized value 12/31/46	100,000

3. Make use of the information provided in question 2 to prepare the assets and liabilities pages of the annual statement blank of the National Association of Insurance Commissioners. Again use item numbers instead of descriptions to conserve time.
4. Make use of the information provided in question 2 to prepare the underwriting and investment exhibit of the annual statement blank of the National Association of Insurance Commissioners. Again use item numbers instead of descriptions to conserve time.

5. Discuss the problems involved in creating an Assigned Risk Plan for Automobile Bodily Injury and Property Damage Liability Insurance and include an indication of the various types of applicants for this coverage.
6. The Workmen's Compensation rate-making procedure is frequently criticized because it does not key the rates to an up-to-date level of experience. Could this defect be remedied by keying to the latest one or two calendar years' experience? Discuss.
7. Expenses for most lines of casualty insurance are included in the rates as a percentage of the rate. Is this theoretically correct? What items of expense would it be better to load in another manner? Discuss.
8. A casualty company writing a large volume of Automobile business had had a decrease in the average outstanding amount of Automobile Bodily Injury claims at December 31, 1947 as compared with December 31, 1946, but little change in the number. Having in mind the effect of inflation on the cost of claims, the company wishes to determine the reason for the situation, fearing that the level of reserves on this line may be inadequate. Outline the investigation you think should be made.