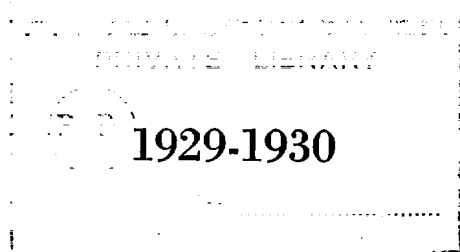


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NOTICE.

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PROCEEDINGS

NOVEMBER 19, 1929

NEW YORK MOTOR VEHICLE FINANCIAL RESPONSIBILITY ACT

PRESIDENTIAL ADDRESS, GEORGE. D. MOORE

When a few months ago I began considering subjects which might be suitable for my address at this meeting, it occurred to me that none would be more timely than the New York Motor Vehicle Financial Responsibility Act approved in April of this year to become effective September 1, 1929. During the summer, however, because of the great amount of publicity given this subject, I once thought it would be too hackneyed for presentation at this date. But on further consideration I concluded that as this law has received so much attention from the casualty insurance fraternity generally, as well as the public, it should not be neglected by this Society.

In this state there are now probably about two and a quarter million motor vehicles registered. It is well known that New York stands first among the states in the number of its registered cars. As regards the number of persons per motor vehicle, however, this state does not rank high. The National Automobile Chamber of Commerce reports that in the year 1928 there were 6.56 persons per motor car in New York State; this ratio gives New York thirty-fifth place among the states, California heading the list with only 2.87 per car.

The increase in the ratio of automobiles to population throughout the country has been rapid and with this development the problem of automobile accidents has been growing more and more serious. The National Safety Council has estimated the number of deaths due to all accidental causes during 1928 in the United States to be about 96,000, approximately 27,500 or about 29 per cent. of which were attributable to automobile accidents. According to reports received by this organization, there were during the first three-quarters of this year a total of 21,100 deaths

due to automobile accidents in this country. This represents an increase of about 7 per cent. over the total for the first three-quarters of the year 1928. The indications are that the total number of deaths during the present year will approach 30,000.

I have made a similar study of data for New York State from the periodical reports of the Bureau of Motor Vehicles. These reports indicate that there were during the first three-quarters of the year 1928 a total of 1684 deaths in this state, while in the first three-quarters of this year the total number was 1893, representing an increase of over 12 per cent. Thus the indications are that the increase in deaths during the first three-quarters of this year as compared with the same period of last year was greater in New York State than in the country as a whole, 12 per cent. as compared with 7 per cent. During last year there were in this state 2582 deaths due to motor vehicle accidents or 22.4 per 100,000 population, which is about the same as the rate for the country as a whole. From estimates which I was able to make from the data at hand, it appears that the number of deaths in New York State during the present year will exceed 2900.

All of the data bearing on automobile accidents which I have presented have been in reference to deaths. The ratio of personal injuries to deaths has been variously estimated and appears to differ considerably between the states in which statistical information of this sort is available. This ratio for the year 1928 was 28 in Connecticut, while in New York it was 38. The National Bureau of Casualty and Surety Underwriters has estimated the ratio for the country as a whole to be 35, while the latest experience of one of the large casualty companies indicates that this ratio is 100. In the case of insurance carriers, this ratio is no doubt affected by the inclusion of a large number of minor injuries which would not be reported to state motor vehicle bureaus.

From our point of view it is interesting to note that it is now pretty definitely established that automobile deaths throughout the country outnumber those due to industrial hazards. This should be of special interest to us in view of the anxiety which industrial accidents have caused us for many years. We now have a more serious problem in automobile accidents.

In New York there were reported to the Department of Labor during the first nine months of this year, 1345 industrial fatalities excluding deaths due to motor vehicles. But for this same period

there were 1774 deaths in this state due to accidents involving motor vehicles, motor vehicle fatalities exceeding industrial deaths by 32 per cent. Automobile fatalities have exceeded reported deaths arising from industrial causes in the State of New York for a number of years.

I do not wish to weary you with statistical data bearing on this subject, as this information is so well presented yearly in reports published by agencies, such as the National Safety Council, The National Automobile Chamber of Commerce and State bureaus of motor vehicles. I merely wish to call your attention to the situation which provides the background for the growth of the movement to secure the financial responsibility of owners of motor vehicles, the operation of which is proving to be such a menace to life and limb.

HISTORICAL BACKGROUND

State laws which have thus far been enacted and measures which have been proposed in the attempt to establish financial responsibility for damages caused by the operation of motor vehicles are of two general types, namely, compulsory insurance acts and the so-called financial responsibility laws. Massachusetts is the only state in which there exists legislation of the former type which is substantially general in its application. There are, however, now twelve states* which have enacted motor vehicle financial responsibility laws. Of these, Connecticut was the pioneer. The law of that state as originally enacted became effective January 1, 1926 and provided substantially that whenever any person had been convicted of reckless driving, speeding, operating a motor car while intoxicated, evading responsibility upon the occurrence of an accident, or had caused the death of or injury to any person or had caused damage to property of at least \$100 the commissioner of motor vehicles could require of such person, proof of financial responsibility as specified in the act. Upon the failure of the offender to furnish the proof required, the commissioner was given authority to suspend the registration of the motor vehicle involved and thereafter refuse to register any other motor vehicle owned by such person until

*California, Connecticut, Iowa, Maine, Minnesota, New Hampshire, New Jersey, New York, North Dakota, Rhode Island, Vermont and Wisconsin.

the required proof was furnished. Effective provision was also made for dealing with non-residents. The Connecticut Act was repealed and reenacted with amendments in 1927, the insurance provisions being materially broadened.

Prominent among the early students of the subject of automobile liability security measures was Mr. Edward C. Stone, United States Manager of the Employer's Liability Assurance Corporation. He brought forward a scheme which became widely known as the "Stone Plan." The New Hampshire Law which became effective June 1, 1927, was closely modeled upon this plan. This law provides that upon proper petition in an action to recover damages for injury to person or property resulting from an automobile accident, the court shall make a preliminary inquiry and if it is found that the automobile operator was probably solely to blame for the accident, the court shall order the defendant to furnish such security as the court considers sufficient to satisfy final judgment within certain limits. If this order is not complied with, the commissioner of motor vehicles must suspend the defendant's license and the registration of any motor vehicle owned by him. Provision is also made for the exclusion of defaulting non-resident motorists from the privilege of operating or having operated in the state any motor vehicle owned by him.

In Maine, Minnesota, Rhode Island and Vermont there were laws adopted in 1927 similar in most respects to the Connecticut law. All of these laws provide for proof of financial responsibility in cases where a motorist is guilty of conduct contrary to the principles of safety on the highway as specified in the Act.

Another proposal for securing the financial responsibility of motorists which met with very widespread favor was the so-called Pennsylvania Plan. This plan was passed by the Legislature of Pennsylvania in 1927 and New York in 1928, but in each state the bill was vetoed by the executive. This plan provides for suspension of all driving licenses and automobile registrations of the judgment debtor in case a final judgment for injury to or death of a person or for damage to property caused by the operation of a motor vehicle remains unsatisfied for a specified period. Such suspension remains in force and no new licenses or registrations can be issued until the judgment shall have been discharged. The unfortunate peculiarity of this plan is that no limitation is set upon the amount of the judgment required to be paid.

It is interesting to note that of the seven states—Connecticut, Maine, Massachusetts, Minnesota, New Hampshire, Rhode Island, and Vermont—enacting liability security laws prior to the year 1929, all were of the New England section except Minnesota. The large number of registered motor vehicles and the great population per square mile in Massachusetts, Connecticut and Rhode Island, might well have intensified the problem in those states.

THE NEW YORK LAW

In December, 1928, there appeared the Safety-Responsibility Bill sponsored by the American Automobile Association. It was framed by the special National Committee of Seventeen of that Association in collaboration with its executive committee. This measure which was announced by the Association as "a bill to promote safe driving and to remove the irresponsible driver from the highways" incorporated features of the Connecticut and New Hampshire laws and the Pennsylvania plan. With but few changes the Safety-Responsibility bill of the American Automobile Association was enacted as Article 6-A of the Vehicle and Traffic Law of the State of New York entitled "Financial Responsibility for the Operation of Motor Vehicles" and became effective in this State on September 1, 1929.

Briefly the Act provides that any person who fails to satisfy within specified limits any final judgment for damages on account of personal injury or property damage caused by the operation of a motor vehicle or who is convicted of or pleads guilty to a violation of certain provisions of the Vehicle and Traffic Law, shall lose the right to operate a motor vehicle or to have an owned motor vehicle operated in the State of New York until such judgment is satisfied to the extent required by the Act and until proof of the financial responsibility of such person for future accidents is furnished. The Act provides for the satisfaction of damages to the extent of at least five thousand dollars for an injury to one person in one accident and, subject to this limit for each person, of at least \$10,000 for an injury to more than one person in one accident, and for damages to property of at least one thousand dollars resulting from any one accident. It, therefore, follows that a person must be in a position to satisfy judgments that may be returned against him on account of motor vehicle accidents

or run the risk of having his rights as an owner or operator of a motor vehicle in the state revoked.

It is not my purpose to present a detailed analysis of the provisions of the New York Act. This would be superfluous in view of the publicity given the Act in the insurance periodicals and the daily papers and the excellent analyses of the meaning and application of this Act which have been prepared and distributed during the last few months by the Honorable Albert Conway, Superintendent of Insurance, the New York State Automobile Association, the New York State Bureau of Motor Vehicles, the National Bureau of Casualty and Surety Underwriters, insurance companies, and other interested agencies. It is rather my intention to discuss some of the problems concerning the business of casualty insurance which have arisen in connection with the practical operation of the Act.

INSURANCE PROBLEMS

I

COVERAGE AND FORMS

We shall first give our attention to the question of policy forms and actual coverage required by the Act. Concerning this point the law provides that:

“Proof of ability to respond in damages when required by this act may be evidenced by the written certificate or certificates of any insurance carrier, duly authorized to do business within the state, that it has issued to or for the benefit of the person named therein a motor vehicle liability policy or policies as defined . . .”

This law, of course, also contains the usual provision that the required proof may be evidenced by the bond of a surety company, a bond with individual sureties or the deposit of a sum of money or collateral. The law defines a motor vehicle liability policy and sets forth the extent of the public liability and property damage liability coverage which must be afforded thereunder. It also provides for approval of all motor vehicle liability policy forms by the superintendent of insurance, and further that any

form of policy which contains certain provisions is to be so approved. An interesting and important feature of the law in this connection is the enumeration of certain provisions to which the policy is subject but which the policy contract need not necessarily contain.

It is quite evident that it was not the intention of the framers of this law to require special policy forms. The standard policies of the companies previously accepted in the state prove entirely satisfactory and the use of a certificate and an endorsement with such policies was approved by the supervising authorities. There are two forms of motor vehicle liability policies in use, the vehicle policy and the driver's policy. The former covers the liability of the named assured arising out of the ownership and operation of any motor vehicles owned by such person and specified in the policy. This form of policy must cover "the insured named therein and any other person using or responsible for the use of any such motor vehicle with the consent, expressed or implied, of such assured." This feature being termed "omnibus coverage" in our insurance parlance. The driver's form covers the liability of the named assured for the operation of any motor vehicle except a motor vehicle registered in the name of the named assured. Since individuals who own motor vehicles are required to take out the former type of policy it is proper from a practical standpoint to eliminate, under the latter type, coverage with respect to automobiles owned by the named assured.

At this point it might not be amiss to discuss briefly the administration of the Act in regard to the actual use of the certificates. As stated above, there are two kinds of certificates in use, one to be filed in connection with the vehicle policy and the other, the driver's policy. In the first place, the question arises as to when and under what circumstances a certificate is brought into play. Not every policyholder is concerned with these certificates. It is not necessary that any certificate be filed until an insured becomes subject to the Financial Responsibility Law. As a matter of fact, the Bureau of Motor Vehicles has ruled that it will not accept evidence of financial responsibility from any motorist until he has become subject to this law. Upon the occurrence of this contingency the insured obtains a certificate from his insurer which he completes by an affidavit that he is the owner named in the certificate and that all motor vehicles registered in his name

are properly covered. This certificate he then files with the Commissioner of Motor Vehicles as evidence of the existence of insurance as required by the law. This filing is made at Albany or New York if a suspension exists, or at any issuing office in other cases. The certificate includes a detachable stub which is returned to the insurance company for its records. In addition to the filing of an original certificate, an owner or an operator will be required to produce a certificate every time he has occasion to obtain or renew registration plates or an operator's license.

In connection with the use of the adopted endorsement the question arose regarding the coverage afforded by policies outstanding and providing coverage beyond the effective date of the new law. As of September 1, 1929, each outstanding direct liability policy to which the endorsement would have been attached had the policy been written on or after that date, was construed as giving the coverage required by the Financial Responsibility Law. In lieu of actually attaching the endorsement to these policies, the Insurance Department indicated that each company might file a letter signed by an executive officer of the company stating that the company would, on and after September 1, construe such policies as giving the same coverage as they would have given if the endorsement had been attached. Among other things, however, these letters stated that the companies would attach the endorsement to any policy providing coverage required by the Financial Responsibility Law, upon request of the policyholder. Needless to say, this procedure greatly simplified matters for the companies in making provision for this coverage at the inception of the law.

Another question which arose in connection with the coverage to be granted under the Financial Responsibility Act, is the relation between the coverage required under this law and that under Section 17 of the Vehicle and Traffic Law (formerly Sec. 282-b of the Highway Law) applicable to public automobiles. The latter law provides in substance, that operators of motor vehicles engaged in the business of transporting passengers for a consideration, with certain exceptions, must file with the Commissioner of Motor Vehicles for each motor vehicle to be operated, either a bond or a policy of insurance conditioned for the payment of any judgment, provided that such bond or policy may limit the liability of the surety or insurer on any one judgment to

\$2,500 for personal injury or death, and \$500 for damage to property, and on all judgments recovered upon claims arising out of the same accident, to \$5,000 for personal injury or death, and \$1,000 for property damage. It is noted at once that the limits provided under this law are lower than those required under the Financial Responsibility Law. Operators of public automobiles, however, have no different status, so far as the new law is concerned, than the operators of any other types of automobiles. So far as the payment of judgments for public liability is concerned, if the public automobile operator has a policy for \$2,500/\$5,000 limits, the Financial Responsibility Law does not affect him unless a judgment in excess of those amounts is assessed against him and he is unable to satisfy it to the extent of \$5,000/\$10,000. A similar situation exists with respect to property damage.

If a public automobile operator is found guilty of the violation of provisions of the Vehicle and Traffic Law referred to in the Financial Responsibility Law, he will then be required to file evidence of financial responsibility to the extent required by the latter law. Under the compulsory provisions of the Vehicle and Traffic Law, he will already have coverage to the extent of at least \$2,500/\$5,000 public liability, and \$500/\$1,000 property damage liability. Under the Financial Responsibility Law he is then obliged to have coverage for at least \$5,000/\$10,000 public liability, and \$1,000 property damage liability. For complete coverage the financial responsibility endorsement may then be attached to his policy. Where a company issues a statutory policy (the form required for compliance with Sec. 17 of the Vehicle and Traffic Law) and then an excess policy on the standard form, bringing the total coverage on the risk up to \$5,000/\$10,000 public liability, and \$1,000 property damage liability, the endorsement may be attached to the excess policy, appropriate reference being made to the statutory policy. The statutory policy gives coverage which meets the requirements of the Financial Responsibility Law, except of course, that the coverage is not for the same amounts. Therefore, if the excess policy, written on a standard form is endorsed, the coverage is completely in line with that required by the Financial Responsibility Act.

In regard to the termination of insurance contracts, this law specifies the following:

The commissioner shall be notified of the cancellation or expiration of any motor vehicle liability policy or insurance certified under the provisions of this article at least ten days before the effective date of such cancellation or expiration. In the absence of such notice of cancellation or expiration said policy of insurance shall remain in full force and effect.

It would appear to be very much to the advantage of the companies to comply with the requirement in the last sentence above regarding notice of expiration. Otherwise, we may find that some policies will, like the brook of Tennyson's poem, go on forever.

In compliance with these provisions of the law the Bureau of Motor Vehicles has approved a printed form of notice of cancellation and expiration of policies under which certificates have been filed. In this connection it should be noted that when a policy is to be renewed it is not necessary that an expiration notice be filed.

II

RATES

The premium rates charged for coverage under the Financial Responsibility Act are subject to approval by the Superintendent of Insurance. The authority of the Superintendent in this respect is established by the provisions of Section 67-a of the New York Insurance Law which became effective July 1, 1927. Referring to companies qualified to issue liability insurance policies as required by the provisions of the highway law, this section reads in part as follows:

Every such liability insurance or surety company authorized to issue in this state insurance policies or surety bonds to owners of motor vehicles, pursuant to the provisions of the highway law, shall file with the superintendent of insurance, in such form and detail as he may prescribe, the classification of risks and a schedule of the premium charges and rules which he proposes to use and charge in connection with the issuance of such motor vehicle liability policies or bonds, none of which shall take effect until the superintendent of insurance shall have approved the same as adequate for the risks to which they respectively apply.

As previously stated in this paper, the Financial Responsibility Act is a part (Article 6-A) of the Motor Vehicle and Highway Traffic Law. The rates to be charged for insurance under the Financial Responsibility Act, are, therefore, automatically brought under the provisions of Section 67-a of the Insurance Law.

As the companies had no means of knowing whether any change in rates ought to be made on account of the new law it was deemed inadvisable to make any such change on September 1. The rates applicable to public liability and property damage liability in effect prior to that date were therefore continued in effect. It will, of course, be some time before sufficient experience is accumulated under the Financial Responsibility Law to determine the effect, if any, which this new law will have on insurance costs. However, in the meantime a penalty charge was adopted to be imposed upon the assured who subjects himself to the Financial Responsibility Act by virtue of a violation of any of the sections of the Vehicle and Traffic Law as provided in the Act. The charge, which is 10 per cent. of the premium, went into effect at the inception of the law and is imposed by most of the carriers writing this coverage in the state. This charge is determined on the basis of the total limits for which coverage is provided and must be made for the entire period during which a certificate is required.

In this connection it is interesting to note the introduction of the principle of merit rating in connection with the operation of the financial responsibility laws in the states of New York and Connecticut. Recalling the operation of the automobile merit rating plan, it will at once be evident that there are now three possible rates for a private passenger car in the State of New York: (1) the manual rate; (2) 10 per cent. below manual in cases fulfilling the conditions required by the merit rating plan; and (3) the manual rate plus 10 per cent. in cases of automobile owners and operators required to file a certificate with the Commissioner of Motor Vehicles for any cause except failure to satisfy a judgment. In the State of Connecticut the principle of merit rating is being applied even more extensively in connection with the Financial Responsibility Act of that state. As amended effective July 1, 1929 that law provides for the classification of owners and operators required to furnish evidence of financial

responsibility into three classes designated Class A, Class B and Class C. The law further provides that those owners and operators placed by the Commissioner in these classes must pay a greater premium for insurance than those not so classified. The penalty for Class A is 10 per cent., for Class B, 25 per cent. and for Class C, 50 per cent. Thus it is seen that in the State of Connecticut there are five possible rates for an owner or operator of a private passenger car; the manual rate, the manual rate less 10 per cent. under the merit rating plan, the debits in Classes A, B or C.

INDICATED EFFECT OF OPERATION OF LAW

From such fragmentary data as could be secured, an attempt was made to see what the indications were as to the increase in the percentage of motor vehicles insured in the State of New York as a result of the introduction of the new law. Premium volume was the most readily obtainable. The combined figures of eight companies show that the public liability premiums for the month of September, 1929, were 10 per cent. in excess of those for August of this year. But for 1928, the September premiums were only 76 per cent. of those for August. This premium volume, therefore, does indicate some increase. I might say that the corresponding ratios for property damage premiums were about the same. Premium volume, however, is not an altogether reliable indication as to the number of insured. For one company, the number of policies issued in September of this year exceeded that for August by 60 per cent. while the corresponding premium volume increased only 10 per cent. This was due to the increase in the proportion of lower-rated cars insured in September. From this it may, of course, be inferred that many of the less affluent motorists owning inexpensive cars decided to insure because of the new law.

There has been some expression of disappointment about the indicated increase in business. It would seem that in the face of this law, an automobile owner or operator would have considerable temerity to continue uninsured. However, it remains to be seen whether the shiftless who do not believe in anticipating trouble will agree with Sir John Falstaff that, "discretion is the better part of valor" and attend to securing proper coverage.

GENERAL

In writing on the subject of financial responsibility for damages caused by the operation of motor vehicles, Mr. E. C. Stone has admirably expressed the fundamental idea which should always be kept in mind by legislators in dealing with this matter. He states the following:

It must always be borne in mind that the real fundamental underlying evil is not that some persons who are wholly to blame for injuries occurring to others are financially irresponsible but that serious accidents do occur because of the use of automobiles.

The real remedy for the evil with which we are dealing is the reduction in the number of accidents and the prevention of all serious accidents. The aim of the financial responsibility acts is to make indemnity sure. But even assured indemnity is only a palliative. No adequate indemnity exists for the loss of life or permanent injury. This point of view is also expressed in the report of the Committee of Nine as follows:

The prime and fundamental need in relation to the operation of motor vehicles is to prevent accidents, and all regulatory legislation should be framed with that need in view. Prevention should not be subordinated to indemnity.

We must then inquire as to whether or not the financial responsibility laws provide an effective remedy. I believe that they have a powerful tendency in the right direction. Let us consider the two classes of motorists—the uninsured and the insured. The existence of such laws is a potential menace to the uninsured and, therefore, serves as a powerful incentive to careful driving. I do not believe that carelessness will be fostered in the insured motorist. He will realize that the notoriously reckless drivers and owners are in danger of encountering difficulty in obtaining insurance and that once a motorist becomes subject to the law, he must have insurance in order to continue to operate. These acts should then in time tend to eliminate from the highways the moral as well as the financial irresponsibles.

TRADE UNION BENEFITS AND OUR SOCIAL
INSURANCE PROBLEMS

BY

RAINARD B. ROBBINS

Trade unions have, for half a century, paid insurance benefits, quasi and pseudo insurance benefits, along with many other forms of allowances to which the term "insurance" is entirely foreign. An examination of the methods and experiences of trade unions will teach members of this body nothing in the way of actuarial theory. In fact, from the standpoint of an actuary the study of what trade unions have done is a good way of finding out what not to do. Nevertheless, this paper is written to review, very briefly, some of the characteristics of trade union benefit schemes, with the thought that we may learn something from these activities which will be of use in dealing with problems of importance to us as good citizens, if not as company actuaries.

Trade union organizations are formed for the purpose of collective bargaining in order to improve wages and working conditions. The basic units of union organizations are quite local and almost without exception a union is in existence for only a relatively short time before the members agree to unite in helping the less fortunate of their number by the payment of benefits in case of the occurrence of various contingencies, such as sickness, accident, death and old age. These are in addition to other benefits such as those paid in case of labor disturbances and unemployment.

One of the most common trade union benefits is the death benefit. Probably the simplest method of handling this benefit is to have either a tentative agreement or a hard and fast rule that each member shall pay a certain amount, say \$1.00 whenever a member dies, and that the total amount collected shall be paid to the beneficiary. An improvement on this method is to determine the amount to be paid in case of death and collect at once an assessment sufficient to produce this amount. This fund is kept on hand until a death occurs, at which time a union official is empowered to make payment to the beneficiary of the deceased and to levy another assessment so as always to have on

hand a sufficient fund to meet one death payment. A further step in the development of the assessment method provides for the allocation of a certain part of each payment of dues to a fund set aside for the payment of death benefits, the amount of the benefit having been fixed in advance.

While the death benefit is one of the earliest developments of trade unions, a disability benefit payable for time lost through sickness or accident is quite popular. There is a widespread feeling that the disability benefit is more important than the death benefit and there is no gainsaying that prolonged illness of the wage earner is a most serious matter today among our industrial classes. Disability benefits, as paid by most unions, consist of fixed weekly or monthly allowances taken from the general funds of the union, or from a special fund set aside for this purpose, and supported by a fixed part of regular dues.

In some unions a benefit payable at advanced age has arisen through a rule that what would usually be paid later as a death benefit may be paid to the member as a disability benefit, in case the member has reached an agreed-upon age and is unemployed. In such cases the death benefit disappears.

During the last twenty or thirty years a number of trade unions have arranged for the payment of old age benefits, either in the form of annuities or lump sum payments, made available after reaching a specified age and length of continuous membership. The defense for the lump sum payment is that it permits the old member who can no longer follow his trade to start some kind of a small business for himself. Doubtless we all have our doubts as to the value of this reasoning.

Another method used by trade unions in caring for old members is by means of so-called "Homes." In recent years a number of these homes have been constructed, at great cost, to care for the aged members of particular trades. In some cases these homes are also open to members who are permanently disabled through dismemberment or through such diseases as tuberculosis.

In connection with practically all of these benefits, with the possible exception of the death benefit, it is important to note that the intention is to pay only in needy cases. Especially in case of disability due to age, and in case of the regular retirement pension, it is usually planned to pay only if no other substantial means of support exist. A claimant looks upon a life insurance

company as a responsible corporation which must pay claims regardless of the financial status of the claimant, and regardless of the fate of the corporation. Trade union benefits, on the other hand, are usually considered somewhat as gratuities contributed by the members, the union being merely the instrument for making payment. This point of view is supported by the fact that a trade union is not usually liable in the same sense as is an insurance corporation. It can at any time, through the proper vote of members, increase, decrease or eliminate benefits of any kind.

With rare exceptions, trade unions have set up their benefit schemes without actuarial advice. The usual method at the beginning is to arrange for assessments which will support the benefit payments for a year or two and trust to luck or increased assessments for the future. Many plans have required the scaling of benefits or the increase of assessments, or both, and not a few benefit plans have been abandoned entirely.

A number of statistical reports have recently been published regarding the benefit schemes of trade unions. Some of these reports have appeared in recent issues of the *Monthly Labor Review*. A special bulletin of the United States Department of Labor (No. 465) has recently been published entitled "Beneficial Activities of American Trade Unions." Industrial Relations Counsellors, Incorporated, has just published a preliminary report, prepared by Murray W. Latimer, entitled "Pensions and Other Old Age Benefits for Trade Union Members in the United States and Canada." This report points out forcibly the insufficiency of the support for most of the pension plans of trade unions. No actuarial technique is required to realize that practically all trade union benefit plans are conducted only by a cash disbursement method and that, without readjustment, most of the present plans must fail.

If these are the facts, how can we hope to profit by studying them? Certainly not as actuaries, and yet we must bear in mind that in their crude way these trade unions have recognized and met needs which have not been met satisfactorily by any other means. We must also remember that these organizations represent large numbers of our citizens and that recognizing, as they do, these various needs which have not been met, we may expect them to use their influence to get results in some way or

other. It seems not improbable that we will have in this country, in the relatively near future, some form of sickness and accident benefits, old age benefits, death benefits and unemployment benefits operating in such a way as to be applicable to very large classes of our industrial population. If this is a correct prognosis, it seems only the part of wisdom that our insurance experts should do everything in their power to guide this development along conservative lines in order to avoid, on a large scale, some of the deplorable consequences which we have seen on a small scale in many ill-advised insurance schemes.

Probably no greater contrast can be imagined than the difference in attitude of trade unions and insurance companies regarding the factor of safety in connection with a benefit plan. We are all thoroughly trained in the thought that insurance is only a promise and that as such it is no better than the ability of the promising party to fulfill its promise. For this reason we leave no stone unturned in our effort to devise methods of making as certain as possible that the insurance company will be able to meet its claims, and in case we should be lax in this regard innumerable state insurance departments are ready to lend their aid in seeing to it that the elements of safety are present.

With a trade union, the point of view is entirely different. Here we have a mutual gathering of men with a common interest. They see the need of unfortunate members and plan to meet that need without delay and with as little machinery as is absolutely necessary. These men are accustomed to assessing themselves. They have voted substantial assessments to support strikes. They have voted funds to support their leaders in various movements which they think will be of mutual benefit. They have voted funds to extend their organization, with the conviction that their strength is increased thereby. They are used to taking action on rather short notice to remedy situations as they arise and when these members are convinced of the advisability of a proposed benefit scheme, they vote just as confidently to undertake it without giving thought as to whether or not the assessments will be sufficient after a few years. In fact if a doubting Thomas should raise the question of the adequacy of the assessments the reply would probably be that there will be time to raise the rates when it is demonstrated by an empty treasury that they are too small.

The development of insurance in this country has been almost entirely through corporate bodies, issuing contracts involving fixed liabilities. The corporation estimates the risk as carefully as possible and then agrees to cover it for a stated consideration. We look with disfavor upon any assessment form of insurance and it is the common opinion that any inadequate rate life insurance scheme is worse than no insurance arrangement at all. The work of trade unions suggests that there is another point of view. Even though a benefit plan may finally fail, with apparent loss to those who have not yet benefited at the time of failure, there is the point of view that the plan may have been worth while for the service it rendered before failure. Particularly may this view be defensible in connection with benefits involving hazards which cannot be sufficiently defined at present to attract the corporate method of insurance.

There has always been in this country a stubborn opposition to government insurance of any form. We have consistently attempted to furnish desired insurance service by private means through corporations formed voluntarily to conduct this business. This point of view is deeply rooted with us and as our social problems become more persistent our effort is continually to devise methods by which our private corporations may meet our needs.

A number of industrial nations have attempted to meet their social insurance needs by means of national insurance schemes. We cannot avoid national insurance in this country by denying the need for the benefits. Organizations of industrial workers will see to that. The most helpful attitude would seem to be an open-minded study, and if the need exists for more widespread participation in insurance benefits than seems feasible with our present methods, we must ask ourselves if we can modify our procedure to such an extent as to enable our private corporations to meet the existing needs.

It is significant that within the last two months statements have been made on this subject by three leaders of thought, each statement apparently being made without knowledge of the statements of the others. All three take practically the same point of view. President Herbert Hoover, in conversation with Mr. Paul F. Clark, President of the National Association of Life Underwriters, is reported as follows:

"The President said, according to Mr. Clark, that the immediate necessity of the life men was the consideration and solution of the matter of old age pensions. The country as a whole is concerned with a government bill of some \$500,000,000 for old age pensions and there are many private enterprises which would be insolvent if they had to meet the actuarial standards of reserves on their old age pension obligations.

"The President said he is strongly against government interference in business or any further extension of such interest, but that the life business should devote itself foremost to this great problem of old age pensions."

Leroy Lincoln, First Vice President of the Metropolitan Life Insurance Company, addressing the American Life Convention, made the following statement:

"It is rapidly becoming apparent that some vehicle, public or private, must be found for organizing and managing systems of old age pensions which shall be purely pensions without those frills which so materially increase the cost. Our companies must meet this problem and meet it squarely if we do not wish to see it taken out of our hands by government. Surely, the institution of life insurance in this country will be alert to devise and present appropriate means of satisfying the growing demand for this sort of protection on a basis which, both in cost and in administration, will be superior to any service which government may be expected to provide."

Thomas I. Parkinson, President of the Equitable Life Assurance Society, addressing managers and agents of that Society, is reported as follows:

"President Thomas I. Parkinson said that there was no demand upon the life insurance companies today so great nor any need so urgent as for some form of old age pension plan. He sounded a warning note when he told the assembled managers and agents that the life insurance business should undertake to solve this problem so that the demand will not go over the heads of the companies into the hands of government. He said the people would rather do this for themselves than have the government do it for them."

It was Hoover who threw down the challenge to life insurance executives in 1923 to take care of the problem of unemployment. The consensus of opinion among most life insurance officials is that the unemployment risk is not a proper one to combine with the risk of death. However, the sad fact is that problems

of unemployment are still with us and the indications are that they will be far more serious in the future than they have been in the past. Yet there is little evidence that insurance executives of any kind have given any serious consideration to the question of how we shall solve our unemployment difficulties.

Insurance executives are a unit in opposing state insurance of any form and they can cite economic abuses to support their point of view. Yet these men are too busy with the details of conventional business to give time and thought to the newer problems which are pressing for solution. Our pioneers are our theorists. Social workers see the problems and describe them. Economists have time to think about them and suggest solutions. These classes are not afraid of state insurance as such. They see problems which are not being solved and conclude that our present economic machinery is not adapted to the solution of such problems.

Along with the economist and the social worker in the study of these novel problems we find the trade union official. This man is a strange combination of the theorist and the practical. He must keep his feet on the ground since he is confronted daily with the needs of his members. He has learned how to approach legislatures in order to get desired laws enacted. He may not always be right, but because of his prominence among his members and his obligations to them he persists in efforts to obtain results which seem likely to be helpful to the members.

If we permit these classes to be our pioneers, we must accept the consequences of our own inertia. Each year sees additional states passing legislation favorable to old age pensions. Organized labor favors such legislation and so expresses itself in resolutions of the Convention of the American Federation of Labor. Quite aside from the merits of the case these are pertinent facts.

Possibly the state is the proper organization to undertake some forms of insurance coverage which have not proved popular with private corporations. Certainly we cannot continue to deny the seriousness of this suggestion so long as private enterprise fails to undertake these risks while various states are doing so.

It would seem that the business of insurance has developed along the lines of least resistance. The simpler and more obvious hazards were the first to be insured. We have left practically untouched some of the more complicated hazards, probably for

the very reason that they are complicated. To provide a retirement allowance for all persons reaching a given age, regardless of the financial status of the individual at the time, would cost enormous sums of money. Furthermore, from a social standpoint this is not necessary. Socially our need is for a scheme by which benefits will be available for those who have reached retirement age but have not succeeded in collecting sufficient wealth for modest comfort. If we can devise equitable arrangements by which only the needy will receive old age benefits, the cost of the insurance will be enormously decreased. Here is an essential difficulty for a private life insurance corporation. The view at present is that a corporation must carry out its contracts regardless of the financial status of the recipient of benefits. This rule results in many payments which are of little social value since they are received by persons who have no real need for them. Whether or not it is advisable to establish a custom of paying old age benefits only to the needy is surely worthy of consideration. If this should be deemed advisable we must face the question of whether or not our corporate machinery can be used for this purpose, whether some new form of organization can be devised for the purpose or whether we will fall back on the state to furnish such benefits.

NOTES ON THE ORIGIN AND DEVELOPMENT OF
REINSURANCE

BY

EDWIN W. KOPF

I. INTRODUCTION

During the past few years there has been a quickening of interest internationally in the major aspects of reinsurance history, theory and practice. The peculiar development of the national and international economy of the European countries since the World War has apparently made reinsurance the backbone of the whole of private property insurance. This accounts for the greatly extended literature on the subject in recent years. Classic doctrines of risk, theorems in the calculus of probabilities, principles of insurance law, long neglected, are being brought forward by writers on reinsurance.* There is vitality and depth in recent reinsurance literature which has been lacking in the literature of the direct lines for many a decade. Thorin's recent work^{72†} is one sign of revival. Unfortunately not much has been contributed to this discussion recently in the United States.

Herrmannsdorfer³⁵ has set forth admirably the aspects of the newer movement on the legal side. Cruciger,⁹ Rendtorff-Golding,²² Moldenhauer,⁶⁶ Thorin,⁷² Villotte,⁷⁵ Hagens²⁸ and others have dealt with it effectively on the side of practice and with its broader economic and historical significance. The subject is of such scope and intricacy that no one author in recent years has been able to describe adequately more than a few aspects of reinsurance. The purpose of the present paper is to present notes and leading ideas which may, I hope, lead to more comprehensive studies in this country, and possibly to the development of suitable texts in the English language for the use of our members and students.

*The historical development of the economic and mathematical theory of risk, in its relation to insurance and reinsurance, will be discussed in a later paper.

†Numbers refer to bibliography in Part III of this paper.

Fundamentals

In the most widely accepted sense, reinsurance is understood to be that practice where an original insurer, for a definite premium, contracts with another insurer (or insurers) to carry a part or the whole of a risk assumed by the original insurer. By insurers we mean all persons, partnerships, corporations, associations, societies, associations operating as Lloyd's, inter-insurers or individual underwriters authorized by law to make contracts of insurance. We may define insurance as an agreement by which one party, for a consideration, promises to pay money or its equivalent, or to do an act valuable to the insured, upon the happening of a certain event or upon the destruction, loss or injury of something in which the other party has an interest. The insurance business is the business of making and administering contracts of insurance.

Insurance contracts are of two types.* Those which engage merely to pay a sum of money on the happening of an event, or merely to begin a series of payments on or after the happening of a certain event, are *contracts of investment*. Contracts of insurance which engage to pay money or its equivalent, or the doing of acts valuable to the insured, upon destruction, loss or injury involving things, are *contracts of indemnity*. And so, reinsurance may be *second insurance* of (a) contracts of investment and/or (b) contracts of indemnity. There may exist, therefore, two types of insurance business, depending upon which of these two organic contracts the business engages to administer.

Risks Carried by the Insurer

The need for reinsurance arises out of the fact that a first or primitive insurer bears two distinctly different major risks: (1) the risk that the events insured against will happen among a

* (1) *Dalby v. India and London Life Assurance Co.* 15 C. B. 365. (1854) at p. 387. See also: *India and London Life Assurance Co. v. Dalby*, 15 Jur. 982; (2) *Suttles v. Railway Mail Association* 156 App. Div. 435, 438-440, 141 N. Y. S. 1024; (3) *Campbell v. Supreme Conclave etc.*, 66 N. J. L. 274, 49 Atl. 550; (4) *Dover Glass Works v. Amer. Fire Ins. Co.* 1 Marv. (Del.), 32, 29 Atl. 1039; (5) *Nye v. Grand Lodge, A. O. U. W.*, 9 Ind. App. 131; 36 N. E. 429; (6) *Trenton Mut. L., etc., Ins. Co., v. Johnson*, 24 N. J. L. 576, 585. See the following for collected cases: 25 Cyc. 702; Joyce, *The Law of Insurance*, 2nd edn., Vol. I, pp. 123-128.

number of *homogeneous* risks; (2) the risk that certain events insured against will happen among a *heterogeneous* group of risks to one or several insureds entitled by contract to an exceptional payment in money or its equivalent, or entitled to exceptional, costly service. This idea has been set forth by Adan (in his "Importance de la limitation des risques dans les Assurances sur la vie." *Moniteur des Assurances*. Paris, 1870). Adan uses a simple instance in life insurance practice, which applies in principle to any other insurance transaction.

Case 1: An insurer contracts to pay \$10,000 to the beneficiary of each of 806 persons insured by him at 21 years of age, in event of the death of the insured during the contract year. This group is homogeneous in respect to amount insured and class of risk. He charges a net premium of 1.22 per cent., or \$98,332 to meet the expected claims in that year of age.

Case 2: Assume, however, that the insurer has accepted, as a second instance, a heterogeneous group composed of 805 risks at \$10,000 each and one risk at \$100,000. This produces \$99,430 in premiums.

If in Case 1, only 8 deaths actually occur with a uniform coverage of \$10,000 each, the premiums are \$98,332 and the claims \$80,000, leaving an underwriting profit of \$18,332. If in Case 2, the \$100,000 policyholder and seven \$10,000 policyholders die, the premiums are \$99,430, and the claims \$170,000, or an underwriting loss of \$70,570. We had in the first case the carrier of a group of primary, homogeneous risks, with only a slight hazard to him that the number of actual claims would exceed the expected. Against this slight hazard the insurer is supposed to hold paid-in capital and surplus (or "guarantee capital" in case he were a mutual underwriter). Slightly exceptional losses above the expected are to be made up by slightly favorable underwriting profits in the long run of the business. In the second case, the insurer is not only carrying a group of primary, homogeneous risks but also the secondary risk of *selective* loss through the death of the \$100,000 policyholder. The quality of the second group of risks is heterogeneous with respect to the carrier's interests.

Insurers have historically met the second risk through the practice of two varieties of coinsurance: (1) *external*, or true coinsurance or (2) *internal* coinsurance or *reinsurance*. (See glossary in Appendix.)

Purposes of Reinsurance

We may offer one more general remark, this time from Ehrenberg¹⁶ ("*Handbuch des gesamten Handelsrecht . . .*"): "Reinsurance achieves to the utmost extent the technical ideal of every branch of insurance, which is actually to effect (1) the atomization, (2) the distribution and (3) the homogeneity of risk. Reinsurance is becoming more and more the essential element of each of the related insurance branches. It spreads risks so widely and effectively that even the largest risk can be accommodated without unduly burdening any individual." Jahn⁴¹ (in his *Studien über Rückversicherung*) takes the practical view that "one of the major purposes of reinsurance is to permit the original insurer at least to break even on his transactions." Reinsurance and retrocession insure the insurance business. They keep insurance companies out of the "mortuary chapel." Jahn further insists that reinsurance should be an independent branch of the insurance business as distinctly different in law and practice from any *line* of insurance as one line differs from another. Moldenhauer⁵⁶ and many others advance the same philosophy. No valid argument seems to exist against this contention in the abstract.

"Assumption" or Substitution Practices as Reinsurance

I believe we should for the time being decline to view as "reinsurance" the practice of "assuming," "amalgamating" or "fusing" the established business of two or more insurers. That applies in part also to mere "substitution" procedure. These practices by some have been called "reinsurance."^{*} The partial or complete union of the business of two or more insurance companies, solvent or insolvent, may call for a new nomenclature. This was Walford's view (1871).

II. HISTORICAL NOTES ON REINSURANCE

Antiquity

There is nothing in the very early history of insurance which suggests practices that approach in any way our modern reinsurance procedure. The earliest reinsurances first appeared in transport, especially marine insurance, at a comparatively late

^{*}See: Sections 21, 22, 23, 24, 69, 72, 110, 163, 196, 236, 320 and 340. N. Y. Ins. Law for variety of senses in which word "reinsurance" is used.

date (14th or 15th centuries). Marine insurance in antiquity was conducted chiefly by individuals, more or less in a speculative manner, without a statistical foundation and without retrospective data on loss experience. Single ships and their cargoes in ancient times often had a value disproportionately large to other private holdings, and the whole of the private fortune of an insurer often hung on the outcome of a single voyage or marine adventure. The perils of the sea were greater also, considering the rudimentary state of the shipbuilder's art.

It can readily be understood why marine underwriters wanted someone to share their risks. After having effected insurances, whether on the ship, on the cargo or on both, or on the lives of the captain and crew, an underwriter often would become worried and try to sell parts of his contract to others and necessarily at a higher rate. At first risks on parts of voyages were assigned to others, usually the more dangerous parts.

First Recorded Reinsurance Contract

The first reinsurance contract on record relates to the year 1370, when an underwriter named Guilano Grillo contracted with Goffredo Benaira and Martino Sacco to reinsure a ship on part of the voyage from Genoa to the harbor of Bruges. Grillo offered to retain the risk on the voyage through the Mediterranean and to transfer to Benaira and Sacco the risk from Cadiz through the Bay of Biscay and along the French coast. Other arrangements of this kind were, no doubt, made in single instances for many years, but reinsurance contracts in the modern sense of the word were unknown.

As early as the twelfth century, marine insurance began to be transacted through the so-called "Chambers or Exchanges of Insurance," which had for their object, first, the promotion of the marine insurance business on a solid basis and, second, the settling of disputes arising among merchants and others concerned in bottomry and respondentia contracts. In later years, these Chambers or Exchanges of Insurance became corporate bodies and instead of remaining confined to the original function of regulating and registering insurance made by others, actually undertook an insurance business themselves. With the establishment and functioning of Lloyd's in 1710, there was a marked

decline in the transaction of insurance business through these Chambers or Exchanges.

There is a suggestion of reinsurance practice in the "Antwerp Customs" of 1609. Some mention of reinsurance practice is to be found also in the "Guidon de la Mer," a code of sea laws in use in France from a very early date. These marine regulations were consolidated and published at Bordeaux in 1647, and at Rouen in 1671. The author of the consolidations was said to have been Cleirac.

With the shift of centers of commerce from the south, southwest and west of Europe to the north, England's foreign trade grew. Marine insurance followed in its wake. Some underwriters found they could effect reinsurance with others. Underwriters were accustomed to assign parts of risks to others at lower rates, and these reinsurers had hopes of finding other persons who would take parts of these risks at still lower rates. This traffic in premium differences was so greatly abused that in 1746 it was forbidden. (19 Geo. II, c 37, Section 4). Under this statute, reinsurance was permitted only if the party whose risk was re-insured was insolvent, bankrupt or in debt and if the transaction was expressed in the policy to be a reinsurance. The statute was more or less of a dead letter and was repealed by 27 and 28 Vict. c 56, Section 1 on July 25, 1864.

Reinsurance in the Fire Insurance Business

The development of reinsurance in the modern sense may be credited chiefly to the fire insurance business. Following the industrial revolution during the last third of the eighteenth century, the growth of the factory system gave rise to the existence of things and interests which rendered insurance necessary in large amounts. Reinsurance developed slowly at first. Insurers of fire risks had, until the amounts of insurance requested became too great, adopted the practice of charging different premiums for different risk classes and by limiting their commitments in certain areas. Furthermore, fire insurance at its outset seems to have been cultivated largely by mutual institutions having assessment arrangements with their members. At the beginning of the nineteenth century, however, stock companies became more numerous in the fire insurance field. These offices soon learned that offering coverage

in large amounts, especially in areas of concentrated risk, was an exceedingly hazardous procedure. The stock companies could not appeal to their policyholders for assistance in event of calamitous losses as could the mutuals which had an assessment arrangement. And so coinsurance practices developed whereby the companies transferred the business which they felt they could not keep to other insurers by means of direct contracts between the other companies and the insured. We are now at the point where we may consider developments in the several important countries. The countries are mentioned in the order in which reinsurance practices seem to have arisen.

GERMANY

The First Automatic Reinsurance Treaty

The first fire reinsurance treaties seem to have had their origin in Germany shortly after 1820. According to the records, the *first obligatory or automatic reinsurance treaty* was effected in 1825 by the "*Vaterlandische Feuerversicherungs Gesellschaft*" in Elberfeld. Theretofore, coinsurance practices and facultative reinsurance practices had played the major role. This treaty of 1825 was concluded with the "*Compagnie Royale d'Assurances Contre L'Incendie*," in Paris. Most of the reinsurance on record for Germany during the first half of the nineteenth century, was covered, however, by coinsurance, by facultative reinsurance and by direct writing companies, not by reinsurance companies.

Reinsurance business seems to have been conducted, moreover, in Germany by *domestic* direct-writing companies. This, however, permitted competitors to know too much about each other's business. Hence, it became the practice to offer reinsurance facultatively to foreign companies, chiefly French companies. And here was the germ of international reinsurance; it was to flower fully under Carl von Thieme a half-century later.

In the meantime, the number of different objects offered for insurance and their value rose with the development of manufactures during the early part of the nineteenth century. This strengthened the need for reinsurance. We may note here the law of May 8, 1837, in Prussia, where foreign insurance companies were required to have official approval in order to transact business. The law also required that the amount of fire

insurance which could be closed by one company on one risk must not exceed 10,000 thalers. This was done to check tricky practices in double insurance. Many foreign insurance companies withdrew entirely from the transaction of direct insurance in Prussia as a result of this law. The domestic fire companies in Germany were not therefore in position to handle the whole of the business offered and began to demand reinsurance facilities.

Reinsurance of Mutual Fire Business with Stock Company, 1839

On October 1, 1839, the Aachen and Munich Fire Insurance Company entered into a contract with the *Privat-verein Gegenseitiger Versicherung* in Crefeld, which provided for the acceptance by the Aachen of surplus fire insurance on all immobile risks which the Crefeld society had mutually insured. The total sum to be reinsured was fixed at 1,400,950 thalers in accordance with the statement of risks attached to the treaty. The contract ran for a definite period from October 1, 1839 to January 1, 1843. It appears to have been renewed at least once after 1843, and 15 per cent. commission was then allowed to the direct writer. The important clause in the treaty was a provision for the *settlement of disputes by arbitration* in which respect the contract appears to have anticipated some of the French and Italian contracts.

Catastrophic Fires, Mid-Nineteenth Century

Perhaps the one force which gave reinsurance its greatest forward impulse was the group of catastrophic fires which occurred in the middle of the nineteenth century. The fire at Hamburg on May 4, 1842, was one of the greatest conflagrations of modern times. The total damage was, at that time, estimated to have been more than \$35,000,000. The buildings were mostly insured in the City Fire Fund, founded in 1667, and the fire of 1842 exhausted the treasury of that office. The British offices were interested in the fire to the extent of about \$2,000,000. A number of the German fire companies were very seriously embarrassed.

Development of Running-Mate Companies

There then arose the practice of developing subsidiary or running-mate companies in Germany to take the surplus business of parent institutions. The first organization of this kind was ascribed to the "*Niederrheinische Güter Assecuranz Gesell-*

schaft in Wesel," which caused to be formed the "Wesel Reinsurance Society." This society was to take uniformly a third of the business written by the parent company. The society survived long after the parent company passed out of existence and conducted a reinsurance business for many years under the name of "Vesalia." In the spring of 1925, the society went into bankruptcy. In the years after 1842, a series of direct-writing fire companies founded subsidiaries which operated *only* with the parent companies and did not enter the general market.

The First Independent Reinsurance Company

In 1846, the first independent reinsurance company was founded in Germany,—the Cologne Reinsurance Company. This was the idea of Mevissen. He held that an independent reinsurance company would be no competitor of the direct-writing companies and that it was certain to be welcomed by and to receive a good volume of business from those companies. Mevissen's idea of 1846 did not mature, however. For various reasons the company did not begin business until 1852, and then only with the assistance of considerable French capital. *This marked the establishment of reinsurance as a specific, independent branch of the business.* Out of small beginnings, this company began to prosper and its example began to attract other enterprising persons. During the first three years of its business life the Cologne Reinsurance Company extended its operations in Germany, Austria, Switzerland, Belgium, Holland and France, and then tried to arrange treaty contracts with English companies. It seems that domestic English reinsurance business, at that time, was quite unprofitable to the reinsurers and the Manager of the Cologne was obliged to keep out of the English market.

On June 24, 1853, a fire treaty was concluded between the Aachen and Munchener Fire Insurance Company and its subsidiary, the Aachener Reinsurance Company. This was an early example of a true "first surplus" treaty under which the reinsurer was allotted one-tenth of every surplus risk, with certain modifications in respect to various classes of risk enumerated in the contract. It is interesting to note that the Aachen-Munchener company had an earlier arrangement with *L' Urbaine*, Paris.

In the years 1871 to 1873, no less than twelve independent reinsurance institutions were founded in Germany, of which very few survive today. The pressure of competition led to unwholesome practices, and soon many of these newly formed companies found themselves in dire straits.

In branches of insurance, other than fire insurance, we find no definite tendency in the '70's toward the establishment of separate reinsurance facilities in Germany. Ernst Albert Masius, in his "Rundschau" in 1846, deplored the lack of reinsurance facilities in hail insurance. Even at the present time, this branch of the business lacks adequate reinsurance service.

*Hail Reinsurance in Central Europe**

At the present time, the reinsurance of hail business in Central Europe is covered chiefly by German and Swiss companies, the *Muenchener Rück* and the *Schweizerischer Rück* leading. Some French and Italian companies, and to a smaller extent the Royal Exchange (London) participate. Certain other English and American reinsurers are interested.

Münchener Rückversicherungs Gesellschaft and Carl von Thieme†

The tendency toward effective, ably managed reinsurance business was marked in 1880 by the founding of the *Münchener Rückversicherungs-Gesellschaft*. The founder of the company was Carl von Thieme, second son of Julius von Thieme, director of the "Thuringia" in Erfurt. Thieme was born March 30, 1844, and died in 1924. From his early youth he was associated with the insurance business. After the Franco-Prussian war, Thieme went to Munich as general agent for the "Thuringia," where he soon demonstrated his marked gift for organization. This came to the attention of the business men of the city, and toward the end of the '70's, Thieme was asked to found a fire insurance company.

The narrowness of the scope of the "Thuringia's" operations led him to think, first, of providing real reinsurance facilities for fire insurance. He bore always in mind the possibilities of a monoline, multifield reinsurance business, truly international in scope. And particularly he felt that reinsurance could best

*Bela Deutsch in: *The Policyholder*: Oct. 23, 1929, p. 1749.

†See: Herrmannsdorfer³⁴ and Cruciger.⁹

be conducted as an independent and self-sufficient branch of the business. His first problem was to secure a volume of business from original insurers, or direct writing companies, and his second was to secure the business on terms which would permit an independent company to survive. Both these aims he accomplished by holding a significant or controlling stock interest in direct writing companies. He felt that if his voice were heard by the boards of directors of the companies, his company would be in position to secure business on fair terms. Thieme's internationalism was based on the idea of smoothing out the effects of purely local fluctuations in business, climatic and operating conditions. Losses on one branch of the business in one country could be counterbalanced by gains on another branch in the same country. Or losses on all lines in one country would be compensated by gains on all lines in another country. The internationalization of reinsurance was, in his opinion, the first step toward the atomization and the widespread distribution of risk. Thieme's policy was so effective that just before the War, his company was the largest single reinsurance institution in the world.

Toward the end of 1890, the M. R. established its foreign department in London under Mr. Carl Schreiner (afterwards head of the United States branch). American treaties began to be accepted in 1890. The M. R. entered New York State on October 19, 1898, Wisconsin, on December 1, 1897, and Massachusetts on November 16, 1898. To provide for its foreign business, the company's capital was increased from 10 to 20 million marks in 1898. At that time, Isaac Seligmann, Ernest Thalmann and John A. McCall were appointed trustees for the company in the United States. The M. R. passed through three major crises,—the Baltimore and San Francisco fires and the World War. The San Francisco fire cost the company 11 million marks. How the World War affected the M. R. may be shown by the fact that in 1914 the company had a premium income of 204,000,000 gold marks; in 1922, the income was 50,000,000 marks; and not until 1924 and 1925 did the annual premium volume exceed 125,000,000 marks. In 1927-1928, the premium income was quite close to the 1914 figure. In 1927, the M. R. was second to the Swiss Reinsurance Company (Zurich) as a world reinsurance carrier. Just before the War, 69 per cent. of the M. R.'s business was

derived from foreign sources. Of the total premium income of all the independent reinsurance companies in the world in 1913, 576,000,000 marks, 386 millions, or 67 per cent., was in German companies. A report on the first half century's work of the M. R. will probably be published in 1930.

The comparative volume of business transacted by the Swiss Reinsurance Company and the Muenchener Rück is shown below:

COMPARISON OF PREMIUM INCOME OF SWISS REINSURANCE COMPANY AND MUNICH REINSURANCE COMPANY, 1910 TO 1928

Year	Swiss Reinsurance Company (Swiss francs)†	Munich Reinsurance Company (gold marks)†
1910	35,635,000	166,632,000
1914	55,935,000	204,454,000
1918	126,200,139	253,809,000
1924	208,089,307	64,816,599
1925	236,919,870	126,526,188
1928	319,111,872	197,381,000

Source: Herrmannsdorfer²⁴

Reinsurance among Government Fire Insurance Offices in Germany*⁵⁶

The monopolistic and competitive fire insurance offices, chiefly in Prussia, also had a reinsurance problem. The *Verband öffentlicher Feuerversicherungsanstalten* was founded in 1872. This union established a reinsurance section which was reorganized in 1906. Under the new regulations of August 28, 1914, the Union takes a part of the insurances of its members up to 50 per cent. of the sum insured.

Reinsurance among Government Life Insurance Offices in Germany*⁵⁶

The public life insurance offices founded since 1911 have set up their own reinsurance institution, the "Deutschland," as a stock company.

*Post-War Reinsurance in Germany*⁶²

In 1922 and 1923, some 192 reinsurance companies were founded in Germany. These companies did a fairly good business while inflation lasted, but it soon became apparent that they were chiefly gambling in marks and in foreign exchange.

*Öffentlich-rechtlich versicherungsanstalten. See *Assecuranz-Jahrbuch*, Zusatzband, Vol. XLVIII for list; 41 property and 18 life insurance offices in 1928. †Swiss franc=19.3 cts.; German gold mark=23.8 cts.

The young reinsurance enterprises will in the natural course of events succumb under economic crises as did many of the newly formed German companies in the sixties and seventies of the last century.

The new amalgamation movement in Germany—the movement toward “Konzerne”—has already reduced the number of competing company units. The Allianz-Konzern, the most significant alliance of direct writing companies, is itself a unit of the Muenchener-Rück group. The “Konzern” idea does not yet dominate German private insurance, either in the direct or reinsurance field. The following list of “Konzerne” may be of interest: Aachener und Muenchener; Allianz; Deutscher Lloyd; Duncker; Frankfurter; Gerling; Hovad; Iduna; Mutzenbecher. (See: *Bolwin*, “Rückversicherung und Versicherungskonzerne” in *Zeitschrift für die gesamte Vers. Wissenschaft*, Vol. XXII, p. 308, Berlin).⁴

Some idea of the growth of the business by reinsurance companies in Germany may be obtained from the following table:

NET PREMIUM INCOME OF GERMAN REINSURANCE COMPANIES, 1887 TO 1917
(Unit 1,000,000 marks)

Year	Fire Insurance	Transport Insurance	Life and Accident Insurance	Miscellaneous Branches
1887-1890	19.5	6.4	.4	4.7
1891-1895	31.4	7.1	1.2	10.3
1896-1900	60.2	24.0	7.5	11.9
1901-1905	89.9	16.0	18.6	16.0
1906-1910	108.8	17.1	37.6	18.1
1911-1915	141.1	21.2	64.2	33.1
1916	149.8	21.6	66.5	34.5
1917	126.3	28.5	72.9	28.0

(After *Moldenhauer*: From available statistics. In *Manes' Versicherungswörterbuch*, 2d edn. p. 1077-1078).

For forty-two German reinsurance companies in 1927,* the reinsurance premium income was 215,453,583 R. M. on fire, casualty and marine accounts and 97,425,683 R. M. on the life account. The year 1929 was marked by the heaviest loss-ratios in recent German reinsurance history.

FRANCE

We find a note in the *Guidon de la Mer* to the effect that “if it so happened that the insurers after underwriting the policy repent of their engagement, or are afraid to encounter the risk, they

**The Review*, London, November 16, 1928.

are at liberty to reinsure; but still they can not prevent the insured from making his demand upon them in case of loss; for, having by their signature engaged to permit indemnity, they can not by any protestations to the contrary discharge themselves from their responsibility without the consent of the insured." This suggests that at an early date there was no privity of contract between reinsurer and the direct insured.

It is fairly well established that reinsurance practices among the fire companies of France developed not long after 1820. In fact, the word "facultative" was apparently first used in a treaty arranged between the *Compagnie Royale* of Paris and the *Compagnie des Proprietaires Reunis* of Brussels, in 1824. It is to be assumed that when reinsurance was new, accepting offices did not at first give up their right to accept or decline risks offered.

Independent Reinsurance Institutions in France Prior to 1871

For some time prior to 1871, it had been the practice in France to found insurance companies whose special business it was to reinsure the surplus risks of other companies. This was more especially the case in regard to fire insurance where the companies were frequently compelled to take very large lines. These French independent reinsurance companies made it unnecessary for the fire offices at that time to have reinsurance contracts with each other as was very generally the custom in Great Britain. In 1869, there was founded in Paris the *Compagnie Special d'assurance et de Re-assurance Maritimes*. In 1874, *La Re-assurance* (capital 5 million francs) and the *Caisse Generale des Re-assurances et de Co-assurances contre Risques d'Incendie* (capital 5 million francs) were in active business. Formerly reinsurance contracts in France were made principally with German and Italian companies; relations with direct writing companies were maintained chiefly with British offices.

French Reinsurance Practices in 1870

The principles which governed French fire reinsurance at the time (1870) were as follows: (1) the reinsurance premiums were to be exactly at the same rates as those on the direct policy; (2) the direct writing company retained on the risk insured a sum equal to that given to the reinsurance company; (3) the accounts were to be settled every three or six months, according to agreement; (4) the losses below 2,000 or 3,000 francs were generally

included as deductions from the current premium account and were not claimed immediately; (5) the larger losses were to be paid by the reinsurance companies as soon as the direct company had paid; (6) all differences between direct writing and reinsurance companies were to be adjudicated by arbitrators and not by the common law courts.

One mode of conducting the business was that risks offered were entered in a book (*carnet*) and the signature by the agent of the reinsurance company denoted acceptance of the risk. The commission paid by the reinsurance companies to direct insurers was usually 25 per cent. Mr. G. W. Kilford was, at that time, the foremost British authority in regard to fire reinsurance in France.

In 1884, the *Societe Anonyme de Re-assurances* (Paris) was organized. This company, separately organized in the United States, did business as the Fire Reassurance Company, with headquarters at Hartford. It was licensed in Connecticut in 1911, and ceased business in that State, September 1, 1920. There were in France in 1928, seventeen companies engaged in reinsurance business, of which four had a small direct business. Only six of this total were in existence before 1914. The oldest of the existing companies was the *Societe Anonyme de Re-assurances* (previously mentioned, 1884). This was followed by the *Atlantide* in 1890, the *Reassurances Nouvelles* in 1904 and the *Havraise* in 1905.

The statistical position of ten French reinsurance companies at the end of 1927* was as follows:

Founded	Company	Premium income (French francs)	
		Fire, Accident, etc.	Life
	Total ten companies	418,292,331	17,495,787
1913	Cie. Europeenne	38,922,978	not given
1916	Francaise de Reass.	131,449,331	2,621,304
1920	Generale de Reass.	16,900,867	1,697,851
1905	Havraise de Reass.	33,200,723	....
1916	Parisienne de Reass.	5,790,297	not given
1921	La France Reassurances.	6,125,549	701,474
1904	Reassurances Nouvelles.	43,802,681	2,845,266
1919	Les Reassurances.	72,988,150	3,187,672
1884	Societe de Reassurances.	66,237,382	6,442,220
1926	Cie. Co.-et Reassur.	2,874,373	....

In addition there were five companies writing "mainly reinsurance" (National Reass.; National Credit and Reass.; La Polaire; Seine et Rhone; and Oceanide). These had some 83,000,000 francs of general premium income and 38,000,000 francs of life premium income.

**The Review*, London, November 16, 1928.

GREAT BRITAIN*

Life Co-insurance in Great Britain, 1583

While very little is known of the early history of reinsurance in Great Britain, it may be of interest to note that one of the earliest life policies in that country was given on the life of one William Gybbons in 1583. This was signed by 16 underwriters, so that in life insurance, also, coinsurance preceded reinsurance. According to Rendtorff, it seems likely that big risks were disposed of in this way for a long time. The authentic history of life reinsurance in Great Britain dates from about the middle of the nineteenth century, according to Mr. H. F. Rothwell, of the Royal Exchange Assurance at Sheffield. A general system of life reinsurance began about 1844, and must have assumed some importance, for in 1854, certain English and Scottish life offices drew up an approved list of regulations to govern the conduct of reinsurance business. They provided for reinsurance on a facultative basis.

It is of interest also that the Standard Life Assurance Company of Edinburgh, Scotland, as early as 1850, and on other occasions since then, limited its liability under a number of annuity contracts which it had in force, and purchased Government annuities on the same lives. This it could do on favorable terms because at that time the yield on Government annuities was extremely favorable to purchasers. Here was an early example of "substitution" practice. This also was the custom of a number of other British and Scottish companies. (Walford).

Park, in his "Law of Marine Insurance" (1800 edition) says that the law of England, prior to 1746, "permitted underwriters . . . to insure themselves against those risks for which they had inadvertently engaged to indemnify the insured, or where perhaps they had involved themselves to a greater amount than their ability would enable them to discharge." He also points out that this facility was so much abused and turned to purposes so pernicious that the Legislature was at last obliged to interpose (1746, 19 Geo. II, ch. 37, Section 4).

Reinsurance was apparently of such slight interest in Great Britain, especially in the marine field, that Gow in his textbook of

* Much of the material on the early history of reinsurance in Great Britain is taken from the Rendtorff collection as compiled by C. E. Golding.²²

1895 makes no mention of it, while the Marine Insurance Act of 1906 devotes two paragraphs of Section 9 to the subject. Trenerry in his "Origin and Early History of Insurance" appears to be wrong in saying that reinsurance was definitely known in 1450. The instance which he there cites where merchants became guarantors of the fulfilment of insurance contracts seems to have been more in the nature of a promise to make good any loss due to the fault of the original underwriter than in the nature of reinsurance.

First British Treaty Still in Force

The first British treaty on record, according to Golding, concerning an English company, was concluded in 1824 between *La Nationale* of Paris and the *Imperial* of London (now merged with the Alliance Assurance Company). No formal treaty was prepared, the binding arrangements being conducted through correspondence with the good faith of both companies pledged. This treaty has remained continuously in force down to the present day. The reinsurance commission was at a rate of 30 per cent to the original writer.

The records of the *Royal Exchange Assurance* show that as early as 1826 it was receiving business in larger amounts than it was prepared to retain. In that year, the question of fixing limits of retention was considered by the Court of Directors of the Exchange. In 1828, the corporation received its first facultative proposal and this was an offer from the *Guardian* to reinsure a share of the risk on which that office had accepted a double line by mistake. The proposition was considered by the Court of Directors and declined.

That the prohibition of 1746 seems to have fallen into disregard with the passage of time is shown by the publicity given to the big reinsurance transaction made in 1828 when the newly formed *Alliance Marine Company* placed a very large line on gold on the ships *Almeria* and *Princess Charlotte*, and reinsured the bulk of it with Lloyd's underwriters at a large difference in premium in favor of the direct writing company.

Mr. H. S. Moore, in a paper before the Insurance Institute of Ireland on March 4, 1910, discussed the development of British reinsurance in the middle of the nineteenth century. Speaking of 1845, Mr. Moore said "It is worthy of note . . . that although

there were upwards of 20 offices transacting fire insurance in this country there was no particular necessity for reinsurance. This was mainly due to the enormous lines held by the offices upon single risks. It was no uncommon thing in those days for an office to retain as much as \$250,000 on a warehouse at a two shilling rate. It was the practice in those days for an office first to help itself to its full holding on a fire risk and then to send the insured, in company with one of its clerks, around to friendly offices to place the balance."

The records of the *Guardian Assurance Company* show that in November, 1856, the directors decided to reinsure a portion of their risks with other companies. This resolution of the Directors may be taken as an indication of the way the idea of reinsurance was then developing. In June, 1879, a further resolution was passed in the *Guardian's* annual meeting, authorizing directors either to grant fire reinsurance to, or accept them from, any company outside the United Kingdom.

British Fire Offices Tariff Association and Reinsurance

In 1858 the Tariff Association of British Fire Offices was founded. This was followed in 1863 by the Fire Offices Committee and that body shortly directed its energies towards the regulation of fire reinsurance business. On November 27, 1863, a circular was issued to members of the Committee saying that "guarantee should not be given to or taken from any office which does not adhere to the Tariff system as to any class of risks in London or elsewhere in the United Kingdom, whether tariff or non-tariff and whether at tariff or non-tariff rates." In 1868, the general rules of the Fire Offices Committee were promulgated and in these the rule above quoted was amended and included.

Finally in 1871, further rules came into force which exist in substantially the same form today as when they were first issued. These rules may be said to establish the complete recognition of reinsurance as an integral and necessary part of fire insurance in Great Britain, but with the qualification that they apply only to facultative reinsurance and do not strictly govern the transaction of treaty reinsurances. Golding²² infers that as late as 1871 reinsurance by treaty was so little practiced in Great Britain as not to call for definite recognition by a large section of the fire insurance companies.

Here we may note the nomenclature of fire reinsurance at or about 1871. A reinsurance of a fire risk was called a "guarantee" and that word is used in the rules of the Fire Offices Committee. When a risk was reinsured by one office with another, the ceding office described the transaction as a "guarantee obtained" while the accepting office called it a "guarantee granted." The same word was used in the transaction proposed between the Guardian Assurance Company and the Royal Exchange Assurance in 1828. The modern tendency is, of course, to use the word reinsurance.

First Independent Reinsurance Company in Great Britain, 1867

The first independent reinsurance company was established in London on July 8, 1867. It was known as the Reinsurance Company, Ltd., with a capital of £100,000. Cornelius Walford* was the Managing Director. At that date there were known to be only nine independent reinsurance offices in existence, five in Germany, two in Austria-Hungary, one in Belgium and one in Switzerland. The next independent British reinsurance company to be formed was the London General, founded October 1, 1873, with a capital of £500,000. The latter transferred its business to the Fire Reinsurance Corporation which was established June 9, 1874. This company also took over the offices and personnel of the London General.

French Companies in British Reinsurance, 1873

In 1873, two French companies opened offices in London for the transaction of reinsurance business. They were the *Caisse Generale de Reassurances et de Co-assurances*, 1873, and *Le Monde Compagnie d'Assurances*, 1874.

In 1877, the Central Reinsurance Company was founded, but no trace of its transactions is available. In the same year, the London Reinsurance Company was established, existed for four years and its business was finally transferred in 1881 to the Glasgow and London. In 1877, also, the Underwriters Association was formed with £250,000 capital and it managed to do some fire and casualty reinsurance until 1885, when it was wound up. The same year also saw the foundation of the United Fire Rein-

*Walford, the greatest scholar in insurance history, was also the founder of group life insurance. This he did in his capacity as consulting actuary to Napoleon III, who initiated the *Securite General* in Paris, 1867-1868.

insurance Company, with a capital of £50,000. *The United Fire seems to have been the first foreign reinsurance company to be admitted to do business in the United States.* (Rendtorff). It had a United States premium volume of \$900,000 for the nine months of 1882, and \$1,500,000 for 1883. In subsequent years, the volume was as high as \$3,000,000 per year. This company retired from the United States in 1891 and was itself wound up and transferred to the Paladine in 1893.

In 1879, the East Lancashire Fire Reinsurance Company was founded, but there is no further record of its business. In 1880, there arose the British Reinsurance Company, wound up in 1886, and the Equitable Fire Reinsurance, which ceased business in 1884. A number of others were founded in succeeding years which either left no trace in the statistics, or which failed within a few years. From 1860 to 1894, there were formed in all about 44 companies doing a strictly reinsurance business in the United Kingdom.

Excess Cover Reinsurance First Established in 1880

The so-called "excess" cover, a purely modern development in fire reinsurance, was first established by Mr. Cuthbert Heath of Lloyd's some time between 1880 and 1890.²² This is an arrangement whereby the ceding company retains the whole amount of any given loss up to an agreed figure, and reinsures for the loss beyond this amount, up to a fixed sum. Excess reinsurance, as thus understood, has become a recognized instrument in certain forms of casualty insurance.

In the centenary book of the Indemnity Mutual Marine Assurance Co., covering the period 1827 to 1876, we find that the underwriter, Mr. William Ellis, "never reinsured a risk, only accepting the amount he was prepared to retain." His policy was apparently not one of timidity, since in 1854 he paid one total loss equal in amount to one-sixth of the company's whole year's premium income!

Casualty Reinsurance in Great Britain

Reinsurance practices in Great Britain on casualty insurance have developed, of course, with the growth of the direct-writing side of the business. The great bulk of such business was undoubtedly facultative and this applies to all the main sections of

casualty insurance, except automobile and public liability cover. For these, the excess cover possessed great conveniences and this made the practice quite general. The practice of excess cover reinsurance on automobile lines began with the origin of such insurance in 1896. There are records in Great Britain of excess casualty reinsurances on a small scale as far back as 1889.

Supplementary Legislation in Great Britain, 1891 and 1906

The reinsurance of marine risks was expressly mentioned in the Stamp Act, 1891 (54 and 55 Victoria, Cap. 39, Section 92) and in Section 9 of the Marine Insurance Act, 1906, where it specifically states "the insurer under a contract of marine insurance has an insurable interest in his risk and may reinsure in respect of it."

General Status of Reinsurance Prior to 1914⁶²

Reinsurance seems, therefore, to have had an uneventful history in Great Britain up to the outbreak of the war. In the old days, the business was mainly reinsured facultatively, the rate of reinsurance commission paid to the ceding company being 20 per cent. as against 15 per cent. paid by the ceding company to its agents. This difference in commission did not make it profitable to reinsure, but the ceding company looked to some benefit through reciprocation. With the introduction of the treaty system in Great Britain, in recent years, commission rates went up—27½ per cent. was the rule and then 30 per cent., or even more. Very often commission to an intermediary was frequently thrown in. These higher commissions represented a handsome profit to the ceding concern and this profit became an inducement to accept business at inadequate rates and to pass it on to the treaty company.

"Profit" Treaty Evils

In marine insurance some underwriters seized upon this method of safeguarding themselves with the result that reinsurers were losing heavily on business where the direct writing company made a profit. It has been rumored, in fact, that the downfall of the *Consolidated* recently in Great Britain was largely brought about because it was loaded by the direct writers with non-paying business.

With the outbreak of the war, and the withdrawal of the once popular German reinsurance companies, British underwriters

were left practically without the reinsurance facilities upon which they had previously relied. When the double premiums of war and marine risk policies enabled underwriters to make profits regardless of the quality of the business, the new system of reinsurance functioned well enough. But under post-war conditions millions of pounds have been lost in marine reinsurance. The statistical summary given on page 45, shows this record.

Post-War Marine Reinsurance in Great Britain

It seems that over the period 1920 to 1926, marine reinsurance produced a loss of £799,316 without taking into account outstanding liabilities, nor any consideration of losses resulting from failed reinsurers. If the figures for the failure of the Consolidated, the Profits and Income, the Western Alliance, etc., could be ascertained they would show losses of an appalling nature. It has been estimated that since the war no less than £4,500,000 has been lost by British shareholders in reinsurance companies. The British marine reinsurance market has been severely stricken. It is convalescing under difficult circumstances.

There seem to be two remedies offered for the present situation in British reinsurance: first, there must be brought about better faith between the two parties; second, recognition of the fact that reinsurance can not be accepted at less than the original rate.

Post-War Burglary Reinsurance in Great Britain⁷⁷

In burglary insurance, reinsurance risks in Great Britain are effected on the so-called "surplus" method. Here the original company fixes the portion of the risk it desires to keep and the remainder, called "surplus" is ceded to the reinsurers. Reinsurances are placed either facultatively or by obligatory treaty. In burglary insurance the use of treaties has greatly increased in recent years and may in time supersede the old facultative practice.

On private residence burglary covers, the amount which the ceding company will retain depends on two factors: (1) the amount insured on valuables; and (2) the values of any articles especially insured. Retentions are fixed with these two points in mind and a company will not, in general, retain more than a certain sum in all on valuables, nor more than a certain sum on any one article. It is usual to cede a share of the whole policy including non-hazardous as well as hazardous items. For business

premises burglary reinsurance, four factors are considered: (1) the class of stock; (2) the total value of the insurance; (3) the character of the neighborhood; and (4) whether the premises are unoccupied at night. The more attractive the class of stock, the lower the retention. Practice is not uniform, but depends on the rules of the individual companies. The greater the sum insured, the greater the retention, because on this class of business probable maximum loss does not seem to rise in proportion with the amount insured. Individual consideration governs the reinsurance arrangement.

*Automobile Liability Reinsurance*⁷⁷

On individual automobile risks, reinsurance is not transacted in Great Britain to any great extent. The majority of policies cover for unlimited liability. The question of retention is a general one over the whole of the business rather than on particular cases. The incidence of a particularly heavy liability claim, or of an undue run of large claims, is provided for by excess policies, the premium for which is generally based on a percentage of the total annual premium income for the company on this class of business. The element of catastrophe hazard in automobile insurance can not be said to be as significant as in connection with fire business. Public liability automobile cover is handled through pooling arrangements, by arrangements for excess cover, or by ordinary reinsurance in individual cases.

Automobile Fire Risks

In automobile insurance, the fire risk is handled in much the same way as with public liability cover. Some British companies writing automobile insurance have arranged to take out reinsurance, or to make pooling arrangements, on the whole of the risks carried under motor vehicle policies. By paying a percentage of their total premium income they are protected in respect to any one occurrence whether involving liability to third party claims under vehicles, personal accident payments, fire loss or a combination of these risks. At the present time, it is even possible to arrange such contracts with world-wide scope to cover the whole of the automobile business written by the insuring company both in Great Britain and throughout the world.

The following table shows operating results for a group of British reinsurance companies in 1927:*

Company	Per cent. specified item of premium income:		
	Losses	Commissions	Expenses
Average for group.	58.0	30.4	2.9
Mercantile and General.	58.7	31.1	4.0
Reinsurance Corporation.	60.6	29.8	1.1
Victory.	63.7	29.5	3.6
Tariff Reinsurances.	55.6	32.1	3.1
Treaty Reinsurance.	54.8	30.6	3.0
Associated Reinsurance.	55.7	26.7	2.2
London Associated.	60.6	32.3	2.2
British and European.	60.5	26.6	4.1
Anglo-Scottish.	54.7	33.7	5.9

For both fire and marine a combined premium income of £3,587,466 was reported for 1927, an increase of £363,514 over 1926.

**The Review*, London, November 16, 1928, and November 8, 1929.

The recent statistical history of British fire and marine reinsurance is shown below:

Fire, Accident and General Account—					
Year	Premiums £	Claims £	Expenses £	Balance £	Trading Result £
1920	4,939,190	2,132,659	1,608,029	1,198,502	103,066
1921	4,994,958	3,154,739	1,698,741	141,478	-394,706
1922	4,842,693	3,063,101	1,642,047	137,545	276,394
1923	4,484,072	2,813,215	1,515,526	155,331	218,092
1924	4,727,986	2,768,652	1,569,780	389,554	291,990
1925	4,309,067	2,704,281	1,541,576	63,210	230,777
1926	3,346,195	1,926,250	1,171,872	258,503	149,467
1927	3,770,075	2,104,149	1,339,920	326,206	139,473
Trading Profit. . .					£1,014,553

Marine Account—					
Year	Premiums £	Claims £	Expenses £	Balance £	Trading Result £
1920	2,912,583	2,017,823	350,939	543,821	-33,969
1921	1,788,354	1,711,010	181,515	-104,171	-64,478
1922	1,196,400	1,519,911	129,988	-453,499	-25,411
1923	1,162,457	1,209,175	58,179	-104,897	-74,029
1924	1,600,228	1,417,587	142,885	39,756	-350,216
1925	1,031,053	1,378,642	109,618	-457,207	-1,867
1926	444,880	512,340	26,988	-94,748	-97,708
1927	479,684	573,433	21,023	-114,772	-142,638
Trading Loss.					-£799,316

Source: *The Policyholder* (Manchester), February 27, 1929, p. 309, and February 5, 1930.

British reinsurance companies established since 1901 are listed below:

- 1901 Pall Mall (associated with Fine Art and General).
- 1903 Consolidated (liquidation 1926).
- 1905 Alpha (associated with Fine Art and General).
- 1906 Aldwych (associated with Fine Art and General).

- 1907 Mercantile and General.
- 1908 British and European.
City Equitable (liquidation 1922).
City of London (liquidation 1922).
Reinsurance and Guarantee (liquidation 1919).
Southern.
- 1909 City Fire (transferred to Tariff Reinsurances).
Anglo Scottish General Commercial.
- 1911 European General (transacts American business only).
Metropolitan (to Mutual Property Insurance Co. 1917).
British (liquidation 1921).
- 1912 Inclusive (subsidiary of Vulcan Boiler).
- 1914 Home and Foreign (subsidiary West of Scotland).
- 1916 Essex Union (liquidation 1922).
- 1917 British Insurance Alliance (associated with Motor Union).
- 1919 Associated Reinsurers.
First National (liquidation 1923).
General Reinsurance (liquidation 1923).
London Associated.
London and Edinburgh (now a direct office).
Olympic (transferred Tariff Reinsurances 1925).
Reinsurance Corporation.
Tariff Reinsurances.
Treaty Reinsurances.
Victory.
Western Alliance (liquidation 1924).
- 1921 City Equitable Associated (liquidation 1922).
- 1923 St. Christopher (subsidiary British Oak).

Source: *The Policyholder*: (Manchester). February 5, 1930, p. 195.

DENMARK

*"Substitution" Practice in the Seventeenth Century*²²

In the bi-centenary book published in 1926 by the Royal Chartered Marine Insurance Company of Copenhagen, we find an entry to the effect that a broker or agent, one *von der Wiele*, on July 2, 1658, placed five policies with different underwriters covering a voyage from Copenhagen to Portugal and return.

Von der Wiele wrote later that one of the underwriters, Jochin Heusch of Hamburg had become bankrupt, and that Wiele had accordingly attempted, without success, to reinsure Heusch's portion of the risk. The word "*reasseuriren*" was used. According to Rendtorff, this is the earliest use of the word "reinsurance." Since this contract was offered to replace a previous one, it may

not be considered strictly a reinsurance in the modern sense. This is also an early example of "substitution" practice.

The Royal Chartered Marine Insurance Company (founded 1726) made an indirect reference to reinsurance in an "application" which it made to the Government in 1775. This may be found on file in the Record Office in Copenhagen. It seemed that the monopoly which the company held had met with active competition from private insurers from about the year 1760 onward. In its application of 1775, it said that thousands of private insurers reinsured their heavy risks with the company without the latter being fully aware of the circumstances surrounding the risk. This exposed the company to heavy loss. This is also one of the early specimens of breach of faith between direct and reinsurers. The Royal itself transacted isolated marine reinsurances as far back as 1780, when risks on two ships which had sailed for the West Indies and were long overdue were reinsured at Hamburg at a higher rate of premium. This company's regular reinsurance practices date back to 1841.

For a great many years the insurance of buildings against fire in Denmark was carried on almost exclusively by three old mutual societies, *i. e.*, the Copenhagen Fire Fund, established in 1731, the Kobstadernes General Fire Fund, established in 1861, and the Landbygningernes Fire Fund, established in 1792. None of these ancient institutions appears to have made use of reinsurance for many years. The Copenhagen Fire Fund commenced to reinsure in 1855, the Landbygningernes in 1900 and the Kobstadernes in 1914. The oldest existing independent Danish company transacting reinsurance solely is the Nordisk Reinsurance Company of Copenhagen, established in 1894. Since its inception, the company has been in intimate touch with leading direct writing companies over the world.

In the Royal Concession granted in 1778, to the Royal Chartered Fire Insurance Company of Copenhagen, it was mentioned that the company was permitted to seek protection by reinsuring its large risks. The power seems not to have been exercised at first since in 1817 the company made inquiries as to the possibility of obtaining reinsurance facilities in foreign parts, possibly in Hamburg. It decided not to reinsure owing to the fear of interference by reinsurers in claim settlements or the possible failure of the reinsurers to make good their obligations. In fact this

company seems not to have made general use of reinsurance until about 1870. When the Nye Danske Fire Insurance Company was promoted in 1864, it was mentioned in the prospectus that it was the intention of the company to distribute risks so far as possible by reinsurance.

The Copenhagen Marine Insurance Company, the first to be established after the monopoly of the Royal was broken, made use of reinsurance shortly after the company was founded in 1852.

From the records of the Nye Danske Fire Insurance Company we learn that that company entered into a treaty with a British company in 1878. This was cancelled in 1882, because it was obligatory only on the Danish and not on the English company. In 1883, the Nye Danske again entered the English market, opening an agency at Manchester. This agency was closed after two years on account of the unfavorable results. No further treaty reinsurance was done by the company in the United Kingdom until 1890.

Certain results for 1927* may be of interest for Danish Reinsurance Companies.

Founded	Company	Premium Income (Kroner)†
		Total nine companies.....	59,842,228
1916	Dana.....	2,957,700
1917	Dansk Veritas.....	2,402,673
1915	Kjobenhavnske Reins.....	1,089,909
1894	Nordisk Gjenforsikrings.....	6,688,113
1915	Reassuranceforeningen.....	2,246,560
1916	Royal.....	1,134,382
1918	Salamandra.....	29,610,090
1898	Nye Danskes Reassurendorer.....	758,593
1918	Rossia Re.....	12,954,208

In thirteen additional companies, writing reinsurance mainly, the total premium income was 82,221,043 kroner.

**The Review*, London, November 16, 1928.

†Danish crown=26.8 cts.

SWEDEN*

From the by-laws of the Skandia Insurance Company, established in 1855, we learn that the company could not accept more than Rd. 150,000 on one risk without reinsuring in another company. The company probably practiced reinsurance from the time it was founded. It concluded at least two treaties in its

*Courtesy of Mr. Bertil Jochnick, Stockholm.

first year: one with the Prussian National Insurance Company of Stettin, 1855, and one with the *Assicurazioni Generali* of Trieste, dated October 1, 1855.

As far back as 1894, an attempt was made in Sweden to carry on risk-premium life reinsurance.* The *Thule*, at that time, established a reinsurance company, the *Egid*, which was to grant risk-premium life reinsurance. It did not receive support and ceased business after a few years.

In 1907, the *Trygg* established a reinsurance company, the *Atlas*, which grants life, accident, fire and third-party insurance. The company had a capital of 1,000,000 kroner. It has today a combined premium income of about 5,000,000 kr. In May, 1914, the life reinsurance idea was carried into further effect by the Clearing Institute for Reinsurance, established at that time by the Swedish life insurance companies. The facility established was the *Reassurance Company Sveriges*. This company was founded as a limited liability corporation with a capital of 600,000 kroner fully paid-up by the contracting companies. This company had a premium income of about 3,500,000 kr. last year. One aim was to keep in the country the money which had formerly gone abroad, estimated at 50 per cent. of the business in 1914. This company operates on the risk-premium basis. The *Sverige* had 229,000,000 kr. in force at the end of 1927.

In 1919, the *Vala*, a life reinsurance company, was founded in Gothenburg with a capital of 1,000,000 kr. Its premium income was about 2,000,000 kr. in 1928. There are 23 reinsurance companies in Sweden at the present time with a combined premium income of about 30,000,000 kr.

The following data on reinsurance in Sweden for 1927 may be of interest:

Type of Reinsurance	Premium Kr.†	
	Gross	Retrocession
Swedish Life reinsurance (3 companies) . . .	12,248,891	8,028,669
Swedish fire reinsurance (16 fire, and one fire and life companies)	12,304,247	2,909,508
Swedish marine (fire and marine)	3,102,007	2,287,496
Swedish casualty (4 casualty and 6 casualty, fire and miscellaneous companies)	2,299,000	466,000
Totals (approx.)	29,900,000	13,700,000

*Insurance for difference between reserve and face amount of policy.⁴⁰

†Swedish crown = 26.8 cts.

NORWAY

Through the Christiania General Insurance Company (Storebrand), Mr. Rendtorff²² obtained some early reinsurance history for Norway. Marine business was first transacted in that country by mutual marine insurance societies and these began about 1840 to reinsure the whole of their undesirable risks on the cheapest terms possible, the business being placed in Hamburg. Facultative arrangements between the societies date from about 1843. Obligatory treaties did not appear until about 1880 among the mutual societies in the country.

Among the stock marine companies, reinsurance appears to have been first discussed about 1850. In 1854, some 16 per cent. of the premiums of the Christiania Marine Insurance Company were reinsured.

Very little information is available on the beginnings of fire reinsurance in Norway. The *Storebrand* reinsured small amounts from 1849 and the *Lillebrand* from 1848. The Ganle Bergen, established in 1838, shows no reinsurance premiums in its accounts until 1865 and then only in very small amounts. By 1871, this had grown to approximately 9 per cent. of the business in force.

It seems that the disastrous fire in Christiania, in 1855, made the necessity of reinsurance imperative. Up to that time the *Storebrand* had, broadly speaking, carried the whole of its liability for its own account. In 1862, the *Storebrand* entered into its first reinsurance treaty with a British company, which treaty was still in force in 1922. It was chiefly through the early adoption of the reinsurance treaty system that the *Storebrand* has maintained its British reinsurance connections. In 1880, the *Storebrand* opened a reinsurance office in London, but the unsatisfactory results achieved by the arrangement caused the office to be closed in 1883.

Up to 1917, life-reinsurance methods in Norway left much to be desired. An essential part of the Norwegian companies' funds went to foreign countries, chiefly to German companies. The Norwegians in the spring of 1917 established the *Norske Folk* to accept life-reinsurance from Norwegian companies. The reinsurance arrangements of the *Norske Folk* with direct writing companies were patterned after the practice of the *Sverige*. (Sweden).

Three Norwegian companies report as follows for 1927*:

Founded	Company	Net premium income(Kroner)†
	Total three companies.....	18,646,821
1919	Anth. B. Nilsen's Reassurance.....	10,748
1916	Norske Assurance Union.....	1,470,608 ‡
1847	Christiania General (Storebrand).....	17,165,465

For Finland we have the following:

	Total four companies.....	16,134,608
1917	Finska Reassurances.....	401,348
1923	Norma Återforsakrings.....	1,044,738
1899	Osmo Återforsakrings.....	7,312,806
1906	Verdoni Forsakrings.....	7,375,716

*The Review, London, November 16, 1928

†Norwegian crown = 26.8 cts.

ITALY

The *Riunione Adriatica di Sicurta* of Trieste, established in 1838, has records which suggest that in its early days it transacted facultative reinsurance. There are also extant records of its first operations under the treaty system. It entered into a contract with the Azienda in 1842, an agreement whereby the *Riunione Adriatica* took over the whole fire portfolio for Lombardy of the Azienda, thus effecting complete cession of the whole business.

The *Riunione* shows an item for reinsurance premiums in its first balance sheet. This must have been for facultative business since its earliest treaty was not made until a later year. Even after treaty methods were established, facultative methods continued. A copy of a reinsurance contract issued by the above company to the *Assicurazioni Generali*, in Trieste, covering a third share of a fire insurance on the Florence Gas Works, is shown in the Rendtorff "History of Reinsurance." This policy was dated December 3, 1849.

From some records which were furnished to Mr. Rendtorff²² by the *Assicurazioni Generali*, it seems that at the Board meeting of July 19, 1832, it was decided to effect reinsurance in two cases, one a fire risk and one a marine risk. In respect to the fire risk, the Board resolved to reinsure even though at a higher rate of premium. They preferred to incur a small loss rather than run an immoderate risk. They seemed to have understood well the purpose of reinsurance. In 1833 the *Generali* issued instructions

to various agents that certain risks might only be accepted subject to reinsurance, thus showing that facultative practices had become a regular and normal feature of its business.

In 1843, a marine reinsurance arrangement was concluded by the *Assicurazioni Generali* and the *Riunione Adriatica* which possessed all the attributes of a treaty. It applied to hull insurance only and was arranged on a reciprocal basis. In 1850 a fire treaty was arranged between the Schlesische Fire Insurance Company of Breslau and the *Riunione Adriatica*. In the same year a fire treaty was also arranged between the *Riunione*, as reinsurer, and the Parisian *Compagnie d'Assurances contre l'Incendie* as the ceding company.

In 1922, the *Unione Italiana di Riassicurazioni* was founded in Rome. No systematic history of reinsurance in Italy has been written.

Premium volume for reporting Italian companies in 1927* was as follows:

Founded	Company	Reinsurance premiums (net Lira)†
	Total six companies	99,880,991
1898	Ansonia	5,741,166
1923	Generale de Riassicurazioni	4,267,612
1918	Riass. Consorziale	11,048,777
1918	Riassicratrice	34,109,784
1917	Unione Italiana	35,842,405
1920	Istituto Italiana	8,871,247
Reinsurance accounts of five Italian direct writing companies:		
Founded	Total five companies, 1927	50,573,301
1831	Assicurazioni Generali	17,993,860
1896	Italiana Infortuni	7,443,841
1889	Italiana Incendio	7,232,449
1898	Italiana Vita	7,921,561
1898	Assicuratrice Italiana	9,981,590

**The Review*, London, November 16, 1928.

†Italian lira = 5.3 cts. since December 22, 1927.

SWITZERLAND

There are on record a number of early treaties for the Swiss Annuity Institution, particularly one for October 1, 1858, with the Frankfurter Reinsurance Company and in 1865 with the Swiss Reinsurance Company to cover life risks. The Cologne Reinsurance Company, Germany, transacted life reinsurance during the period 1854 to 1860. Life reinsurance treaties were,

however, slow in development as is indicated by the fact that from 1865 to 1880 no reinsurance company other than the Swiss Reinsurance Company seems to have transacted the business. In 1880, the Muenchener Rück commenced business in Switzerland and extended its operations to life reinsurance some years after its foundation. In 1885, the Cologne Reinsurance Company resumed life reinsurance in Switzerland after a lapse of 25 years.

The Swiss Reinsurance Company was founded in 1863. The reports of this company show that life treaties were first accepted by that company in 1868 and accident treaties in 1880. The company had assets of 358,000,000 Swiss francs in 1927, and a premium income of 297,000,000 Swiss francs. This made it the largest single reinsurance institution in the world.

In 1911, the Union of Cantonal Fire Insurance Institutions was established.³ This organization handles reinsurance business for its constituent members.

The 1927 accounts for Switzerland, as reported by "The Review," London, November 16, 1928, were as follows:

Founded	Company	Premium Income*	
		Fire, Accident and Marine (Swiss Francs)	Life (Swiss Francs)
	Total nine companies	222,931,458	45,410,560
1863	Swiss Reinsurance	135,894,357	23,872,439
1875	Prudentia	53,781,491	9,579,817
1919	Allgemeine Rück	8,385,667	2,949,108
1923	Rheinische Rück	7,489,716	7,724,506
1923	Union Re	7,625,012	696,063
1869	Switzerland General	3,091,052	....
1926	New Insurance and Reinsurance	3,101,875	588,627
1869	Baseler Rück	1,899,032	....
1910	Swiss Cantonal Rück	1,663,256	....

*Swiss franc = 19.3 cts.

AUSTRIA

A mutual fire insurance office in Vienna, the *Wechselseitige Brandschaden u. Janus Versicherungsanstalt*, arranged on August 9, 1824, to reinsure a certain share of its business with the *Azienda Assicuratrice* of Trieste. The idea was to cede the business at lower rates than those for the original policies in order to permit the direct writer to be assured of a certain profit. The *Azienda* was prepared to accept up to 30,000,000 kroners at a

premium 25 per cent. below that of the direct writer. It does not appear that the proposal was ever completed, but it is of value in showing a procedure which has never been subsequently adopted to any great extent in fire reinsurance.

The growth of treaty reinsurance seems to have been persistent in Austria as evidenced by the inquiry addressed on September 25, 1845, by the Imperial and Royal First Privileged Insurance Company of Vienna to the London Assurance Exchange. This company is still in existence though having changed its name to the Danube General Insurance Company.

Figures for four Austrian companies in 1927* are given below:

Founded	Company	Total premium income (Schillings)
		Total four companies.....	17,751,813
1906	Internationaler Rückversicherung.....	7,845,201
1869	Wiener Rückversicherung.....	6,018,720
1897	Bundeslander Rückversicherung.....	3,335,886
1885	Wechselseitiger Rückversicherung.....	552,006

**The Review*, London, November 16, 1928.

RUSSIA

Russian reinsurance business had been placed certainly as early as 1870 among eleven English fire companies, all among the front rank among such companies of the period. This arrangement was effected through brokers in London.

Russia has attempted reinsurance on a national scale.⁵⁶ Reinsurance institutions in foreign countries had been taking much money out of the country. In 1896, under Finance Minister von Witte, a Russian reinsurance institution was founded. In a few years, however, this enterprise was dropped and reinsurance was again effected through foreign companies. Activities of the Russian companies in the United States will be related further on.

The Soviet Russian Insurance Law of September 18, 1925, contains the rules for the reinsurance of Russian risks in foreign companies. (*Eastern Underwriter*, June 21, 1929, p. 24). The law authorizes reinsurance for all lines except compulsory insurance. Transportation risks under Article 5 are given practically a free hand. The rules specifically authorize treaty reinsurance and particularly by the excess loss method. Mr. N. Herziani, of *La Reassurance*, Paris, has made an intensive study

of Russian reinsurance problems. The *Eastern Underwriter* for October 25, 1929, reviews the Russian experience for 1928.

HOLLAND

The risk-premium system of life reinsurance has been regularly in effect in Holland since 1914.⁴⁰ The companies interested notified the central office of the surpluses, which in turn were assigned to one or more companies. The assignments were made on a fixed treaty basis, no preference or selection being shown as between companies. In 1921, three companies withdrew; a reorganization took place and the original plan was modified to avoid certain cumbersome administrative practices. This was done by pooling the ceding risks. Notice of a ceding risk is given to the central office which for the time being only debits the ceding company with the premium. At the end of the calendar year, it is determined how much each of the companies has to pay. If the pool has suffered a loss, this loss is apportioned among the companies at agreed rates. The pool is only an administrative body not having any money under its control. The pool takes only homogeneous risks of certain grade. Certain tropical risks are taken and rated up seven years of age.

Data for four Netherlands companies in 1927* follow:

Founded	Company	Premium income (Florins)†
	Total four companies.....	
1889	Nederlandsche Her.....	446,265
1899	Tweede Nederlandsche Her.....	204,866
1899	Derde Nederlandsche Her.....	204,866
1924	Universelle Reassurantie.....	1,021,252

**The Review*, London, November 16, 1928.

†Netherlands florin = 40.2 cts.

HUNGARY

One of the first of the Continental companies to take interest in British reinsurance business was the *Fonciere Pester*, of Budapest, established in 1864. This company was represented in England in 1877, and some of the companies who placed their reinsurance with that office in those days still maintain close business relations with the Hungarian company. A report is available for the *Pannonia Rück* for 1927. This showed a premium income of 1,635,519 *pengoes*.

JAPAN²²

The first treaty known to be entered into in Japan was contracted between the Yokohama Insurance Company and the Commercial Union Assurance Company. This treaty began either in 1904 or in 1905, and was afterwards transferred by the Yokohama to the Liverpool & London & Globe Insurance Company in 1908. The further introduction of treaties into Yokohama was brought about largely through the agency of Dr. Schultz, formerly the General Manager of the South Germany Reinsurance Company. On the return of Prof. Kambe of Yokohama from Europe in the autumn of 1910 he reported on insurance practice in Europe. The rapidly developing industrial situation in Japan and other factors led to the formation of such companies as the Kyodo Fire Insurance Company, Osaka and the completion of fire treaties between Dr. Schultz's company and the Kyodo. Three independent reinsurance companies (Dai-Nippon, 1919; Tatsuuma, 1919; and Nissho Fire and Marine, 1917) showed premiums of more than 4,000,000 *yen* in 1927.

TURKEY

Under the law of June 7, 1927, Turkey established a reinsurance monopoly. Fifty per cent. of every risk written by any national or foreign insurance company must be reinsured with *National Reinsurance*, and the latter must be bound to accept such risks. In this way 50 per cent. of all the insurance premiums encashed in Turkey by companies working in Turkey will be paid over to the monopoly company. Owing to the fact that the capital is limited to approximately \$500,000, it is obvious that the company will be unable to assume any but an unimportant share of the total risks involved—some \$50,000,000 per annum—and it will, therefore, be obliged to look to the European insurance market for cover. In point of fact this has already been found principally in Switzerland.

At least 60 per cent. of all premiums to the reinsurance monopoly will thus leave the country in the form of direct retrocessions from the monopoly company to foreign reinsurers. It is probable, too, that this will be the fate of a further substantial proportion in the form of indirect retrocessions made abroad by national companies, created and controlled by foreign insurance

companies, whom the monopoly company propose to interest by way of reinsurance. Thus it seems that the bulk of the profit which the *National Reinsurance* hopes to make is not from the small proportion of the premium income which it will retain, but the commissions which it will earn as intermediary for placing the reinsurances.

The monopoly may, at the discretion of the Government, be vested for a period not exceeding 25 years in a limited company established for the sole purpose of transacting such business. Sixty per cent. of the capital must be in Turkish hands. Under the decree of March 19, 1929, the monopoly was granted to the *Banque d'Affaires* for a period of fifteen years.

CZECHOSLOVAKIA*

The First Bohemian Reinsurance Bank is the only purely reinsurance company in Czechoslovakia. It was organized in 1872. The business of the Company is chiefly in the fire field. Its 1928 accounts stood as follows:

Item	kc.
Gross premiums.	63,234,049
Retrocessions.	44.1 per cent.
Net premiums	35,338,642
Fire.	28,703,111
Miscellaneous.	6,635,531

POLAND

In 1920, the "Warta" Reinsurance Company was established in Pozna. The office was later removed to Warsaw. The largest proportion of the capital stock is owned by the *Powszechny Zaklad Ubezpiecze Wzajemnych*. The "Warta" transacts all branches of reinsurance in all European countries and in England. Its premium income in 1928 was Zl. 13.6 million. The capital is Zl. 1 million.† Mr. Emile Betscher is General Manager.

UNITED STATES

Colonial and Early Nineteenth Century Status

There seems never to have been any definite, general prohibition of reinsurance in the United States in the eighteenth century

**Insurance Record*, London, October 11, 1929.

†Polish Zloty = 11.2 cts.

except as the statute of 1746 (19 Geo. II, c 37) applied before the Revolutionary War. It was held in an early Maryland case that this English statute of 1746 was in force in that State, but that it related exclusively to marine insurance.*

The Eagle Fire Insurance Company of New York, in 1906, said in its Centennial Book that "the first case of *reinsurance* noted in the history of the company was in August, 1813, when it *assumed* all of the outstanding risks of the Union Insurance Company (formerly the Jersey Bank) for a premium consideration of \$2,950.83, being for the unexpired time of \$689,200 at risk. The last of these risks did not expire until 1819, when a balance being drawn showed losses of \$429.50. The deal thus resulted in a profit to the company of \$2,521.33. This seemed to be the first case of "reinsurance" of one company by another in United States fire underwriting history. The Aetna, of Hartford, followed by reinsuring the outstanding risks of the Middletown Fire in September, 1819, and some three years later the Hartford Fire reinsured the business of the New Haven Fire. By these transactions the reinsuring companies took over whole portions of business from companies which had presumably failed.

According to the Secretary of the Eagle Fire Insurance Company of New York in a memorandum relating to the insurance of factories from 1806 up to November 1, 1817, it seems that the fire insurance business had run badly over that period, and certain suggestions were made as to the premium which might be paid for reinsurance, though there is no actual record that any such transaction was carried out.

An interesting early example of the striving after reinsurance through coinsurance practices is given in a publication by the Aetna Insurance Company wherein it is mentioned that that company arranged with the Hartford Fire Insurance Company to take half of a risk of \$15,000 as a direct insurance.

In July, 1837, the Supreme Court of New York in the case of the New York Bowery Fire Insurance Company *v.* the New York Fire Insurance Company, said: "reinsurance in this State is a valid contract* as well in cases of fire as marine policies. The risk assumed by the fire assurers gives them such an insurable interest as renders the reinsurance a valid contract."

*See *Merry v. Prince*, footnote, page 59.

Hone v. Mutual Safety Ins. Co. Case, 1847

We now come to an 1847 case which has bulked large in whatever discussions of reinsurance philosophy and practice there have been in this country,—*Hone v. Mutual Safety Insurance Company*, 1 Sandford (N. Y.) 137.

This is the leading American case on the subject of reinsurance as a monofield business, and, in the opinion of some, seems to establish an organic distinction between the reinsurance risk and the risk originally insured. A policy was made by the defendant in favor of the American Mutual Insurance Company. In the great fire of New York, July 19, 1845, the property insured by the American Mutual Insurance Company was destroyed and the company became insolvent. Defendants gave notice that they would prove on trial that by universal usage among insurers, they were liable for a sum which should bear the same proportion to the amount of the property destroyed as the policy of reinsurance bore to the original policy.

Here the court said "From *Le Guidon de la Mer* to the last edition of Mr. Justice Park's work, and the publication of M. de Alauzet in France, the contract of reassurance is described as a *contract of indemnity* to the party obtaining it; and in all the modern treatises such indemnity is explicitly declared to be the whole sum reinsured The case of *Merry v. Prince* (2 Mass. [Tyng] 176)* (November term, 1806) sustains the same view of the reassurer's liability The reassurer has nothing to do with the payment by the insurer."

It has been held by some insurance men that a contract of insurance is a contract to indemnify against loss, whereas a contract of reinsurance is a contract to indemnify against liability. This may be true if one overlooks that there are two primary species of insurance contracts subject to "second" insurance: (1) contracts of investment and (2) contracts of indemnity. In the *Hone* case only property loss was involved. Contracts insuring against loss or liability may be sub-species of contracts of indemnity. And reinsurance may be multi-field and monoline only *within* each of the two fundamental categories.

*"A policy of reassurance is a valid contract. The statute 19 Geo. II c37 did not extend to the British Colonies, and has never been adopted in this Commonwealth."

Philadelphia Reinsurance Practices

Fowler mentions a suit in Philadelphia in 1848 on a marine reinsurance liability case by the Philadelphia Mutual against the Washington Mutual. It seems also that French companies were transacting fire reinsurance in Philadelphia about the middle of the nineteenth century. New York State, in the act of June 25, 1853, provided for the incorporation of fire insurance companies, providing in Section 2 that "any company organized under this Act shall have power to effect reinsurance of any risks taken by them respectively." The Act of June 24, 1853, providing for the incorporation of life and health insurance companies under Section 1, authorized: "every company organized under this Act shall have authority to reinsure any risk herein authorized to be undertaken."

Fire Insurance Practices, 1872

In Griswold's "Fire Underwriters Textbook" (1872) we find it stated: "Reinsurance is general throughout the Continent of Europe as well as in the United States. In the United States there is no organized system of reinsurance by companies chartered especially for that purpose, although such an office is in contemplation in New York City." The Continental Insurance Company, in 1877, announced: "as a rule we do not wish to reinsure any company. It is, however, sometimes admissible to reinsure a company having a larger line than it ought to carry. In those cases where it may be necessary or advisable to reinsure our lines, we prefer to do so in the New York office."

Chicago and Boston Fires, 1871-1872

The Chicago Fire of October 9, 1871, directed attention toward the rudimentary state of the reinsurance business in this country at the time. Some 12,000 buildings were destroyed involving a loss of about \$165,000,000. The insurance on the property destroyed was about \$100,000,000, and the adjusted losses about \$90,000,000. Six British fire offices lost about \$5,100,000; the Aetna of Hartford adjusted about \$4,000,000; the Home of New York about \$3,000,000; the Chicago Firemen's, \$6,500,000; Merchants' of Chicago, \$5,000,000; Germania of Chicago, \$3,300,000; and Equitable of Chicago, \$2,000,000. Quite a number of United States offices were ruined. On November 9, 1872, the Boston

fire occurred, consuming 748 houses and causing a loss of \$75,000,000, covered by about \$65,000,000 of insurance; some \$35,000,000 was in Massachusetts companies. Many small, local companies went into liquidation.

The subject of reinsurance was discussed thoroughly by Commissioners of Insurance after the Chicago fire. Superintendent Miller of the New York Department pointed out in his 1871 report (p. 45, Barnes' Condensed Edition, 1871-1877) that some fire companies had assumed single risks which often exceeded the entire capital of the companies.

British Reinsurance Company Enters United States, 1882

The United Fire Reinsurance Company of Manchester, England, commenced business in the United States April 1, 1882, and its first obligatory treaty was arranged with the Fire Association of Philadelphia and this was followed shortly afterwards by treaties with the Hartford and the Queen. The first year's business showed a volume for this company of more than \$900,000. All the early American treaties seemed to be placed either with foreign unadmitted reinsurers or with the few native reinsurance offices, of which the first was the Reinsurance Company of America which was wound up in 1890. It was not until 1898 or 1899 that foreign reinsurance companies were admitted to business in the States under current conditions. In that year the Cologne Reinsurance Company and the Salamandra Reinsurance Company, and a number of others were admitted, since which time there was a great development of reinsurance on the North American continent.

The case of *Manufacturers Insurance Company v. Western Assurance Company* (145 Mass. 419) (1888) is of interest as an indication of the reaction at that time to the philosophy of reinsurance in this country. The court said: "while in a sense it was an insurance upon property, it was strictly a *contract of indemnity against risk under another contract which had been entered into by the insured.*" This suggests that reinsurance has at times been considered in this country as a form of insurance *sui generis*, that it has its own attributes and status, and that the only obstacle to its growth as in foreign countries has been the restriction upon the classes of business which a reinsurance company may write in a given State.

Baltimore and San Francisco Fires

Direct writing insurance companies were again to be tried sorely by two catastrophic fires,—the Baltimore fire of February, 1904, and the San Francisco earthquake and fire of 1906.

The latter catastrophe occurred on April 18, 1906, and caused a total estimated loss of \$350,000,000, on which there was about \$235,000,000 of insurance, and about 80 per cent. of this insurance was paid. Professor A. W. Whitney issued a comprehensive report on the insurance aspects of the fire on behalf of the San Francisco Chamber of Commerce. Many of the companies which did not pay their direct claims in full, paid their reinsurance claims fully. The 1905 report of the Insurance Commissioner of California gives the essence of Prof. Whitney's report (pages 20-35).

Later Developments in Fire Reinsurance

In 1914, there was operating in New York State the Reinsurance Bureau, an organization fostered by 58 direct writing fire companies, which, in the opinion of Superintendent Hotchkiss (N. Y.), would not have needed to exist if proper and sufficient reinsurance facilities had then been available. The Bureau was simply a reinsurance clearing house, for business submitted by contributing direct writing members.

The Pilot Reinsurance Company of New York was incorporated April 14, 1925, in New York to write fire, marine and allied lines of reinsurance. Mr. Carl Schreiner is President. At the close of 1928, the company had \$1,992,283 net premiums in force and assets of \$3,554,186.

Farmers' Mutual Fire Insurance

A most interesting development of reinsurance practice in the United States relates to farmers' mutual property insurance. Here we may note particularly the experience and practices in Iowa. In that State, there are 160 county mutual associations. Their business is primarily to insure farm property within their respective territories against hazards of fire and lightning. The diversity in size of these county associations is illustrated by the fact that the smallest has a total of \$85,700 of risks in force, while the largest carries a total risk of \$30,100,955. The average association carries \$6,058,398.

It has been shown that the aggregate of these small local associations provide property insurance to the farmers at a rate which is, on the whole, much lower than for larger organizations operating throughout a wide area. These farm fire risks are by no means attractive to stock companies operating from the big cities. Among the farm mutuals, it has been found possible to incorporate, by means of a reinsurance plan, some of the advantages of a statewide organization and to retain thereby the advantage of controlling moral hazard which these local associations seem to have. The insurance associations of Iowa stand at the forefront of the development of reinsurance facilities for farmers' organizations.

The Iowa Farmers' Mutual Reinsurance Association of Greenfield, Iowa, was organized April 19, 1908, and for more than a decade confined its work to specific reinsurance. It now carries blanket reinsurance to the extent of \$225,000,000, or something less than a quarter of the total insurance that all county associations have in force.

Methods in Blanket Reinsurance for Farmers' Mutuals

Upon applying for blanket reinsurance, each local association submits a schedule of its gross risks in force and its gross losses for each of the preceding ten years. On these data, the reinsurance association computes a normal loss ratio for that association. The net amount of risks in force in the reinsuring association is multiplied by the normal loss ratio to obtain the loss budget or the total amount of loss which might normally be expected during the year. The reinsurance association agrees to pay any losses of the reinsuring association in excess of 125 per cent. of the loss budget up to 225 per cent. Any losses in excess of this per cent. must be borne by the local association. Funds for the payment of these losses are gained by an equitable assessment upon member associations based upon the loss budget.

Some have maintained that this blanket reinsurance plan operates to the disadvantage of the larger local associations, but this has not been definitely established.

Mutual Fire Insurance Generally

Reinsurance was placed by mutual fire companies for many years with stock companies. Later, agents' associations in the

mutual field became insistent that this practice be dropped and that arrangements for the exchange of business be effected between mutual companies. At the present time most of the mutuals reinsure with other companies in the same field. Eight or ten years ago the Mutual Reinsurance Bureau was founded (Belvidere, Illinois). This Bureau serves many companies. Large mutuals act as reinsurers, and companies taking risks beyond their capacity are given reinsurance service through the Bureau. This Bureau seems to have been the first of its kind in the United States. Excess loss reinsurance for assessment fire mutuals is not lawful in Illinois. (Opinion Attorney-General, Illinois.)

Life Reinsurance Developments

There are on record individual instances where life insurance companies at an early date entered into agreements with other companies to effect reinsurances. One instance of this kind was the contract between the Pacific Mutual Life Insurance Company and the California Mutual Life Insurance Company, November 6, 1868. The Pacific Mutual's limit on one life at that time was \$10,000.

The risk-premium method in life reinsurance has been in use in the United States since about 1903, according to Messrs. Laird and Cathles.⁴⁰ It does not today appeal to the large mutual life insurance companies in the Northeast, but is used extensively by companies in the West and South. It has not been generally adopted in Canada. Of one and one-quarter billion dollars of reinsurance in force in the United States and Canada, at the end of 1926, less than one-half was handled on the risk-premium method.

The Reinsurance Life Company of America, Des Moines, Iowa, was incorporated in 1917 and began business on August 18, 1918, with a paid-in capital of \$500,000 and \$500,000 surplus. It is in business to reinsure life, double indemnity and disability policies on the non-participating yearly renewable term plan (risk premium), or as coinsurance. Five and ten year term reinsurance policies are also issued. At the end of 1928, the company had \$62,651,000 in force.

On February 15, 1919, the Metropolitan Life Insurance Company organized a separate Reinsurance Division. It was found

that the reinsurance of the surplus business of other companies could be handled much more expeditiously and satisfactorily by a separate division than by having such reinsurance merged with the regular ordinary business, as had theretofore been the case. Another factor influencing the establishment of the Reinsurance Division was the fact that during the War the business of two German reinsurance companies, the Prussian Life Insurance Company and the Mercury Reinsurance Company, was taken over by the Alien Property Custodian, and the Metropolitan was asked by the Government to assume the business of the two German Companies. Life reinsurance is transacted by the Metropolitan on the coinsurance and yearly renewable term (risk-premium plan) and through either fixed (automatic) or facultative agreements. At the present time the total life reinsurance outstanding in the Metropolitan is \$437,000,000, the largest single life reinsurance unit in the world.

In 1923, the North American Reassurance Company was incorporated with a paid-in capital of \$1,000,000, and a paid-in surplus of \$1,000,000. A majority of the stock is owned by the Swiss Reinsurance Company of Zurich, founded 1863. The North American operates exclusively in the United States and Canada. This company is the first life reinsurance company to be operated on such a large scale in the United States. It writes life reinsurance only. At the end of 1928 it had \$159,457,000 in force.

The Pilot Life Reinsurance Company was incorporated on April 28, 1928. At the end of 1928 the company had admitted assets of \$1,035,000 and had not up to that time transacted any business. In October, 1929, it was decided to liquidate the company.

The growth of life reinsurance practice in the United States may be gauged from the following table:

PERCENTAGE, REINSURANCE PREMIUMS FOR LIFE INSURANCE OF TOTAL PREMIUM INCOME FOR 19 LIFE COMPANIES HAVING PREMIUM INCOME OF MORE THAN \$20,000,000 IN 1927*
(Constant group, 1918-1928)

Year	Premium Income* (own account)	Reinsurance Premium*	Percentage, Reins. Prem. of Total Premium Income
1928	\$1,872,502,015	\$37,220,809	1.99
1927	1,703,686,091	31,548,778	1.85
1926	1,556,815,696	26,365,886	1.69
1925	1,423,364,035	21,613,886	1.52
1924	1,272,048,677	13,861,847	1.09
1923	1,147,158,113	9,651,029	.84
1922	1,031,369,494	8,114,829	.79
1921	944,933,656	5,310,006	.56
1920	875,512,239	3,604,136	.41
1919	750,409,317	3,212,711	.43
1918	636,266,227	1,994,224	.31
Percentage, 1928 of 1918	294	1869	....

*Includes total and permanent disability.

Life reinsurance premium volume is apparently growing much faster than are premiums for "own account."

Casualty Reinsurance

In 1911, the European General Reinsurance Company was organized in England as the European Accident Insurance Company, Ltd. Its present name was adopted in 1920. The company writes general casualty lines and only in the United States. While registered as a British company, its administrative office is in Switzerland. Recent changes in its administration indicate a closer connection with its associated company, the Swiss Rück. At the end of 1928 it had admitted (U. S.) assets of \$15,395,000 and its net premiums written were \$6,988,705. Since organization in the United States, the company received \$66,956,000 in premiums and paid \$28,261,928 in losses.

The Employers Reinsurance Corporation of Kansas City, Mo., was incorporated January 30, 1914. It was organized by E. G. Trimble who has been its president ever since. In 1928, the net premiums written were \$3,071,000 and the admitted assets \$6,823,000. The company will continue exclusively as a casualty and surety reinsurance concern.

In 1917, the American Reinsurance Company, of Pennsylvania, was organized to transact excess reinsurance on general casualty lines. It is licensed in 21 States and is managed by Ream,

Wrightson and Company, insurance underwriters. Its net premiums in force December 31, 1928, were \$1,060,197.

The General Reinsurance Corporation was organized March 21, 1921 as the General Casualty and Surety Reinsurance Corporation, with a paid-in capital of \$800,000 and \$900,000 net surplus. In June, 1921, it took over the United States' business of the Norwegian Globe of Christiania. In 1923, it assumed its present title. Its present capital is \$1,500,000 and the surplus is \$1,603,035.72. In 1928, the General Alliance Corporation was organized to acquire and hold the shares of the General Reinsurance Corporation and a half interest in the holdings of the Royal Exchange Assurance Group (London) in the United British Insurance Co., Ltd. On March 15, 1929, the General Alliance Corporation owned all the stock of the General Reinsurance Corporation, and, jointly with the Royal Exchange Group, a controlling interest in the United British. At the end of 1928, the General Reinsurance Corporation had \$13,000,000 in admitted assets, and, during that year, net premiums of \$5,450,000, paid losses of \$2,600,000 and total expenses, commissions, and taxes of \$2,240,000. Early in 1929, the United British Insurance Co., Ltd. established a United States Branch with an initial deposit capital and surplus of approximately \$1,450,000. This United States Branch of the United British transacts casualty reinsurance as a "running-mate" for the General, and has the same management as the General. The two companies transact practically all forms of casualty and surety reinsurance and constitute the first example of a "Group" in the history of American casualty reinsurance.

The Excess Insurance Company of America was incorporated under New Jersey laws December 7, 1926, and began business February 18, 1927. It has paid-up capital of \$750,000 and net surplus of \$1,247,000. It writes general casualty and surety reinsurance and excess insurance business. In 1928, its underwriting earned income was \$695,427; losses and expenses incurred \$258,995; underwriting loss, \$252,947 and investment profit of \$72,306. Since organization it has received \$1,235,738 in premiums.

The International Reinsurance Corporation was incorporated February 15, 1928, in California. It writes general casualty and surety lines, is licensed in eight States and on September 30, 1929, had assets of \$7,040,730. The total premiums written between

July, 1928, and September, 1929 were \$3,603,000. The Company has established connections in Great Britain recently.

Workmen's Compensation

According to Mr. Michelbacher* the problem in workmen's compensation insurance seems to be the proper approach to the so-called "shock" loss. The "shock" loss is that which occurs infrequently, but which may be of considerable magnitude. Mr. Michelbacher emphasizes Ehrenberg's principle that in many lines of insurance the ideal procedure is to secure the most minute subdivision of risk and the distribution to the utmost extent of this subdivided risk among risk carriers. The acceptance of obligations by companies in connection with workmen's compensation and employers' liability insurance involves catastrophic risk of unlimited extent in some cases. Here it resembles the unlimited liability assumed by some companies under public liability automobile insurance contracts.

"Shock" losses originate from multiple claims arising from a single accident (gas explosions, collapse of structures, conflagrations, railway disasters, boiler explosions and the like). Liability cover supplementing workmen's compensation has in it possibilities of calamitous loss. In Mr. Michelbacher's article and also in *Michelbacher and Nial* (Workmen's Compensation, N. Y., McGraw-Hill Book Company) the details of workmen's compensation reinsurance practices are related historically. Mr. Michelbacher will discuss reinsurance in the forthcoming text on casualty insurance to be issued by the McGraw-Hill Company late in 1929.

Personal Accident and Health Insurance

Full details on practice in this field are not available. In January, 1916, an individual underwriter in Chicago began to devote all of his time to accident and health reinsurance. At that time reinsurance practices were new in this field in the United States. In 1916, the surplus business of twelve accident and health companies in the Middle West was arranged for through automatic treaties. In April, 1925, catastrophe accident reinsurance was arranged for a cover of \$1,000,000 above a net loss of \$50,000 on \$1.00 newspaper accident policies for a

*"Distribution of Shock Losses in Workmen's Compensation Insurance," *Proceedings* Casualty Actuarial Society, Vol. III, p. 235.

company whose premium on this plan amounts to more than \$1,000,000 annually. The policy is still in force.

Large benefits are sometimes provided for small premiums in accident insurance,—\$15,000/\$30,000, principal sum, four weeks deductible weekly indemnity for \$50 to \$100, for a premium of \$30 annually. Small companies may thus assume greater liability than can be carried safely, hence some method must be devised to safeguard direct writers. Reinsurance is practiced in the industrial health and accident field also.

One type of contract provides, on an "excess" basis, reinsurance of all the weekly indemnity on every policy issued, where the indemnity runs beyond the first four weeks of an accident and health claim. Reinsurance of the double indemnity feature of life insurance policies can be obtained.

Livestock Insurance

The historical and comparative aspects of reinsurance in this field have been set forth by Kopf in *Proceedings*, Casualty Actuarial Society, Vol. XIV, Part II, p. 291. This covers principally the experience in foreign countries.

* * * *

PERCENTAGE REINSURANCE PREMIUMS OF TOTAL PREMIUM INCOME. INDIVIDUAL CASUALTY LINES FOR MISCELLANEOUS U. S. STOCK COMPANIES HAVING MORE THAN \$9,000,000 OF PREMIUM INCOME IN 1926
(Constant Group, 1918 to 1927)

Year	Accident	Health	Non-Can. Acc. & H'lth	Auto. Liability	Liab. other than auto.	Work-men's Comp.	Fidelity	Surety
1927	7.9	5.4	17.2	1.2	1.9	.1	26.2	28.4
1926	7.1	5.4	17.2	1.0	1.7	.1	24.6	31.1
1925	6.4	5.3	16.2	1.1	1.8	.1	24.2	29.1
1924	5.8	6.0	16.1	1.1	1.8	.1	23.5	26.7
1923	6.7	6.9	..	1.0	1.6	.03	29.0	28.6
1922	5.8	6.1	..	.9	1.4	.04	33.3	24.6
1921	6.5	7.1	..	.6	1.3	.5	31.1	23.9
1920	5.7	6.7	..	*	.7	.5	26.0	24.3
1919	5.1	6.1	..	*	.5	.7	21.7	18.2
1918	4.9	5.9	..	*	.3	.6	14.3	17.2

	Plate Glass	Burg. & Theft	Steam Boiler	Eng. & Mach.	Auto. & Teams Prop. Dam.	Auto. Collision	Prop. Dam. & Collision not auto.	Other Classes
1927	.01	18.0	22.9	76.3	.1	.3	1.1	14.6
1926	.01	20.5	19.0	59.7	.02	1.1	2.1	22.4
1925	.01	22.1	20.5	56.7	.3	.7	1.8	22.9
1924	.01	22.5	16.1	63.8	.3	.7	1.0	22.5
1923	.04	21.8	14.3	41.4	.3	.8	.01	19.5
1922	.01	26.6	15.0	42.0	.4	1.2	.01	24.8
1921	..	32.9	22.7	66.9	.5	..	.01	21.5
1920	.02	31.0	20.6	53.4	.5	..	..	8.8
1919	.01	27.0	15.5	38.6	.3	..	..	5.5
1918	.1	25.1	13.6	47.9	.3	..	..	2.5

*Included in "Liability Other than Auto" for 1918-1920.

REINSURANCE PRINCIPLES IN GENERAL DURING RECENT DECADES

Prior to 1909, only ten reinsurance companies had been admitted to New York State. Between 1909 and 1914, fourteen others entered in the State. In 1914, 22 were doing business in Massachusetts and New Jersey; in Pennsylvania, 26,—all but two such companies being limited to fire business. The increase in the premium volume of such business in New York State was from \$18,340,000 in 1909 to \$38,321,000 in 1913.

First Mono-line, Multifield Reinsurance Company in the United States, 1912

The First Reinsurance Company of Hartford was organized on November 13, 1912, in Connecticut by special charter. Mr. Carl Schreiner, Mr. Morgan G. Bulkeley and eleven other prominent insurance men in Hartford organized the company to "*carry on a reinsurance business and to make reinsurance on insurance risks of every kind and description undertaken by other companies, associations or persons.*" It began business January 1, 1913, with \$500,000 paid-in capital and a like amount of surplus. Its charter authorized capital increases up to \$5,000,000. The Munich Rückversicherungs Gesellschaft owned 4,505 of the 5,000 total shares at the outbreak of the War. The stock was sold by the Alien Property Custodian at \$175 a share, principally to ten insurance companies. In April, 1925, interests allied with the *Rossia Insurance Company* secured control of the company at \$225 a share. The *Rossia* now owns the majority of the capital stock, which was increased in 1926 to \$800,000.

The company is a pioneer American reinsurance company and has the distinction of being the only company which operated in the United States, writing *all* lines of coverage, including fire, life and casualty. In 1925, all the outstanding life business was reinsured with the Sun Life of Canada and toward the end of 1925 all fire and allied lines were disposed of. At the beginning of 1926, no other than casualty lines were written. Its business is now confined strictly to casualty insurance. It operates in 18 States. At the end of 1928, it had assets of \$3,278,000; in 1928, \$1,151,311 in net written premiums, paid \$508,794 in losses and paid out \$513,457 in management expenses. After the adjustments as to lines written (1925), the company has shown steady

gains in casualty reinsurance. It seems to have been the first native company to do a *general* reinsurance business exclusively.

The Mono-line, Multifield Reinsurance Principle in Discussion, 1912-1915^{29 30}

We come now to the report of Commissioner Hardison in Massachusetts for 1913. In Volume I, Mr. Hardison said: "There is another phase of the reinsurance question which has been forcing itself upon public attention, and that is the contention that a reinsurance company ought to be given authority to reinsure all kinds or classes of risks, in spite of the fact that in this country it has always been considered sound policy to confine a direct writing company to covering only certain classes." This shows again the development of the idea that a reinsurance company operating in a multi-field may be considered a single-line company. It may be considered to be one *line* reinsurance—insurance of the *liability* of direct insurers. It is held that this lies in the essential difference between a reinsurance risk and a risk originally insured.

Much the same philosophy was advanced by Commissioner Mansfield of Connecticut in 1914. Three papers³⁰ were presented to the 1914 convention of insurance commissioners directed at the general topic of multi-field and mono-line reinsurance. Hon. Burton Mansfield (Conn.) concluded that the abandonment of American restrictions upon the classes of business written both by direct and reinsurance companies would be but a step, and a wiser and better system of classification of the business than had heretofore been in use. Mr. Hasbrouck (N. Y.) did not agree that multi-field operations would show the same efficiency, growth and soundness as would restricted-field business.

A year later we note that in the New York Department Report, Vol. I, p. 36, Superintendent Hasbrouck presents remarks on restricted *vs.* unlimited underwriting powers, which are worthy of careful study. At the 1913-14 sessions of the New York legislature,* bills were presented for the amendment of the Insurance Law, providing for the organization and admission to transact business in New York State of corporations empowered

*1913: Two bills, House Introductory No. 615; Final Print No. 2813.

1914: Two bills, Assembly No. 1386; Senate, No. 1002. (Courtesy of W. Barnes, and Wose and Coigne).

to make reinsurances in every field of insurance. The bill was regarded as out of harmony with the so-called "American system" of insurance, and it was felt that "its passage might perhaps be a forerunner of the adoption in this country of a new system for the regulation of insurance companies which had been vaguely referred to by advocates of the bill as the system obtaining in Europe." Essentially by "American system" was meant the practice of segregating insurance powers by lines or groups of lines.

Mr. Hasbrouck was not satisfied that the limitations on lines operated should be lifted. He did not feel that the operation by one corporation, either as a direct or re-insurer of an unlimited number of lines was wise. The fiduciary or trust funds of a life insurance company should not, in his opinion, be subjected to the conflagration hazards of fire insurance or to the indefinite liability incidental to casualty and miscellaneous insurance. The bill was defeated.

In general, the transaction of reinsurance business exclusively by native companies in the United States, and on a large scale, appears to have been a phenomenon of the last two decades. The earlier and largely unrecorded history of reinsurance in our country relates that treaties were made between direct writing companies or with foreign reinsurance companies admitted to do business in the States. In a few instances, such treaties were effected with companies not authorized to do business in the country. The active penetration of the business into the United States by Continental and English companies, and more recently the entrance of American fire insurance companies into countries outside the United States, seems to be in large measure responsible for the widespread use of treaty reinsurance.

The special characteristic of reinsurance business in the United States, over the past decade, has been the tendency to conduct such business in two general ways: (1) with native companies specializing in reinsurance; (2) with alien companies. Under the latter class, distinction must be made between the alien companies which (a) conduct reinsurance business exclusively in the United States and (b) those companies doing reinsurance business only in the United States and direct writing business only in their native countries.

The War eliminated, of course, the German companies in the United States for the time being. The Russian Revolution of

1917 abolished relations with the Russian companies. Prior to the War, reinsurance as a separately organized business was largely in the hands of German and Russian companies, particularly Russian companies. These Russian operators were later comers in the United States than the Germans. The Münchener Rückversicherung and the Cologne Rückversicherung both entered business in the United States in 1898; the Franconia and the South Germany in 1911; and the Minerva in 1912. The earliest firmly established Russian company was the Moscow Fire in 1900. Between 1900 and 1913, eight other Russian companies entered the United States for fire reinsurance. In 1917, they had a gross premium income of \$51,219,000, net written premiums of \$27,397,000 and earned premiums of \$28,462,000. None of these companies, except the Rossia, was operating in 1927. This company was reconstituted as a Connecticut corporation in 1915.

In 1927, there were a dozen United States native fire reinsurance companies and 15 alien companies writing reinsurance business, although officially licensed as United States branches.

The oldest company of the American group was formed in 1909, the second oldest in 1913. The oldest existing reinsurance specialist company in the United States is a Swedish organization (*Skandia*) which officially entered the country in 1900. Two other foreign companies, Swiss and Spanish, date from 1910 in respect to their officially authorized operations. Thus, of the fire offices doing reinsurance business exclusively before the War, three were foreign and two were native. The only development during the War was the official entry of a fourth foreign company, a Danish institution (Skandanavia, 1916). In 1918, two others were registered and three more in 1919.

The American companies became strongly active after the War. The Rossia (U. S.) was constituted out of the old American branch of the Rossia. It was the only existing survivor as a reinsurance company of a half-dozen Russian companies that were in active operation in the reinsurance business before the Russian Revolution. The principal innovation introduced by these foreign companies was that they made it possible for institutions to cede reinsurance in large amounts without the obligation of accepting any reinsurance in return favor.

The reinsurance business generally in the United States during

recent years has been said to be good. Results were affected, of course, by the Florida hurricanes. There has been no material reduction in rates reported. For some years companies relied upon investment revenue and conjunctural profit in the lack of underwriting profit. Now that investment conditions are hardening, ways and means of improving underwriting conditions will have to be found to assure a working profit. There is not a large margin for saving in management costs; it is in risk conditions that the largest opportunity for improvement lies.

Reinsurance carriers in the United States exhibited the following results* for 1927 and 1928:

Founded	Company	Net Premiums Written	
		1928	1927*
	Fire reinsurance companies: total 13 companies.....	\$33,918,775	\$35,316,580
1926	American Reserve.....	2,498,726	2,104,807
1913	Eagle Fire.....	2,537,930	3,523,139
1920	Fire Reassurance Company..	2,934,664	2,976,854
1926	Guardian Fire.....	2,952,699	2,529,452
1925	Hamburg American.....	1,418,730	1,503,962
1909	International.....	4,706,647	4,927,245
1920	Inter-Ocean Reinsurance....	1,662,517	1,401,598
1923	Lincoln Fire.....	2,056,594	2,076,548
1920	New England Fire.....	289,171	237,333
1925	North Star.....	2,446,355	1,843,612
1925	Pilot Reinsurance†.....	1,165,781	1,513,638
1919	Rossia of America.....	7,774,016	10,611,706
1927	Reinsurance Company of America.....	1,474,945	66,636
	Casualty companies: total five companies.....	16,052,371	15,664,996
1917	American Reinsurance Com- pany.....	1,351,702	986,088
1911	European General Reinsur- ance Company.....	6,988,705	7,432,166
1926	Excess Insurance Company of America.....	1,111,107	146,683
1912	First Reinsurance Company of Hartford.....	1,151,311	1,177,638
1921	General Reinsurance Cor- poration.....	5,449,346	5,922,421
	14—Foreign companies*—total..	\$	29,630,402

The "foreign" companies included were: Baltica (Copenhagen, 1919); Christiania General (Oslo, 1918); Jupiter General (Bombay, 1924); Kyodo Fire (Japan, 1926); Metropolitan National (Cuba, 1920); New India General (Bombay, 1921); Prudentia† (Zurich, 1918); Prudential (Great Britain, 1922); Reinsurance Salamandra (Copenhagen, 1919); Skandia (Stockholm, 1900); Skandania (Copenhagen, 1916); Swiss Reinsurance Company (Zurich, 1910); Union and Phoenix Espagnol (Spain, 1910); World Auxiliary (London, 1920). The year mentioned is the year the company was admitted to the United States.

**The Review*, London, November 16, 1928; and *Spectator Year Books*, N. Y., 1929. †Affiliate of Swiss Re. ‡Affiliate of Muenchener Re. §Not available.

DATES OF ESTABLISHMENT OF REINSURANCE COMPANIES,
1850 TO 1925

Country	1850-1859	1860-1869	1870-1879	1880-1889	1890-1899	1900-1909	1910-1919	1920-1925	Total
Germany.....	3	2	4	3	2	2	6	12	34
Switzerland....	..	2	1	..	..	..	3	1	7
Austria.....	..	3	..	2	..	1	1	..	7
France.....	..	..	..	1	2	3	6	4	16
Sweden.....	..	..	1	1	2	2	5	..	11
Denmark.....	..	..	..	1	2	..	17	..	20
Norway.....	..	..	..	..	..	..	9	..	9
Holland.....	..	..	..	1	2	..	..	3	6
Belgium.....	1	..	..	1	..	1	2	1	6
Italy.....	..	..	..	..	..	..	3	5	8
England.....	..	..	..	..	..	5	10	1	16
United States..	1	10	5	16
Total.....	4	7	6	10	10	15	72	32	156

Source: *Rendtorff-Golding*, p. 91; *Thorin*, p. 26.

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FURTHER INQUIRIES

The following questions in reinsurance theory and practice could be examined comparatively and historically in future papers before this Society:

1. Can the fixed-share treaty idea be applied to the investment practices of small and medium-sized insurance companies, especially in the mortgage loan field? (See: *Post Magazine and Insurance Monitor*, London, August 17, 1929, p. 1622);
2. What has been and what is the place of reinsurance in international private law?
3. Liquidation and assumption history and practices in handling alien reinsurance business at and after the outbreak of the Great War (United States Alien Property Custodian; Insurance Departments of the States);
4. 'Second insurance' practices in 'gift insurance' (Newspaper-subscription and customers' gift accident and life insurance);
5. The principle *uberrimae fidei* in reinsurance: its practical aspects;
6. Revision of statute law on reinsurance: definitions; separation of reinsurance, assumption, substitution and liquidation procedure; rein-

insurance premium and loss reserves in theory and practice; admission of foreign and alien companies; 7. Business, estate and 'jumbo' life insurance in relation to life reinsurance practice and loss experience; 8. A manual of accounts for multifield property and personal reinsurance; 9. The 'fleet', running-mate or 'konzern' idea,—in direct and reinsurance: administration, law, underwriting; 10. Thorough-going examination of reinsurance as possible backbone of tornado, hail, pest, drought, crop or crop damage, 'price' or 'bargain' insurance (as in Walford); business (cycle) risk, and depreciation insurance* (*Sachlebensversicherung*; *Sachleistungsversicherung*, *Sachwerterhaltungsversicherung*, of Hans Heymann); credit, flood and water damage insurance.

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SUPPLEMENT

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IV. GLOSSARY

In the preceding text no attempt was made to define terms as they arose in the discussion. The following glossary may be of service.

Automatic treaty plan:

(1) Where reinsurer's interest in each risk proceeds automatically from the terms of the treaty, *Synonym:* Fixed treaty plan; obligatory treaty plan. (Greene). (2) "A treaty is a contract between an insurer and reinsurer under which the one binds itself to cede and the other binds itself to accept, a certain fixed share of all risks of a nature defined in the contract. The first distinguishing feature of the treaty is its obligatory nature; each party to the contract is equally bound. The second feature of the treaty is that liability of the reinsurer commences simultaneously with that of the ceding company." (C. E. Golding).

Automatic treaty plan (in life reinsurance):

Where the direct-writing company retains its full maximum retention, and under the agreement is obliged to cede to the reinsurer its excess insurance up to a stated amount, generally 100 per cent. of its retention, and where the reinsurer is bound to accept the same. Reinsurance in excess of the amount automatically ceded may be submitted on a facultative agreement to the first reinsurer or to some other insurer with whom the direct-writing company has reinsurance relations. *Synonym:* Obligatory treaty; fixed treaty. *Note:* The word "excess" as here used means "surplus" (q. v.) (M. W. Torrey).

Bordereau:

A form or schedule upon which risks to be reinsured are listed by the ceding company. They are generally filed with the reinsurance company by the 20th of the ensuing month; where accounts are large, bordereaux are often transmitted weekly. The form includes enough data to identify the risk. The bordereau is a legacy from the facultative or open treaty stages of reinsurance. The development of fixed treaty reinsurance may eliminate the bordereau. *See:* *Carnet*. (Greene).

Bulk reinsurance:

Presumably the transfer of many contracts from one insurer to another. (See annotation, Section 22, N. Y. Insurance Law, Baldwin's edition, 1928, p. 59).

Carnet:

The book in which risks offered were entered; the signature of the agent of the reinsurance company denoted acceptance of the risk. (*Walford* on French reinsurance practice in his "Insurance Cyclopaedia").

Cede:

To transfer the whole or part of a risk from the first or primitive insurer to a reinsurer or to reinsurers; or, from a reinsurer to a retrocessionaire (*retrocede*). In the latter case, the second or subsequent cessions are *retrocessions*.

Co-insurance (as between company and policyholder):

(1) Exists where the person who insures his property for less than its entire value, and where he is understood to be his own insurer for the difference which exists between the true value of the property and the amount of the insurance. In event of a partial loss, when the loss is not greater than the insurance, the amount paid is in ratio of the total amount of the insurance to the full value of the property. (*Corpus Juris*, Vol. II, p. 957). (2) To be distinguished from "coinsurance" as between companies, a term which may broadly include reinsurance practice itself. (Kisch).

Co-insurance (as between insurers generally):

(1) "In a *general* sense, coinsurance exists when several insurers take part by agreement in carrying the same risk. It is *not* coinsurance when a person insures the same interest through separate contracts with insurers who have no contractual relation with each other in the particular case. This latter is *multiple* or *concurrent* insurance when the total amount insured does not exceed the insurance value (*q. v.*) of the interest. It is 'double insurance' when in 'multiple insurance' *the sum insured exceeds the insurance value.*"

(a) *External coinsurance*: "In a *special* sense, coinsurance *obligates through one contract* several insurers *directly* to one insured, but does *not* obligate the insurers to each other. This is *external* or true coinsurance."

(b) *Internal coinsurance*: "Where one insurer obligates himself to one insured, and then splits the risk among several insurers obligated only *to the first insurer*, that is *internal* coinsurance, *or the essence of reinsurance.*" (Kisch).

Co-insurance (in life reinsurance):

(2) "Where the reinsuring company exactly duplicates the coverage of the insuring company. The reinsuring company is paid a pro rata share of the premium received by the direct writing company, the reinsuring company paying first year and renewal commissions to the ceder at the rate paid by the direct writer to its own agent. Reinsurer also allows surrender values and dividends at the rate of the insuring company." (M. W. Torrey).

(3) "Where the reinsurer receives a part of the original contract from the original insurer." (Laird and Cathles).

"Company fund:"

A "paper" device whereby within a given company underwriting departments "cede" to the fund certain amounts of "reinsurance." The insurance corporation actually sustains all losses charged to the fund. (Greene.)

Concurrent insurance:

See: Coinsurance (as between insurers generally).

Cover:

See: "Reinsurance Cover" for distinction between "treaty" and "cover." (Gardner).

Determinate reinsurance. See: Treaty types.

Direct insurer:

Insurer obligated directly to policyholder or insured. *Synonyms:* Original insurer; first insurer; primitive insurer; primary insurer; direct writing carrier; original writer; ceding company; ceder.

Double insurance:

(1) Double insurance is where the insured procures two or more insurances of the same interest in the same property and for the same risk. If the persons insured or the risks, interests, or property are different, it is not a case of double insurance. (*Corpus Juris*, Vol. XXXVIII, p. 1159); (2) Reinsurance is to be distinguished from double insurance by the circumstance that the former is an insurance of a risk under an original policy, while the latter is a second insurance of the identical interest or subject matter covered by the first insurance. (*Hone v. Mutual Safety Insurance Company*, 2 N. Y. 240); (3) Double insurance is where an interest on the same risk is insured with several insurers and *the total sum insured exceeds the insurance value* (q. v.). (Moldenhauer, in Manes' *Versicherungswörterbuch*, 2nd edn., p. 1046). *See also:* "Reinsurance—general definitions" and Kisch's definition under "Coinsurance (as between insurers generally)."

Excess cover:

A type of reinsurance *cover* where the reinsuring company usually fixes its amount retained and the reinsurer takes an agreed amount of the excess over the retention. (Term applies in *marine insurance*, Great Britain, to *special risks. See: Reinsurance cover.*) (Gardner).

"Excess of loss" treaties in fire insurance (Great Britain):

These treaties apply chiefly to conflagration losses of fire insurance business and cover the whole business of a company, or a complete section of the business, at home, general foreign, or United States. Used particularly in well known conflagration or catastrophe areas. (Golding).

Excess quota share treaties: (marine reinsurance Great Britain)

Under an "excess" quota share treaty, the reinsurer participates only in the amount which exceeds the direct writer's retention. The direct writer under some excess quota share treaties participates by retaining a share of his own excess, in addition to the first retention. (Gardner).

NOTE: Gardner uses the word "excess" in his definitions in the sense in which we use the word "surplus."

Excess reinsurance (United States):

(1) Where reinsurer is not involved in any loss except to the extent to which it is in excess of a stated amount. Sometimes confused with "surplus" reinsurance. "Excess," in casualty insurance, relates to the amount of the *loss*, not to the total *amount* of the policy. Feasible only for kinds of insurance where losses equalling or approximating the face of the policy are rare. (Greene).

(2) An arrangement whereby the ceding company retains the whole amount of any given *loss* up to an agreed figure, and reinsures the *excess* beyond this amount up to a fixed amount. Devised by Mr. Cuthbert Heath, of Lloyds, between 1880 and 1890. (Rendtorff—Golding).

Excess treaties (marine insurance, Great Britain):

Where reinsurers participate only in amounts which exceed the retention of the direct writing companies. Where the direct writer's retention is not exceeded on any one risk, the reinsurers do not participate, there being no "excess." In practice, "excess" treaties are the most complicated and the most expensive to work. *See: Reinsurance cover.* (Gardner).

"External" coinsurance:

True "coinsurance" as between insurers. *See: Kisch's definition of coinsurance.*

Facultative:

Conveys the meaning "Permissive" as opposed to "Obligatory." In use at least as early as 1820. (Golding).

Facultative reinsurance agreements (in life reinsurance):

The insuring company is not obligated to submit its excess insurance to the reinsurer, but may or may not submit it; and the reinsurer is free to accept or reject the same. Amounts in excess of those automatically ceded may be reinsured facultatively with the first reinsurer or with another insurer with whom direct writing company has reinsurance relations. (M. W. Torrey).

First insurer:

Synonym, direct insurer (q. v.).

Fraud or mistake in reinsurance:

A contract of reinsurance may be invalidated by fraud or mistake, the same as a contract of original insurance. Fraudulent misrepresentation or concealment by the direct insurer as to the nature of the risk will void the contract, notwithstanding the liability of the direct insurer to the original policyholder.

Gross premium system (in life reinsurance):

See: Post Magazine and Ins. Monitor, June 8, 1929, for discussion of merits of risk and office premium systems.

Guarantee (as synonym for "reinsurance") (Great Britain):

In the regulations of the Fire Offices Committee, 1871, Great Britain, the word "guarantee" was used as a synonym for "reinsurance." (Rendtorff-Golding).

Indeterminate reinsurance. See: Treaty types.

Insurable interest:

The reinsurer must have an insurable interest. Although an insurer has no property in the subject matter of the insurance, but has only an interest in its preservation, yet this interest is sufficient to support a contract of reinsurance. In retrocession the same principle applies. (*Corpus Juris*, Vol. XXXIII, p. 48). *See also:* 6 Edw. 7, c. 41, § 9 and *Sun Ins. Office v. Merz*, 64 N. J. L. 301.

Insurance value (Germany):

"Insurance value" is the value defined in the insurance contract: it may be (a) market value at issue of the policy; (b) at the time of loss; (c) replacement value; (d) or some declared subjective or sentimental value. Meaning depends upon the nature of the insured object, the purpose of the insurance, etc. (Moldenhauer, in *Manes' Versicherungslexikon*, 2nd edn., p. 1046).

"Internal" coinsurance:

Synonym: Reinsurance. (See Kisch's definition of *coinsurance*).

Legality of reinsurance contract:

It is not a wager contract. But if such contracts of reinsurance are perverted to improper purposes, then it is within the province of the legislature to interfere and prescribe the cases in which reinsurance shall not be permitted. (*Corpus Juris*, Vol. XXXIII, p. 47). The power to reinsure risks or the risks of other companies is sometimes restricted by statute or by charter.

Liability of reinsurer:

(1) In general, a reinsurer is liable to the same extent as the original insurer for all losses and perils which he has assumed, unless the contract specifically contains special provisions limiting the risks covered.

(2) The reinsurer is not liable to the reinsured for a loss under an original policy, if the original insurer is not liable to the original policyholder. The ordinary contract of reinsurance operates solely between the original insurer and the reinsurer, and creates no privity between the reinsurer and the person originally insured.

(3) "I am not aware of any way in which an original insurer can get at a reinsurer; his rights are only against the original insurer." (Mr. Justice Scrutton in *Law Guarantee Trust and Liverpool Mortgage Company case*, 1914).

Multiple insurance. See: Coinsurance (as between insurers generally).

Open treaty plan in casualty insurance (U. S.):

Where the company has comprehensive and permanent reinsurance arrangements or treaties with one or more other companies (direct carriers and/or reinsurance companies) outlining a definite procedure for "ceding" reinsurance. Ceding company has freedom as to what risks to reinsure and to what extent; the discretion allowed the direct carrier is the salient characteristic of the open treaty and is almost invariably very material. (Greene).

Optional plan:

Synonym: Facultative plan (q. v.).

Original insurer:

Synonym: Direct insurer.

Percentage cover:

Where the reinsuring company retains a percentage of the amount written and the reinsurers participate in the cover beyond this percentage to be distinguished from a fixed amount retained. (In marine insurance, Great Britain, on special risks only. *See: Reinsurance cover*). (Gardner).

Pool:

(1) An agreement or arrangement entered into by several insurers whereunder each insurer assumes a stated share, both of premiums and of losses, with respect to a certain portfolio (q. v.) (2) An association of insurers determined by contract and occupying the same relative position as a reinsurance company. (Greene).

Portfolio:

That which is to be specifically included in the scope of operations of a reinsurance "pool" (q. v.).

Primitive insurer:

Synonym: direct insurer.

Quota share cover: (marine insurance, Great Britain):

Where the reinsurers participate in each and every risk attaching to the cover, whether large or small. (Marine insurance practice, Great Britain, and applies to *special risks* only. *See: Reinsurance cover*). (Gardner).

Quota share treaty (marine reinsurance, Great Britain):

Where there is a fixed participation by reinsurers in each and every risk accepted by the underwriting company the participation is usually expressed as a percentage of all business written by the company in domestic territory. (Gardner).

Reinsurance "cover" (in marine insurance, Great Britain):

Reinsurance cover is an arrangement between two or more companies, whereby the reinsuring company agrees to cede and the underwriting company, or companies, agree to accept a certain percentage of *specified*

risks. A *reinsurance treaty* is an agreement or contract between the ceding company and its reinsurers, whereby, on the one side, the company binds itself to cede, and on the other side the reinsurers bind themselves to accept a certain percentage of *all* business covered by the treaty. (See also: *Reinsurance treaties*).

There are three kinds of reinsurance cover: (a) the excess cover; (b) the percentage cover; and (c) quota share cover. There are three kinds of reinsurance treaties; (a) quota share treaties; (b) excess treaties; and (c) excess quota share treaties. (Gardner, p. 15).

Reinsurance—general definitions:

(1) "Reinsurance is a contract whereby one party, called the 'reinsurer', in consideration of a premium paid to him, agrees to indemnify the other against the risk assumed by the latter, by a policy in favor of a third party." (*Phillips: Treatise on the Law of Insurance*. p. 374. Boston. Little, Brown & Company, 1853); (2) "Although reinsurance, in a certain sense, may be an insurance of the subject matter of the direct writing company's policies, a contract of reinsurance is really one of indemnity against the risk incurred by the direct writer in the original insurance. The contract is totally distinct from the original insurance and is independent of it." (*Corpus Juris* Vol. XXXIII, p. 45); (3) "Reinsurance is a contract whereby the original insurer procures from another underwriter a total or partial indemnity for loss or damage to the property which he has insured, and from one or more of the perils he has insured against." (*Delver v. Barnes*, 1 Taunt. 48, 127); (4) "The term reinsurance may mean a contract between two reinsurers, by which the one assumes the risks of the other and becomes *substituted* to its contracts, so that on the assent of the original insured the liability of the original insurer ceases and the liability of the so-called reinsurer is substituted." (*People v. Amer. Cent. Ins. Co.*, 179 Mich. 371, and *Sun Ins. Office v. Merz*, 64 N. J. L. 301); (5) "*Reinsurance is an insurance effected by an insurer against a risk he has previously assumed; an insurance by the first insurer of the whole or some part of his interest in the risk created by his contract of insurance; a new insurance effected by a new policy on the same risk that was before insured. . . .*" (*Delver v. Barnes*, 1 Taunt. 48); (6) Reinsurance is a term sometimes applied to a *new policy substituted* for a policy previously issued by another company on the same risk, and which the latter company refuses to renew. (*Gifford v. Queen Insurance Co.*, 12 N. B. 432); (7) "Reinsurance in this State is a valid contract as well in cases of fire as marine policies. The risk assumed by the first assurers gives them such an insurable interest as renders the reinsurance a valid contract." (*New York Bowery Fire Ins. Co. v. New York Fire Ins. Co.*, July, 1837); (8) Note Kisch's definition of "*Coinsurance.*" (9) See: Oxford Dictionary definition, "Reinsurance is a *second* insurance. . . ."

Reinsurance clause:

The typical reinsurance clause in British practice follows: "Being a reinsurance of (*so much*) of the. . . . Insurance Company's policy

number for £ and subject to the terms and conditions thereof and to settlement thereunder in case of loss, it being hereby warranted that the above-named company shall, during the entire currency of this reinsurance, retain for its own account at its agency a sum not less than on the identical property thereby reinsured." (Remington).

Reinsurance reserve:

Synonym: Net present value of life insurance policies; unearned premium reserve (sometimes) in fire and casualty insurance. Not generic to "reinsurance" practice as commonly understood.

Reinsurance treaties (marine reinsurance, Great Britain):

A *reinsurance treaty* is an agreement or contract between the ceding company and its reinsurers whereby on the one side the company binds itself to cede and on the other side the reinsurers bind themselves to accept a certain percentage of the business covered by the treaty. There are three kinds of reinsurance treaties: (a) *quota share treaties*; (b) *excess treaties*; and (c) *excess quota share treaties*. The *treaty*, as thus understood, has these characteristics as against the reinsurance *cover*: (1) generally the whole of the direct business attached to the treaty; under a "cover" only certain specified risks, or a certain class of business, are covered; (2) a treaty generally comprises the whole business written in the course of twelve months, whereas "cover" may run for three months or it may be indefinite. *See also: Reinsurance Cover*, (Gardner) and *Treaty types*.

Retrocession; retrocedent; retrocessionaire:

Reinsurance effected in turn by a reinsurer is called *retrocession*; the second ceder is the *retrocedent*; the second reinsurer is the *retrocessionaire*. (Herrmannsdorfer).

Risk assumed in reinsurance:

The risk is determined by the contract of reinsurance. It cannot be *assumed* that the risk covered by the reinsurance is the same as that covered by the original policy (*Corpus Juris*, Vol. XXXIII, p. 52).

Risk premium system (in life reinsurance):

(1) The risk premium system provides only for the cover of the annually decreasing sum at risk, *i. e.*, the difference between the sum insured and the reserve at the end of each policy year, on the amount reinsured. (Torrey). *Synonym:* yearly renewable term system.

Share reinsurance:

Where reinsurer assumes a *stated* proportion of the *entire* risk; this applies to premium, loss, and to salvage or other recoveries. (Greene).

Shock loss:

A loss which may occur infrequently but which may also be a loss of considerable magnitude. *Synonym:* Catastrophe loss; calamity loss. (Michelbacher, *et al*).

Subrogation in reinsurance:

Reinsurers upon payment of a loss acquire the same rights by subrogation as are acquired in similar cases where the original insurer pays a loss.

Substitution:

See definitions 4 and 6 under "Reinsurance—general definitions," also Walford, Insurance Cyclopedia, article "Amalgamations."

Surplus:

Amount over and above the amount which direct writer wishes to keep; amount ceded by direct writer, or amount ceded by reinsurer to retrocessionaire. Sometimes confused with "excess." (Welson, Dictionary of Accident Insurance). See: Treaty types.

Surplus reinsurance (U. S.):

"Surplus reinsurance" is merely "share" reinsurance (*q. v.*) wherein the extent of reinsurance depends on the size of the policy. *Example:* Amount directly written \$50,000; company retains \$10,000; reinsures half of the amount between \$10,000 and \$25,000; and reinsures all of the amount in excess of \$25,000. Amount by which policy exceeds \$10,000 up to \$25,000 is "first surplus;" amount by which policy exceeds \$25,000 would be "second surplus." (Greene).

Treaty types in reinsurance (Herrmannsdorfer³⁴—Thorin⁷²—nomenclature)

The following classification of treaty types is given by Herrmannsdorfer and Thorin.

A. *Reinsurance of Amounts Directly Insured*

(Where the face amount of the primitive risk is divided).

1. *Special or determinate reinsurance* (German: "Einzelrückversicherung"; French: "Reassurance special ou déterminé").
(Division of the face amount of one policy).
2. *General or indeterminate reinsurance* (German: "Generalrückversicherung"; French: "Reassurance generale ou indetermine").

(Division of a fixed amount or fixed proportion of all primitive contracts written by direct insurer).

- (a) *Quota reinsurance* (German: "Quoten-vertrag"; French: "Reassurance quote part").
(Division of all primitive risks on percentage basis)
- (b) *Surplus reinsurance* (German: "Exzedentenvertrag"; French: "Reassurance excedent").
(Cession of amount written above the amount the company is permitted to retain).
- (c) *Quota—surplus reinsurance* (German: "Quoten-exzedentenvertrag"; French: "Reassurance quote part et excedent").
(Combination of (a) and (b)).

(d) *Quota reinsurance, with priority* (French: "Reassurance quote part avec priorite").

(Direct writer retains all business up to his allowed retention; reinsures percentage of amount above his retention.)

B. *Reinsurance of Losses* (German: "Schadenrückversicherung"; French: "Reassurance de damages").

1. *Whole company, one line, excess loss reinsurance.*
2. *Quota—surplus and excess loss reinsurance combined.*
3. *Special catastrophe excess loss cover.*

C. *Reinsurance of part of one risk against specified catastrophes.*

D. *Reinsurance pools.*

E. *Special "credit" reinsurance during inflation periods* (French: "Reassurance credit").

(See: Oesterreichische Revue, 1926, "Die Katastrophen Rückversicherung").

Yearly renewable term (in life reinsurance):

Life reinsurance reduced each year as the reserve on the amount increases, the insuring company (direct writer) paying to the reinsurance company a non-participating yearly renewable term premium at the attained age of the insured for the then amount at risk. *Synonym: Risk premium system.* (M. W. Torrey).

DOUBLE INDEMNITY IN LIFE INSURANCE POLICIES

BY

HENRY H. JACKSON

For a very good general knowledge of disability benefits in connection with life insurance policies the student has but to refer to the excellent papers of Mr. Woodward¹ and Mr. Morris.² No paper devoted to the other popular adjunct of life insurance coverage generally known as Double Indemnity has been published in the *Proceedings*, although in a more general study by Mr. Laird,³ published in May 1921, an important paragraph is devoted to the subject:

"Life insurance companies have introduced a provision that in case of death by accidental means before a limiting age, usually 70, the face of the policy will be doubled. This provision was at first attacked even more vigorously than the permanent total Disability benefit as a function of Life insurance but its popularity with the insuring public has swung company after company into line until now a majority of the Life insurance companies grant some form of Double Indemnity in case of death by accidental means."

The object of the present study is to summarize for students the essential features of the subject, even though these are obtainable elsewhere, with the addition of scattered facts as to present practice not readily accessible.

So completely American is this Double Indemnity benefit that the recent excellent Index of the Transactions of the Faculty of Actuaries contains not one reference to it, while in the Journal of the Institute of Actuaries the report of the one meeting devoted to a discussion of the Disability and Double Indemnity benefits⁴

(¹) Joseph H. Woodward. Disability Benefits in Life Insurance Policies. P. C. A. S., VII, 10 (November 1920). Discussion VII, 394.

(²) Edward B. Morris. The Permanent Total Disability Provision in Life Insurance Policies. P. C. A. S., XV, 9 (November 1928).

(³) John M. Laird. Non-Cancellable Accident and Health Insurance Underwriting Problems. P. C. A. S., VII, 302 (May 1921). Discussion VII, 334.

(⁴) The Inclusion of Disability and Fatal Accident Benefits in Life Assurance Contracts. J. A. I. A., LV, 131 (March 1924—July publication).

flounders inconclusively through the former and manages almost wholly to ignore the latter. The student will find much of interest about Double Indemnity in the following papers:

Note on Double Indemnity Clauses in Life Insurance Contracts, William A. Hutcheson, T. A. S. A., XIX, 79; discussion, 332;

Liability to Death from Accident, H. W. Buttolph, R. A. I. A., VII, 45; discussion, 102;

An Actual Experience of Double Indemnity Benefits, R. M. Webb, R. A. I. A., XI, 77; discussion, 88;

Selection of Risks for Disability and Double Indemnity Benefits, R. G. Hunter, R. A. I. A., IX, 27; discussion, 167;

and the informal general discussions recorded in R.A.I.A., V, 65, VI, 127, and XI (2), 58, while the subject is admirably covered in "The Accidental Death Feature in Life Insurance Policies" by Arthur Hunter, T. A. S. A., XXVI, 37, and the able discussion it elicited.

First, then, for the benefit and its name. Actuarial science suffers from unhappy ambiguity of nomenclature. Many of its terms are employed in two distinct and even contradictory senses—the adjectives *continuous*, *immediate* and *ordinary* are ready examples. In connection with disability benefits the expressions employed have been particularly unfortunate. For years we have been defining the word "permanent" as meaning "temporary" and recent publicity has been given the suggestion that "total" be defined as "partial." (It may be of interest to note that precisely the same suggestion was offered by Mr. Woodward before the Casualty Actuarial Society in closing the discussion of his paper on disability in 1920). But never, I believe, was our nomenclature so entirely unfortunate as in the choice of the expression "Double Indemnity" to designate the special fatal accident benefit attached to life insurance policies. For in the first place (and here it is like the main life contract and decidedly at variance with the disability feature) it is *not* a contract of indemnity at all. In the second place (as will appear later) it does not necessarily provide for a payment of double the face of the original policy. And in the third place such a title gives no faintest inkling of its true significance, since an extra payment for death from tuberculosis or insanity is conceivably

quite as reasonable and is economically decidedly more defensible than one for death which "resulted from bodily injury effected solely by violent, external and accidental means." However, I shall throughout this paper employ the generally accepted name. Besides, the substitute expression now fairly common is longer and itself not quite free from ambiguity. For may not "accidental death benefit" be interpreted as meaning either accidental-death benefit or accidental death-benefit? And the latter implication is certainly deplorable!

The exact coverage extended under Double Indemnity can more conveniently be treated a little later. Accepting for the moment the broad coverage obviously intended by the words quoted from Mr. Laird's paper, and remembering the precise significance of the word *means* as so painstakingly pointed out in Mr. Strong's discussion of the paper by Arthur Hunter (*l. c.*, p. 528) and in a paper by Mr. W. M. Bullitt before the Association of Life Insurance Counsel,⁶ we may examine in turn the popularity of the benefit and the experience of companies writing it in the United States and Canada. To assure authoritative information I addressed inquiries direct to the actuaries of every company in North America having admitted assets exceeding \$25,000,000 on January 1, 1929. With extraordinary patience and the greatest courtesy, these 56 companies have supplied me not only with the information requested but with much valuable material in addition. Subsequent references in this paper to insurance practice in Canada and the United States, unless obviously drawn from the sources already cited or others specifically mentioned, are to be understood as an interpretation of the data thus generously put at my disposal.

Of the 56 companies questioned, 51 offer Double Indemnity as part of their regular coverage, 2 of the remaining five have separate casualty departments through which accident coverage is exclusively placed, while one has a special arrangement whereby its agents are automatically the agents of an accident company which issues accident coverage applied for on the life application. Thus only two of the 56 do not grant the Double Indemnity protection and doubtless at least some of their agents have private facilities for placing this benefit. A tabulation indicating the

(⁶) William Marshall Bullitt. *Accidental Means*. Address before the Association of Life Insurance Counsel, December 7, 1927.

entrance of the 51 companies into the Double Indemnity field during the 25-year period may be of interest.

Year of Entry	Number Entering	Year of Entry	Number Entering
1904	1	1919	4
1905	1	1920	2
1907	1	1921	5
1909	2	1922	13*
1911	1	1923	3
1914	1	1924	2
1916	1	1926	1
1917	5	1928	2
1918	5	1929	1

The amount of this coverage now in force might be ascertained by going to the complete annual statements of the individual companies. The statements filed with the Vermont Insurance Department were accessible and for the companies doing business in that state and offering the Double Indemnity benefit a tabulation showed total insurance in force exceeding \$69,900,000,000; with corresponding Double Indemnity in force on over \$25,500,000,000, or 36.5% on December 31, 1928. The 23 companies represented in this compilation are almost without exception old eastern companies. Some of these have introduced Double Indemnity very recently and have less than 10% of their business containing this provision. On the other hand, the figures include the two giant industrial companies which late in 1928 conferred upon all industrial policies the special accidental death benefit without any extra premium charge, thus swelling the amount of Double Indemnity coverage by several billions. But one of the huge companies writing no industrial business reported 62% of total business containing Double Indemnity. And probably the companies not operating in Vermont have as a whole stressed Double Indemnity at least as much as have these companies. That Double Indemnity is today in force on about a third of all the ordinary business in North America appears to be reasonably certain.

It seems likely that an even higher proportion of new business than of total business in force contains Double Indemnity. The annual statements of the companies do not directly give this information, but first year Double Indemnity premiums received

*In this year the 9 Canadian companies entered the field together, the statutory taboo having been removed.

are included and form a helpful guide in determining the amount of new business so written. Rough approximations based on the figures available indicate that of the business written in 1928 by the 23 companies studied (industrial business excluded) some 40% included this benefit, with four very large companies attaching it to at least 50% of their business, one of them, indeed, to probably more than 75%. The cases in this group where less than 15% of the new business contains the benefit are extremely rare and are accounted for either by the fact that this field has been entered very recently or that the company has a casualty branch with which it does not wish to compete too actively in its life department. In general it seems a fair conclusion that the attitude of the management of an individual company toward the benefit greatly influences its sale, for there are some who regard it enthusiastically while others view it with a sort of tolerant disdain. Let us examine the basis of these divergent views:

In the second edition of Mr. Maclean's standard work⁶ the strictures on Double Indemnity are summarized to this effect:

"The double indemnity clause seems an unnecessary and undesirable part of a life policy. It is merely a 'side bet' for which the odds offered the insured appear so attractive that he usually decides to take it, but there is probably no good reason for his doing so. . . . Indeed, as death from accident is not preceded by an expensive illness, but may, on the contrary, result in some financial compensation to the representatives of the insured, accidental death might be regarded as the least appropriate reason for a double indemnity provision."

How, then, is one to account for the popularity and success of the venture? There are several answers which it seems necessary to repeat in some detail: First of all, a quotation from Mr. Woodward's valuable paper already referred to makes admirably the main point. The reader has but to substitute the words "Double Indemnity" for "disability" wherever applicable in the following paragraph:

"The chief economic advantage of having disability insurance written in connection with life insurance is the saving in expense. The life insurance companies in any

(⁶) Life Insurance, by Joseph B. Maclean. McGraw-Hill Book Company, Inc. New York, 1929. (Second edition.) See pages 321-4.

event incur such expense as is incidental to securing life insurance. At slight additional expense they can supply protection against the more serious cases of sickness or disability. In addition to the commission paid to the agent, the issue of a life insurance policy involves the expense of a medical examination and of an inspection report. It is clear that if we have a medical examination and an inspection report we can sell disability insurance on the basis of a much more careful selection and gradation of risks than any company attempting to issue such insurance without these advantages could hope to achieve. Furthermore, the effort of selling a limited amount of disability insurance at the same time that life insurance is sold is little, if any, greater than the effort of selling life insurance alone. Indeed, the original motive for incorporating the disability clause in the life insurance contract was to make the sale of that contract easier than would be the sale of the life insurance without it. Further advantages are that when disability insurance is issued in connection with life insurance the acquisition cost is paid only once, the renewal expense is relatively low, and, finally, that the purchase of a substantial amount of life insurance along with the disability benefit is an evidence of good faith and tends to improve the moral hazard."

Again, though disability is the more defensible adjunct from the point of view of the economist, from that of the actuary it is the less so in that Double Indemnity is based on the very event which constitutes the major claim and that, in sharp contrast to disability, both are distinctly not contracts of indemnity. Viewed thus, the life policy, the Double Indemnity and the disability benefit are not unlike a staid old dog, his frisky pup, and a decidedly temperamental cat, all in the same compartment.

Even economically viewed, this accident benefit is not merely meretricious since, as has been well pointed out, sudden death may prevent arrangements of the deceased's estate which he could advantageously provide for from an ordinary deathbed. Moreover, fatal accidents befall with undue frequency under-insured fathers of young families.

A further point suggested in Mr. Maclean's account has not to my knowledge received due emphasis. From the point of view of the individual, all insurance is just plain downright gambling. Possibly insurance men in underscoring the economic and scientific basis of the business as a whole have unduly understressed this phase. Now a bargain is as attractive in gambling as any-

where else. Above all it is fun to bet in your own favor instead of eternally against yourself, and here's a chance. With every life insurance premium you pay you are constantly betting against your own desires. "I bet I die this year . . . or surely this." Your whole interest is *against* your winning. But Double Indemnity gives you the opposite chance. For who, if he must die, would not willingly escape all the long-drawn-out agony for himself and those dear to him of lingering illness? "I bet (and at what incredibly favorable odds) if I die this year it will be by accidental means, and if I win I win doubly." Thus psychologically the benefit seems sound enough.

And its chief actuarial advantage has yet to be stated: reasonable and adequate rates are not difficult to obtain. Of the 51 companies in this survey only half a dozen had so much as adjusted the Double Indemnity rates first adopted and of these every revision save two had been downward. What a contrast to the history of disability benefits! The two (slight) upward revisions require a digression. It appears to be the general practice today to let commissions on Double Indemnity follow those on the main contract. Some companies when first without much enthusiasm introducing the benefit allowed only renewal commissions on any of these extra premiums. At least one of the adjustments in question was introduced to cover the change from "renewal only" to "first and renewal" commissions on Double Indemnity premiums.

What, then, are regarded today as reasonable and adequate office annual premiums for such Double Indemnity coverage as is customarily offered with life insurance policies? A broad general answer is: \$1 to \$1.50 per thousand as a flat rate at all ages for continuous premium policies, with limited premiums commuted accordingly. This very broad answer requires nearly as many exceptions as the typical Double Indemnity clause itself, but may be accepted in general. In particular, of the 51 companies 15 report a graded annual premium. These include all 9 of the Canadian companies which here as elsewhere have set their southerly competitors an example by their ability to adopt uniform rates and essentially a standardized clause. Since these rates have been followed more or less closely by several other companies recently entering the field, the student may like to know that the premium is: For ages at entry up to 45

inclusive, \$1.25 flat, graded up \$.05 yearly thereafter to \$1.75 at 55 for a clause automatically cancelled at 60. Only four companies have the flat \$1 rate but these are four of the hugest and grant coverage for life. Of the remaining companies ten charge \$1.25 and eleven charge \$1.50 while the rest are scattered at \$1.20, \$1.30, \$1.35, \$1.40 and (1) \$2. So vast is the business conducted at the \$1 rate, however, that the weighted average continuous premium Double Indemnity charge on this continent is by my best estimate not over \$1.20 and I greatly doubt whether the limited premium policies issued bring this up to \$1.30. Indeed, on the basis of the business accessible to my individual audit, the average is not increased 5% by limited premium business.

While such limited premium extras have been referred to as commuted (on the basis of course of the regular valuation table employed) such commutation varies from exact calculations for each age and kind to very general approximations indeed—with the present tendency apparently toward the use of exactly proportionate individual limited rates.

The question of office rates has been stressed (unduly perhaps) since on a reasonably correct answer depends part of a proposed investigation of the total company experience on Double Indemnity for the years 1920-1927 inclusive. For these years the Spectator Company in the Life Insurance Policyholders Pocket Index has compiled premiums received and losses paid on the Double Indemnity business issued by companies in the United States having over \$25,000,000 of insurance in force. The list of such companies offering the benefit has grown from year to year, amounting in 1927 to 131. The totals for the eight years in question are here tabulated:

DOUBLE INDEMNITY PREMIUMS AND LOSSES—AGGREGATE SPECTATOR FIGURES

Calendar Year	Premiums Received	Claims Paid	Ratio of Claims to Premiums
1920	\$ 4,865,635	\$ 1,677,669	34.5%
1921	9,208,436	4,050,419	44.0
1922	10,533,741	4,441,652	42.2
1923	12,721,213	4,944,230	38.9
1924	15,991,066	6,778,390	42.4
1925	19,117,245	8,431,700	44.1
1926	19,201,531	7,621,057	39.7
1927	21,992,946	9,566,446	43.5
Total	\$113,631,813	\$47,511,563	41.8

If the assumed average weighted premium of \$1.30 be accepted as approximately correct and if an increase (disregarding interest increments) of \$10,000,000 in reserves from the beginning to the end of the period be conceded, it will be observed that the net death losses in the total experience fall just under \$.60 per \$1000 annually.

At a meeting of the Actuaries' Club of Toronto last February, the experience of Canadian companies on Double Indemnity was discussed. Mr. Arthur Pedoe has kindly supplied me with an abstract of this discussion from which it appears that on mean exposures for the calendar years 1923-1927 inclusive slightly exceeding \$1,500,000,000, the net cost of Double Indemnity claims per \$1000 was \$.553. The rate represents total Double Indemnity business issued in Canada by Canadian and other companies. This corresponds with astonishing closeness to the reported experiences of the New York Life, Metropolitan and Mutual at \$.55, \$.52 and \$.58, respectively.

It appears then that the aggregate loadings of American companies above the net Double Indemnity rates are ample to care for the various expenses connected with this special branch of the business and to provide a handsome surplus for contingencies. Reference to the annual statements filed with the Vermont Department appears to confirm this fact. It will be remembered that a comparatively new section of the Gain and Loss Exhibit requires a segregation of income and expense by classes of business. In the absence of explicit directions for its construction there is undoubtedly enormous diversity in the methods employed to prepare certain estimated items. Yet the total figures for the companies in question are impressive. A single company for the year 1927 reported a gain exceeding \$1,900,000 while actual losses existed rarely even for individual companies in spite of the fact already referred to that several had only small volumes in force with comparatively high individual limits and so might encounter violent fluctuations and possible net losses in unlucky early years.

At this point it is convenient to introduce a brief discussion of the underlying actuarial principles. These are so simple that they have not found their way into formal actuarial literature. Yet one who has read examination papers for several years may be pardoned for believing that at least some candidates may profit by such an exposition.

Let the benefit be not granted before age w , and be discontinued at age y , where y may or may not be as great as ω . And let $w - 1 < x < y$. Denote the yearly probability of accidental death at age x within the terms of the clause q'_x . Assume that q' 's have been obtained from existing data. Then from any suitable l_x column may be prepared a d'_x column where $d'_x = l_x q'_x$. Assuming contrary to fact but in accordance with the legalized conventions that claims are payable at the end of the

policy year, we now have: $A'_{\overline{x:1}|} = \frac{v d'_x}{l_x} = v q'_x$ and commuta-

tion columns may be constructed in the ordinary way of: $C'_x (= v^{x+1} d'_x)$ and $M'_x (= \Sigma C'_x)$. In actual practice given a suitable table of q' it would doubtless be simpler to develop C' direct from the ordinary D_x functions (from the relation $C'_x = v q'_x D_x$) without bothering to develop a theoretically correct but otherwise unnecessary d'_x . Such a procedure will obviously give a smoother grade for C'_x , since the theoretic d' , being at once integral by definition and small by nature, will produce ragged values similar to those toward the end of a regular mortality table.

Clearly, then, if $q'_y = d'_y = C'_y = M'_y = 0$ we have

$$A'_x = \frac{M'_x}{D_x}$$

$$A'_{\overline{x:n}|} = \frac{M'_x - M'_{x+n}}{D_x} \quad (n < \overline{y-x})$$

whence annual premiums throughout the entire benefit period or for any shorter period are readily computed by dividing by the appropriate *regular* temporary annuity-due (or life annuity-due if $y = \omega$ with coterminous premiums).

Two comments will occur to the student: If the benefit ceases on the inception of total disability benefits under the policy—as it does in about half the clauses analyzed—should not the C' column be constructed from the l_x^{aa} rather than the l_x table, the D^{aa} column and the corresponding active life annuities being

employed in all computations? That is $\frac{M'_{x^{aa}}}{D_x^{aa}} = A'_x$ and

$P'_{\overline{x:n}|} = \frac{A'_{\overline{x:n}|}}{a_{\overline{x:n}|}^{aa}}$. Again, where the benefit does *not* cease on

disability, should not the benefit be valued from the "mixed life" C' columns and the annual premium from the "active" annuities? Or, what amounts to the same thing, should not the premium-waiver premium include an extra charge when Double Indemnity premiums are to be included in the benefit? For, obviously, a company not discontinuing Double Indemnity on disability will hardly propose to keep on collecting the Double Indemnity premiums while waiving those under the major contract—although the point does not appear to be specifically covered in certain of the policies examined.

The answer to these kindred questions is a third question: Should there not be certain *minima* concerning which the actuary, as well as the law, *non curat*? The ignoring of this trifle introduces the further point as to the proper tables with which to combine your q 's. Must the nuisance of select values be introduced? Again the practical reply should be, I think: Since this special benefit is not materially influenced thereby, *i. e.*, since select q 's need not be developed, an aggregate or ultimate table may be employed for the purpose of deriving C' without essential loss of accuracy.

The usual processes for developing reserves on the basis of premiums thus derived—that is, the prospective, retrospective or accumulative are, it will be observed, readily applicable. For instance, a new k_x' is easily made to match the regular u_x for accumulation; or under the Karup method, a special θ_x' may be developed.

Returning now to the less rarefied atmosphere of actual practice, how are net premiums and reserves computed today? As already implied by the gross premiums, the benefit is generally assumed to be a fixed annual value regardless of age, so that $q'_x = (1 + i)k$, for all values of x from w to $y - 1$ inclusive, and $A'_x = k a_{y-x}$. For purposes of valuation k is assumed to be .001 by many companies (even those charging but \$1 per \$1000 for Double Indemnity); or to be .0009 by some charging \$1.35, thus giving a 50% net loading.

The student will observe that this simple assumption leads to an initial reserve of k per unit and a final of 0 on all continuous premium benefits, while on the higher premium cases the excess of the net annual premium over k has but to be accumulated with benefit of interest and survivorship to the end of the premium

paying period, whereafter the net single-premium value represents the liability. The point is emphasized here, needlessly, perhaps, since as will appear presently the actual company practice resulting is one whereby limited premium business is segregated, mean reserves on the continuous premium plan (of $k/2$ per unit) are set up on the entire business and the excesses of net limited premiums above the theoretical k are calculated and accumulated by various approximate methods.

The Travelers Insurance Company, from the New York Life and Metropolitan experiences and group experience as arranged by Mr. Beers, supplemented by its own experience, has prepared a valuable table of the probability of death (before age 70) by accidental means as defined in modern policies. The results, as combined with the A.M.⁽⁶⁾ Mortality Table with interest at 4%, have been generously put at my disposal by Mr. Morris, and with a companion table prepared by me as an adjunct to the despised but tenacious American Experience Table, both on a 3% and a 3½% basis, will be found in an appendix.

Specimens of q_x' thus developed by The Travelers and of the corresponding premiums and reserves for certain policy types must, however, be introduced at this point. The benefit ceases at age 70.

NET LEVEL ANNUAL PREMIUMS PER \$1000

Age at Issue x	1000 q'_x	Life	20 Pay. Life	20 Yr. End.	5 Yr. Term
25	.52	\$.61	\$.86	\$.49	\$.48
35	.48	.71	.92	.60	.48
45	.66	.89	.98	.82	.67
55	.89	1.12	1.12	1.12	.91

MEAN RESERVE PER \$1000

Age at Issue	Fifth Year			Tenth Year		
	Life	20 Pay. Life	20 Yr. End.	Life	20 Pay. Life	20 Yr. End.
25	\$.94	\$2.39	\$.27	\$2.04	\$5.28	\$.53
35	1.55	2.69	.90	2.71	5.27	1.23
45	1.61	2.13	1.23	2.72	3.92	1.84
55	1.75	1.75	1.75	2.19	2.19	2.19

The first inclination of the actuary on scanning such figures so soundly based is to question the admissibility of flat office rates regardless of age. Yet the simpler assumption has thus far been satisfactory in practice. The rates adopted have been in the

aggregate ample, the great bulk of the business is sought by comparatively young men on continuous premium forms, and the fundamental assumption that all such coverage may be with reasonable propriety regarded as yearly renewable term coverage at a flat premium rate works out with such ease and general fairness that a change to a different assumption in the immediate future is not anticipated.

The Double Indemnity reserves set up by the companies reporting to the Vermont Department are impressive, amounting on December 31, 1928, to over \$31,000,000 on the more than \$25,000,000,000 in force with this benefit. These figures imply total extra Double Indemnity reserves held by all United States and Canadian companies of well toward \$40,000,000. The various processes employed by the companies in calculating so important an item may reasonably and must theoretically be of interest to the student. In this connection it should be remembered that the reserves on this new feature are not ordinarily as yet prescribed by statute. There are exceptions in the Middle West where a definite standard is incorporated in the insurance law but the statement is in general fair that the usage of American companies represents a rational agreement arrived at by the life offices and insurance departments instead of the strait-jacket of legislative enactment. From the detailed information accumulated, a fair statement appears to be:

On continuous premium policies most companies are assuming a generously high rate of fatal accidents constant at all ages covered, and, regarding such insurance as automatically renewable term coverage at flat rates, they set up half the net premium as a mean reserve December 31. The companies operating on a very low extra premium usually set up half the entire premium as the mean reserve. The statutes already referred to require the setting up of half the gross premium. The companies charging the somewhat higher rates and not hampered by statute ordinarily set up \$.45 or \$.50 per \$1000 as the mean reserve.

On limited premium contracts the problem is not quite so simple. An obvious method of handling these cases where \$.50 per thousand is set up as the mean reserve on whole life contracts is to accumulate during the premium paying period the excess assumed net premium collected above \$1 per thousand annually

with the benefit of interest and survivorship to the valuation date. The student familiar with the tables of *forborne annuities* to ages 60 and 65 published in 1922 by Mr. Glover⁷ will realize that the necessary office calculations in connection with the tabular figures are simple. Beyond the premium paying period the reserve will obviously be merely the single premium for the benefit in question at the age attained, which is immediately available per dollar of original net premium on the life plan by reference to a table of temporary annuities. Throughout this discussion it is assumed that appropriate adjustment will be made for the date of automatic cancellation of the benefit if it is cancelled before the end of the mortality table.

Since, however, the limited premium business is comparatively unimportant, approximate methods of valuation are ordinarily employed for this portion of the business. Perhaps the simplest of these is that which assumes accumulations of net premiums in excess of the net level continuous premium at a rate of interest high enough to cover the basic interest assumption and reasonable benefit of survivorship. Five per cent. has frequently been assumed as such a rate and is ordinarily acceptable to insurance departments. The office processes of arriving at total extra reserves for Double Indemnity with these basic assumptions will be obvious.

On the other hand, a few companies even though they charge flat premiums regardless of age for the benefit compute reserves on the basis of such a table as that in the appendix. Theoretically these reserves could be exactly computed by the various office valuation methods comparable to those employed for ordinary insurance policies. Actually, approximate methods are of quite sufficient accuracy under the circumstances. Indeed, the experiment has been successfully tried of applying a flat mean reserve per thousand factor to the total Double Indemnity insurance in force and making such slight adjustment in this factor every few years as an investigation of the business might indicate.

All the companies combined reporting to the Vermont Department showed reserves on Double Indemnity reinsured with other companies amounting to only \$10,425, of which approximately

(⁷) Double, Triple and Multiple Indemnity, Extra Net Premiums and Reserves, by James W. Glover. Edwards Brothers. Ann Arbor, Mich., 1922.

half was reported by a single company which recently entered the Double Indemnity field with a maximum Double Indemnity limit of \$25,000 and a retention limit of \$5,000. This means that the larger eastern companies reinsure practically none of this business. One of these has a retention limit of \$100,000, several others of \$50,000, and still more of \$25,000. Yet the general practice of the 51 companies included in the questionnaire is very different. Most of these, excluding the older eastern companies, have important Double Indemnity reinsurance facilities, the larger companies frequently offering a maximum of \$50,000 with a retention of \$25,000, while others reinsure several times the amount retained. Reinsurance facilities for the business are readily available and until quite recently several reinsurers were willing, I am told, to assume the entire risk on Double Indemnity. The present feeling of the reinsurers, however, is well summed up in this clear statement by one of them: "We prefer to have the original company retain part of the Double Indemnity in order that it may have an interest in the selection and in the claim settlement. If, however, the original company grants Double Indemnity up to \$25,000 and retains \$5,000, we sometimes reinsure the remaining \$20,000. Sometimes it comes to us on what they call the semi-automatic basis. That is, we have a right to refuse if we are already loaded but we accept the other company's judgment as to insurability."

In this connection it is convenient to refer to various miscellaneous office practices connected with the business. As will appear in more detail later, the coverage may be discontinued at age 60, 65 or 70, or may extend throughout life. One company discontinues the benefit after 20 years from date of issue while several companies on limited payment contracts simplify their rates and reserves by discontinuing the special coverage when the policy becomes paid up by limitation. In the limiting age of issuance, however, there is considerable uniformity, the upper age limit being 55 years in about three-quarters of the companies. One does not issue it above age 50 while the rest cease to write at 59 or 60 except only two which go to 65. Both of these discontinue the benefit at 70 and employ fairly stiff graded premiums at the higher ages. Concerning the lower limits, there is rather more diversity, some not choosing to issue the benefit before majority and several not quoting below age 20 or 18. By actual count 15

is decidedly the most popular lower limit while two companies report rates at age 10.

The benefit is granted to women by most companies that insure women at all, since the fatal accident rate is much lower among women than among men. Ordinarily the age limits are the same as for men but the maximum amounts are frequently reduced. A few companies do not sell Double Indemnity to women at all and certain others restrict its sale to self-supporting spinsters.

The attachment of the benefit to term contracts also reveals varying practices. In recent years there has been apparent in American life insurance a trend toward lower premium forms, stimulated perhaps by many very large policies of corporation insurance, frequently on the term plan. It is a trifle difficult to tell whether the volume of term insurance has increased because of the special benefits of disability and Double Indemnity which have been lately attached to it by a good many companies or whether companies have granted these benefits because of the increased popularity of their term forms. In any event, I was interested to find that most of the companies are now attaching Double Indemnity to term policies on about the same basis as to standard forms. The limits in some cases are reduced in connection with term contracts and the benefit is not ordinarily granted at very early ages and sometimes not to women on this plan.

The problems of medical selection have not been seriously increased by the inclusion of Double Indemnity as they have been by the inclusion of disability benefits. The accidental death rate, so far as company investigations indicate, is little or not at all influenced by medical selection. Obviously, there may be physical defects, as for example the loss of an eye, which might be deemed cause for denying Double Indemnity at standard rates where standard life insurance could be issued. But it is a fair general statement that Double Indemnity can be allowed at standard rates in connection with standard policies issued within a company's prescribed limits. Occupational hazards offer an exception. In such instances the practice of the companies varies. A number simply decline the accident risk. Others have exceedingly simple extra rates applicable to such cases, as for example $1\frac{1}{2}$ or 2 times the standard rate. A few appear to have an accident rating as high as 3 times the standard, even on risks

not rated substandard for life insurance. Most companies doing substandard business offer the Double Indemnity in connection with reasonably favorable cases, again under a very simple rating system where necessary.

The practice regarding the attachment of the rider to old policies is naturally suggested by the question of selection. Through the courtesy of its actuary, I learn that a well-established Middle Western company as early as 1908 on entering this field tried the experiment of offering Double Indemnity coverage to all its old policyholders within its specified age limits regardless of present occupation or health and that the whole experience of this company has yielded a net Double Indemnity cost of approximately \$.72 per \$1,000. Generally, however, some evidence of insurability, frequently including a medical examination, possibly of a rather informal nature, at the expense of the insured is required. This is not only a safeguard against adverse selection but also an incentive to the applicant to buy new insurance at the same time and thus save the cost of the examination.

It is generally felt that the moral hazard in connection with Double Indemnity itself need not be feared in a case deemed eligible for life insurance. It is of some interest to remember that such was originally the feeling concerning disability. Thus Mr. Dawson remarked (R. A. I. A., VIII, 112): "That element [*i. e.*, of moral hazard] is scarcely traceable at all when temporary disability insurance is combined with life insurance. You can see how that could be true by reason of the large premium payable in consequence of which the man could not well load himself up with an extravagant amount of that protection; but it is not only on account of that large premium, but also on account of your medical examination and your inspections." Unfortunately, the disability experience of the companies has not borne out these earlier hopes. While obviously the possibility of similar adverse selection in connection with Double Indemnity is greatly reduced, it seemed to be worth inquiring whether companies as part of selection routine were investigating the amount of Double Indemnity already carried by applicants. This question revealed the fact that 24 of the 51 companies do request this information while others are considering its inclusion. Although it appears that only rarely has the information thus elicited led to declining an applicant for Double Indemnity, it may

in future serve a valuable purpose in calling attention to the possibility of a speculative hazard, and indicate the advisability of declining any form of insurance whatever on a particular applicant.

A study of the contract forms offered by the different companies is instructive as revealing the rather general uniformity now established. My first thought was that a comparison of early and recent clauses within the companies would afford valuable material for comment. Yet many actuaries in responding to my request wrote in effect: "The company first adopted the Double Indemnity feature six or more years ago (indeed, 12 years in one instance), and still continues the original clause and the original rates without change." Few of us could truthfully make a similar statement regarding disability! The fact is that after the pioneering stage comparative standardization was early reached and experimental frills have for the most part not been added. The recent changes made were for the purpose, so far as I could detect, of avoiding some particular risk which was proving to be more troublesome than anticipated, of clarifying the clause previously adopted in some minor detail, or of attempting to meet in future some outrageously unjust court decision bearing on a particular wording.

An analysis of the 51 current contracts will prove but dull reading for the student, who is advised to skip the following pages except in so far as any particular entry may engage his special interest. As a general introduction, however, to these particular details a few remarks may be appropriate.

The earliest clause reported by any of the 51 companies enumerated was issued by the Fidelity Mutual in 1904 and reads as follows: "In the case of death being caused by bodily injury of the insured effected exclusively by external, violent and accidental means, and occurring within 90 days of the event causing the injury, double the sum of insurance will be paid." The corresponding rates were graduated by age, varying from \$2.96 per \$1000 at 21 to \$3.44 per \$1000 at 60. It should be remembered that the first clauses of some of the companies consisted solely of what was formerly referred to as the Travel Accident Clause in contrast to what was called in distinction the General Accident Clause. The former, requiring a very low premium—frequently \$.10 annually per \$1000—provided Double Indemnity only in the

event of death by accidental means to a passenger in a common carrier. This travel clause is no longer issued by any of the companies under review. With few exceptions the companies now issue Double Indemnity as a rider instead of incorporating it in the body of the original contract. The exigencies of doing business in conformity with diversified statutes require most companies to have a supply of three or four different riders, all attempting to grant precisely the same coverage so far as the laws of particular states and the rulings of particular commissioners will permit. Very frequently the extremely slight changes thus necessitated would appear utterly puerile to an outsider and some of them surely must so appear even to the commissioners whose unfortunate duty it is to disapprove clauses not precisely adapted to their own Procrustean system. In the following analysis trivial details relating to the requirements of different states are completely ignored.

The portions of the rider which are peculiar to the Double Indemnity benefit may be considered in three groups: The general accidental death coverage, special forms of accidental death excluded from this coverage, and special provisions for termination of the rider. The first of these is the simplest and, if claims were to be adjusted according to common sense instead of judicial procedure, might be worded as follows: "If while the original policy is in full force it becomes a claim by death, the amount of such death claim will be increased by \$. on submission of due proof that death resulted directly from accidental means, as those words are generally understood and accepted, unless such death is specifically excluded in the exceptions hereunder."

NOTE: The inclusion in this clause of the amount in dollars of extra accident coverage instead of "double the face of the original policy" has become popular of late, 28 of the 51 companies employing it. Undoubtedly some mean precisely the same thing by the two expressions and one actually employs both. Yet the device permits the writing in one contract of life insurance for a given amount and of the accident benefit for a different and smaller amount wherever that course is desirable because of the company's limit or otherwise. It also permits the avoidance of any reference to the exclusion of dividend additions for example, which under the other phraseology some companies deem it

necessary to exclude. Not one of the companies questioned is now issuing Double Indemnity for an amount in excess of the face of the original policy—that is, triple indemnity and the like have been definitely discontinued in American practice. However, one company at an increase of about one-third over its usual Double Indemnity premium covers not only accidental death but also gives a benefit of like amount to the insured himself in case of “dismemberment or loss of sight through accidental means.”

Arrangement is ordinarily included to pay the accident claim “in the same manner and to the same payee or payees” as the other proceeds of the policy. Several companies at this point include the expression “unless otherwise provided,” thus implying that office practice permits an occasional special arrangement for payment of the Double Indemnity claims. Where the rider is attached to a continuous monthly income policy care is exercised to limit the accident payments to the guaranteed period. Four companies have in the general provision a clause to this effect: “In case claim is made for accidental death benefits under this Provision and such claim is denied by the Company, it may, upon receipt of satisfactory proof of death, pay the proceeds of the policy, exclusive of any benefits herein provided, without prejudice to the claim for such accidental death benefit or to the defense thereto.”

In every instance the Double Indemnity premium appears to be non-participating and with a single exception is without cash or other non-forfeiture value. In this one instance the excess of Double Indemnity premiums on a limited payment plan over the corresponding continuous premium plan is accumulated without interest to increase the cash value of the original policy or to increase correspondingly its other non-forfeiture options.

EXCEPTIONS

The list of exceptions is very numerous and varies markedly with the companies. Exceptions marked with an asterisk have already been excluded in the general clauses. This redundancy in company clauses is merely another instance of the intricacies to which life is exposed by legal phraseology and fear of judicial obtuseness.

1. If a period of more than . . . days intervenes between the accident and death resulting therefrom.

NOTE: Such a clause is universally adopted. The popular period is 90 days, (preferred by 43 companies). 7 employ 60, 1 uses 100 days.

2. If death occurs after the policy anniversary nearest the birthday of the insured.

NOTE: One company discontinues the benefit after 20 years from date of issue. The most popular limiting date is the anniversary nearest the 60th birthday, (in 24 companies). 8 companies extend it to the 65th, 9 to the 70th, while 9 companies set no age limit.

Actually this clause is less simple than my wording would indicate. One company appreciates the fact that two anniversaries may be equally near the birthday unless a February 29 has been providentially interposed and therefore inserts the expression "The first premium due date nearest the 60th birthday." A few companies ignore policy anniversaries entirely and fix their attention on the actual birthday of the insured. One employs the anniversary following the 70th birthday, instead of the nearest anniversary.

3. *Death by disease.

NOTE: An inclusive expression frequently employed covers "any physical or mental disease or infirmity." 48 companies feel the necessity of introducing such an exceptionable exception, which is in itself sufficient commentary.

4. Death by suicide.

NOTE: Practically without exception this is included with the elaboration "whether sane or insane." A recent case in which a lower court is reported to have approved a claim for Double Indemnity, although the insured was shown to have inhaled voluntarily carbon monoxide, to have been carried to bed, to have recovered sufficiently to get up and obtain his revolver and then deliberately to have shot himself, on the ground that his mind having been deranged by the carbon monoxide he shot himself by the merest accident, indicates the difficulty of excluding all payments on such claims.

5. Death by poison.

NOTE: 27 companies exclude poison whether taken voluntarily or otherwise.

6. Death by inhaling gas.

NOTE: Since speedy death by the carbon monoxide route has become so prevalent, several companies have adopted this clause. 13 are now using it. The student interested will find an illuminating paper on the subject in the 1928 Proceedings of the International Claim Association.⁸

7. Death by violation of law by the insured.

NOTE: The intent of this exception (included by 42 companies) is perfectly clear and no reputable company would dream of a harsh interpretation. That the policyholder may understand this, the wording preferred by some companies is: "Death resulting from committing an assault or felony." One company to take no chances expresses the exception as "Assault, felony or any other violation of law by the insured."

8. Death as a result of riot or insurgency.

NOTE: Included by 33 companies.

9. Death as a result of war.

NOTE: Included by 30 companies. A typical wording of this exception is "from war or any act incident thereto." Red Cross or other relief service is occasionally included in this connection and in a few instances travel in wartime outside the continental limits of United States and Canada is excepted from the Double Indemnity coverage.

10. Death as the result of aviation.

NOTE: All 51 companies exclude the aviation hazard except that two of the companies recognize Double Indemnity where accidental death befalls a fare-paying passenger.

11. Death as the result of submarine operations.

NOTE: Included by 45 companies.

12. Death as the result of military or naval service in time of war.

NOTE: Nearly every company excludes this hazard, many of them not even including the phrase "in time of war." 19 of the companies provide for termination of the Double Indemnity benefit entirely in case of military or naval service in time of war.

13. Death by contusionless injury.

NOTE. In this connection or elsewhere the Double Indemnity clause provides for the company the right to examine the body

(⁸) Charles Rathbun. Carbon Monoxide Poisoning. Particularly from Automobiles. Proceedings of the Nineteenth Annual Convention of the International Claim Association (September 1928). Page 56.

and to perform an autopsy unless forbidden by law. Most of the companies require that the particular accidental means in question shall be evidenced by a mark discoverable on such autopsy. In this connection, however, it is necessary to except accidental drowning which is invariably included in the coverage and which may well fail to reveal such contusion. The interesting methods employed by those drafting the clauses in inserting this exception to an exception are instructive rather to the student of English than to the student of Double Indemnity as such.

14. Death as a result of police duty.

NOTE. 18 companies insist on this exception.

15. *Death as the result of infection.

NOTE. The inclusion of this exception is hedged about by many explanations to show that pyogenic infection as the direct result of the accident and the immediate cause of death is not excluded. When a court can solemnly aver that death by typhoid fever may be death by accidental means if the introduction of the typhoid germ to the mouth can be ingeniously explained as possibly having resulted from the break in a water main, one can hardly wonder at this apparently redundant exception, included by 27 companies.

16. Death by murder.

NOTE. A softer phrase is "intentionally inflicted injuries." One company accepts the risk of death by murder after the first year. 7 do not accept it at all. Though by definition murder cannot be accidental, companies and courts alike recognize it as accidental so far as the victim is concerned.

17. Isolated examples of the following exceptions may be lumped together without comment:

One company adds revolution to riot or insurrection, one company excludes sunstroke, and one company very properly requests but does not quite insist upon notice to the company within 30 days of any accident likely to prove fatal.

DISCONTINUANCE

Provision for discontinuance of the benefit under the following contingencies has been noted:

(1) On discontinuance of the extra premium to provide the special benefit.

(2) On surrender of the original policy.

(3) On transfer of the original policy automatically or otherwise into continued term insurance or into a reduced amount of paid up insurance.

(4) On attainment of the age limit specified in the coverage.

NOTE. One company has asked itself the interesting question: "What would happen if the extra premium is through error collected beyond this period of limitation?" and has answered it by providing for the return of premiums with interest should such an error occur. A nice question in logic is presented where no such foresighted provision has been included. Would a court rule that the rider was inoperative because the period of limitation had been passed or would it rule that pay for the coverage having been collected the coverage must be granted?

(5) On written request of the insured.

NOTE. Such discontinuance is frequently limited to anniversaries, although many companies do not specify. The policy is ordinarily required to be submitted for endorsement with the written request. In several instances where such cancellation is not limited to a premium due date the provision does not specifically include the refund of a fractional premium to that date. Doubtless an adjustment would be made, however.

(6) On receipt by the insured of any total disability benefit in connection with the policy.

NOTE. 25 of the clauses provide for such discontinuance. Few indeed of the other 26 state specifically in the Double Indemnity clause that the extra premium therefor will be waived in case of disability. Very likely such waiver is covered in these instances by the disability clause itself.

(7) Isolated clauses of termination are the following:

It has already been pointed out that frequently military or naval service in time of war automatically terminates the Double Indemnity contract. In one instance engaging in aviation has the same effect. In 5 cases on limited premium policies termination automatically becomes effective when the contract becomes paid up by limitation. In one instance termination is effective "if the insured makes his residence or travels outside the continental limits of the United States or the Dominion of Canada," while Red Cross service or other relief work in connection with actual warfare is cause for termination in another. Some companies think it prudent to assert that coverage ceases on conversion to

another form of insurance unless arrangements at an adjusted rate for continuance of the benefit are made, or on maturity of the contract as an endowment.

The close connection between modern transportation and accident insurance should not escape the student's attention. To the hazards introduced by the invention of railroads we owe the invention in England of personal accident insurance:

"Eleven companies formed in England between 1845 and 1848 to write accident insurance against railway injury, £1 for £1000 being the usual rate. One survived, the Railway Passengers Assurance Company. It was but a step to assume liability for accident of any nature, and this the Accidental Death Insurance Company did in 1850. As is true in all branches of insurance, rates had to be dictated by judgment until experience became available."⁹

One suspects that much of the need and popularity of Double Indemnity today may properly be attributed to the automobile. In the statistics of the New York Life published five years ago by Mr. Hunter, this was the direct source of over 35% of the Double Indemnity claims, without counting carbon monoxide poisonings. A Department of Commerce bulletin of October 17, covering data from 78 large American cities, reports an annual death rate from automobile accidents per 100,000 population of 24.9 for the 52 weeks ending October 5. The rate of increase from year to year in this type of fatal accidents has been alarming. Just as an increasingly important function of life insurance companies lies in educating the insured public through campaigns to promote better health, it may well be that the life companies offering Double Indemnity benefits will take a more and more commanding part through education and the arousing of the public conscience to reduce automobile fatalities. The record of Double Indemnity in this country for the first 25 years must impress the impartial historian as being on the whole very favorable indeed. If during the next quarter-century the companies can cooperate successfully toward the material reduction of the fatal accident risks against which they insure, the history of Double Indemnity for that period will be fairer still.

(⁹) *Insurability, Prognosis and Selection*, by H. W. Dingman. The Spectator Company. New York, 1927. Page 13.

APPENDIX I
COMMUTATION COLUMNS

Double Indemnity to Age 70

The Travelers q'_x combined with $A M^{(5)} 4\%$

Age	q'_x	C'_x	M'_x	1000 A'_x	a_{70-x}
20	.00059	25.546	536.223	11.96	20.21
21	.00057	23.608	510.677	11.90	20.06
22	.00055	21.787	487.069	11.85	19.90
23	.00054	20.469	465.282	11.82	19.74
24	.00053	19.223	444.813	11.80	19.57
25	.00052	18.044	425.590	11.79	19.40
26	.00051	16.929	407.546	11.80	19.22
27	.00050	15.877	390.617	11.81	19.03
28	.00049	14.882	374.740	11.83	18.83
29	.00048	13.944	359.858	11.87	18.63
30	.00047	13.058	345.914	11.92	18.42
31	.00046	12.222	332.856	11.98	18.19
32	.00045	11.433	320.634	12.06	17.96
33	.00046	11.199	309.201	12.15	17.72
34	.00047	10.962	298.002	12.23	17.47
35	.00048	10.724	287.040	12.31	17.21
36	.00049	10.486	276.316	12.39	16.94
37	.00050	10.246	265.830	12.45	16.66
38	.00052	10.210	255.584	12.52	16.37
39	.00054	10.155	245.374	12.56	16.07
40	.00056	10.084	235.219	12.60	15.76
41	.00058	9.997	225.135	12.61	15.44
42	.00060	9.894	215.138	12.61	15.11
43	.00062	9.777	205.244	12.60	14.77
44	.00064	9.647	195.467	12.56	14.42
45	.00066	9.356	185.820	12.51	14.06
46	.00068	9.208	176.464	12.46	13.69
47	.00070	9.048	167.256	12.39	13.31
48	.00072	8.878	158.208	12.30	12.92
49	.00074	8.697	149.330	12.19	12.53
50	.00076	8.506	140.633	12.07	12.12
51	.00078	8.306	132.127	11.93	11.70
52	.00080	8.096	123.821	11.78	11.27
53	.00083	7.978	115.725	11.60	10.82
54	.00086	7.841	107.747	11.41	10.37
55	.00089	7.687	99.906	11.18	9.90
56	.00092	7.431	92.219	10.92	9.42
57	.00095	7.248	84.788	10.65	8.93
58	.00099	7.125	77.540	10.34	8.42
59	.00103	6.979	70.415	9.99	7.90
60	.00108	6.877	63.436	9.59	7.35
61	.00114	6.807	56.559	9.14	6.79
62	.00120	6.644	49.752	8.61	6.20
63	.00126	6.509	43.108	8.01	5.58
64	.00133	6.394	36.599	7.33	4.94
65	.00141	6.288	30.205	6.53	4.25
66	.00150	6.141	23.917	5.61	3.53
67	.00160	6.036	17.776	4.55	2.75
68	.00172	5.920	11.740	3.27	1.91
69	.00185	5.820	5.820	1.78	1.00

APPENDIX II
COMMUTATION COLUMNS

Double Indemnity to Age 70

The Travelers q'_x combined with American Experience 3%

Age	C'_x	M'_x	1000 A'_x	B_{70-x}
20	29.236	699.705	13.64	22.24
21	27.175	670.469	13.57	22.05
22	25.224	643.294	13.52	21.86
23	23.837	618.070	13.48	21.65
24	22.517	594.233	13.46	21.44
25	21.261	571.716	13.45	21.23
26	20.475	550.455	13.44	21.00
27	19.323	529.980	13.44	20.77
28	18.227	510.657	13.45	20.53
29	17.184	492.430	13.47	20.29
30	16.192	475.246	13.50	20.03
31	15.249	459.054	13.55	19.77
32	14.353	443.805	13.61	19.50
33	14.129	429.452	13.68	19.22
34	13.900	415.323	13.74	18.93
35	13.667	401.423	13.80	18.63
36	13.430	387.756	13.86	18.33
37	13.189	374.326	13.91	18.01
38	12.946	361.137	13.95	17.68
39	12.949	348.191	13.98	17.35
40	12.930	335.242	14.00	17.00
41	12.891	322.312	14.00	16.64
42	12.832	309.421	13.99	16.28
43	12.756	296.589	13.95	15.90
44	12.663	283.833	13.90	15.51
45	12.553	271.170	13.83	15.11
46	12.428	258.617	13.73	14.69
47	12.288	246.189	13.62	14.27
48	12.134	233.901	13.49	13.83
49	11.965	221.767	13.34	13.38
50	11.783	209.802	13.18	12.93
51	11.587	198.019	12.99	12.46
52	11.364	186.432	12.80	11.97
53	11.295	175.068	12.56	11.48
54	11.053	163.773	12.30	10.97
55	10.925	152.720	12.02	10.45
56	10.773	141.795	11.71	9.92
57	10.597	131.022	11.37	9.38
58	10.507	120.425	11.00	8.81
59	10.382	109.918	10.59	8.24
60	10.322	99.536	10.13	7.64
61	10.311	89.214	9.60	7.03
62	10.247	78.903	9.01	6.40
63	10.049	68.656	8.33	5.74
64	9.966	58.607	7.59	5.05
65	9.897	48.641	6.73	4.33
66	9.829	38.744	5.75	3.58
67	9.688	28.915	4.63	2.78
68	9.652	19.227	3.33	1.92
69	9.575	9.575	1.80	1.00

APPENDIX III
COMMUTATION COLUMNS

Double Indemnity to Age 70
The Travelers q'_x combined with American Experience $3\frac{1}{2}\%$

Age	C'_x	M'_x	1000 A'_x	a_{70-x}
20	26.537	572.751	12.30	20.59
21	24.547	546.214	12.24	20.43
22	22.675	521.667	12.19	20.27
23	21.325	498.992	12.17	20.10
24	20.047	477.667	12.15	19.93
25	18.837	457.620	12.15	19.75
26	17.692	438.783	12.15	19.57
27	16.609	421.091	12.17	19.37
28	15.584	404.482	12.20	19.17
29	14.615	388.898	12.24	18.97
30	13.698	374.283	12.30	18.75
31	12.832	360.585	12.36	18.53
32	12.013	347.753	12.45	18.30
33	11.775	335.740	12.55	18.06
34	11.534	323.965	12.64	17.81
35	11.291	312.431	12.73	17.56
36	11.046	301.140	12.81	17.29
37	10.801	290.094	12.89	17.01
38	10.770	279.293	12.97	16.73
39	10.720	268.523	13.03	16.44
40	10.653	257.803	13.07	16.13
41	10.569	247.150	13.10	15.81
42	10.471	236.581	13.10	15.49
43	10.358	226.110	13.10	15.15
44	10.233	215.752	13.07	14.80
45	10.095	205.519	13.03	14.44
46	9.946	195.424	12.97	14.07
47	9.787	185.478	12.89	13.68
48	9.617	175.691	12.79	13.29
49	9.307	166.074	12.67	12.88
50	9.124	156.767	12.54	12.46
51	8.932	147.643	12.40	12.02
52	8.731	138.711	12.23	11.58
53	8.630	129.980	12.05	11.12
54	8.509	121.350	11.84	10.65
55	8.371	112.841	11.59	10.16
56	8.214	104.470	11.32	9.66
57	8.041	96.256	11.01	9.15
58	7.934	88.215	10.67	8.62
59	7.802	80.281	10.29	8.07
60	7.646	72.479	9.86	7.50
61	7.605	64.833	9.38	6.91
62	7.525	57.228	8.82	6.30
63	7.407	49.703	8.19	5.66
64	7.310	42.296	7.46	5.00
65	7.172	34.986	6.63	4.29
66	7.091	27.814	5.69	3.55
67	7.004	20.723	4.59	2.76
68	6.902	13.719	3.30	1.92
69	6.817	6.817	1.79	1.00

THE ANALYSIS OF EXPENSES BY THE USE OF HOLLERITH CARDS

BY

H. O. VAN TUYL

A great deal of effort is expended by casualty insurance companies each year in obtaining accurate pure premium data. The necessity of basing rates upon reliable information as to loss cost justifies this expense, heavy though it unquestionably is. Precise statistical plans promulgated by the various rating organizations contain detailed instructions for the coding of premiums, exposure and losses by classifications and territories and the general use of these plans has resulted in the preparation of pure premium data on a uniform basis.

Until recent years, comparatively little attention has been given to the analysis of underwriting expenses, although these constitute nearly as large a part of the premium dollar as the loss cost. There is little difficulty in making accurate allocations so far as commissions are concerned as these are invariably charged to the line of insurance involved but as to the other expenses each company is left to adopt the methods it deems best in determining the distribution of expenses to lines or groups of expense. Indeed, the organization of companies varies so greatly that uniformity of analysis must be sought through agreement upon general principles, the adoption in some cases of more precise definitions and the use of tested and approved methods of cost analysis rather than the establishment of precise formulae to be followed in all cases. Our *Proceedings* now contain several papers dealing with the proper analysis of expenses and many practical suggestions as to the bases upon which allocations can be made will be found therein. It is not our purpose in this paper to review the recommendations and suggestions already made but to consider from what viewpoint the analysis should be made and to indicate how punch cards can be used to facilitate the necessary collection of data.

The Disbursement page of the Annual Statement blank pro-

vides for the most part for a reporting of expenditures by *kind* rather than by *purpose*. It lists the various items of disbursements such as salaries, rent, printing and stationery, postage, etc., as though all payments of these kinds, regardless of purpose, should be reported thereunder. The immediate nature of the disbursement apparently determines the assignment rather than the ultimate aim. The tendency, however, is to classify expenditures first in accordance with purpose and secondarily by kind and in doing so casualty insurance is following the best commercial accounting practice.

Originally, "investigation and adjustment of claims" was intended to include only the direct expenses of investigating and adjusting individual claims. When the liability loss reserve laws were enacted, companies were required, so far as liability and workmen's compensation were concerned, to take cognizance of the overhead claims expense and the foot note to Schedule P now requires the inclusion with loss expense payments of "all payments for legal expenses, including attorney's and witness fees and court costs, salaries and expenses of investigators, adjusters and field men, rents, stationery, telegraph and telephone charges, postage, salaries and expenses of office employees, home office expense and all other payments under or on account of such injuries, whether the payments are allocated to specific claims or are unallocated." At the present time, it is the practice to include unallocated claims expense in reporting the disbursement for "investigation and adjustment of claims" for all lines although the above quoted language refers only to liability and compensation.

Since the adoption of the rules of the Conference on Acquisition and Field Supervision Cost, it has been the general custom to include in the item "Salaries, traveling and all other expenses of branch office employees and agents not paid by commission" all "production cost" expenses, other than commissions. Likewise, there is usually included under "Inspections" the entire cost of making inspections, although the salaries of the home office staff of the inspection department, it might be argued, should be reported as a part of item 29, "Salaries, fees, other compensation and traveling expenses of officers, directors, trustees and home office employees."

In the New York Casualty Experience Exhibit, a definite

separation of expenses in accordance with a few broad groups is required. These groups are:

- Investigation and Adjustment of Claims
- Acquisition and Field Supervision
- General Administration
- Inspection and Bureaus
- Taxes, Licenses and Fees

As the indications shown by the combined reports of companies filing this schedule are used by at least one rating organization in establishing expense loadings, it is a matter of real importance that the analysis of expenses be made in a uniform manner so so far as allocations to groups and lines are concerned. Probably the most valuable single contribution in the way of suggestions for the proper compilation of this exhibit is contained in the report on a "Uniform Method of Expense Distribution" prepared in 1925 by a Committee of the Association of Casualty and Surety Accountants and Statisticians.

There are other functions, however, of expense analysis besides serving as a means of obtaining dependable data for rate making purposes. An adequate system will furnish much other valuable information to the individual company. It should show, among other things, the cost of each branch office and of each department of the home office and branch office and the component parts of which each of these is made up and this information should be available in such form that further detailed analysis can readily be made.

The company with which I am connected has since organization used Hollerith cards as a means of obtaining a complete analysis of its expenses and this method has been found to afford a very simple, flexible and dependable method of obtaining the desired information.

The punch card used for this purpose contains the following fields:

Date of Transaction. The month and year that the entry appears on the books is shown here. An additional field could be added for the day of the month and two columns instead of one used for indicating the month, if desired.

Voucher Number. As all entries are substantiated by vouchers, the voucher number is entered on the card in each case.

Source. All entries affecting expenses originate in four books of account, the Cash Disbursements Book, the Cash Receipts Book, the Sundry Journal and the General Journal and the initials of these books are entered in Column 26 of the card, to permit identification of the source of entry.

Office Paying. All payments made at the home office are assigned the "home office" code and likewise all entries which first appear on the books of the branch office are coded as payments of that branch office.

Office Charged. Disbursements on behalf of a branch office whether made at that office or at the home office are all recorded as charged to the office for whose benefit the payment is made.

Department. This classification is established so that the cost of each department of the home office as well as each department of the individual branch offices may be determined. The underwriting departments are all classified hereunder simply as "Code 1—Underwriting Department" and the distinction between various underwriting departments is expressed by means of the line code. The claim departments are similarly all shown as "Code 2—Claim Department" and the Automobile Claims Department, for instance, will only be charged with such expenses as are coded for automobile lines.

Kind. By "Kind" is meant the classification in accordance with the immediate nature of the disbursement such as salaries, rent, printing and stationery, etc. A set of code numbers provides for a complete analysis of all expenses and taxes.

Group. Seven groups of expenses are established. These harmonize with the groups established in the Casualty Experience Exhibit, the payroll auditing expense being treated, however, as a separate group and "Inspections and Bureau" expenses as shown in the Exhibit being subdivided into the two component elements. A description of the items composing each group follows:

1. Sundry (Unallocated) Claim Expenses.

To this group is charged all claim expenses of every kind that are not chargeable to any specific claim. These will include the salaries, rent and all other expenses of claim departments at the home office and in the field.

2. Acquisition and Field Supervision.

The expenses to be charged to this group are those set forth in the conference "Rules Regarding Acquisition and Field Supervision Cost for Casualty Insurance." In determining the expenses of a branch office to be charged hereunder, the portion applicable to the investigation and adjustment of claims, the making of inspections and the making of payroll audits should be excluded as well as such administrative or other expenses as are clearly of a home office character and are such expenses as a general agent would not incur.

3. General Administration.

The greater portion of the home office expenses will be charged to this group. Ordinarily the entire expense of such departments as underwriting, accounting, cashier, filing, statistical, stenographic and supply will be treated as general administration. While a large portion of the general executive salaries, rent, etc., is chargeable to general administration, a part may be properly chargeable to sundry claim expenses or other group.

4. Payroll Audit.

The salaries, rent, traveling and all other expenses of the payroll audit department at the home office, as well as similar expenses at branch offices, are charged to this group.

5. Inspections.

The entire expenses of the home office and branch office inspection departments, as well as the salaries and expenses of all inspectors, are charged to this group.

6. Bureaus and Associations.

Membership dues and assessments paid to all rating bureaus and company organizations are included herein.

7. Taxes, Licenses and Fees.

All taxes, licenses and fees that are considered to be a proper charge against underwriting are charged to this group.

Line. Codes have been provided not only for the separate lines of insurance but also for certain combinations of lines, such as "Accident and Health," "Liability and Compensation," "Liability Auto and All Other." These codes permit the charging to a whole department or group of lines those expenses which are incurred for the benefit of the entire group. At the end of the month, quarter or year, the total of such expenses can be apportioned to the individual lines on the basis of premiums written, losses paid, inspections made or number of transactions as the case may be.

The "Expense Distribution" form of punch card in use is shown herewith as well as a Cash Disbursement Voucher containing the various columns needed to code the payment. We have found it convenient to assemble on one sheet all the various kinds of codes used in connection with the coding of expense vouchers and a copy of this sheet is likewise reproduced.

Every expense item is allocated to group, kind, department and office at the time of coding. So far as determining the "kind" of disbursement there is ordinarily no difficulty. The assignment to department and office is also rather easily made, assuming that full information as to the particular disbursement is available, but there are frequent cases arising where the proper allocation to group may be in doubt. It is better, however, to charge the entire item to the group which evidently should bear the greater portion and arrange for necessary adjustments of all such items at one time by a single transfer entry.

It should be clearly understood that there are many cases where it is not possible to allocate an expenditure to any definite *line* of insurance. Many expenses, such as the cost of a central typing department, a supply department, a mailing department, or subscriptions to insurance papers and other items of general office expense cannot readily be apportioned at the time individual payments are made to each line of insurance benefitted. Such procedure would result in breaking up many amounts, some of them of very small size, into as many as a dozen or more small parts. The labor of such refined analysis of each individual disbursement would be prohibitive. It is entirely feasible, however, to accumulate in one total the items to which the same pro rata percentages apply and obtain the amounts chargeable to each line monthly, quarterly or yearly as need for the information arises.

The system herein outlined is used for all underwriting expenses other than commissions and "allocated" claim expenses. All commission payments are recorded on a special "Premiums Collected and Commissions Paid" form of punch card and the entries affecting expenses in connection with specific claims are punched on our regular form of loss payment card.

As checks are drawn for expenses, they are all charged to a single account "General Expenses." All these vouchers are coded by competent persons in the Accounting Department and then passed to the Statistical Department for the punching of Hollerith cards. When all vouchers for the month have been received, the cards are totalled and balanced with the control account of "General Expenses." Tabulations of these cards are then run to furnish the totals by kind, by department, by group and by office. Ledger accounts are maintained for the various groups and kinds of expenses and auxiliary summary records are maintained to which are posted the monthly totals of departments and offices. The trial balance is so designed as to show at all times the total expenditures under each group and the analysis of each group by kind.

It goes without saying that all coding of expense vouchers should be done by experienced clerks who will exercise the same care that a bookkeeper would in making entries to be posted to his ledger. As the coding system is quite simple, however, it does not take long to memorize the various code numbers and remarkably few errors due to incorrect interpretation of codes have arisen.

The system described herein has been in use for over three years. The method adopted is believed to be sound in principle and is sufficiently elastic to permit of as refined analysis as may be desired. The use of Hollerith cards as a means of assembling data has unquestioned advantages because of its flexibility and while no system of records will of itself furnish accurate statistics, the great number of problems incident to the proper determination of costs in casualty insurance will, we believe, be made easier of solution by the use of this modern device.

OFFICE PAYING (OR CHARGED)		DEPARTMENT	KIND OF EXPENSE
1. Home Office	11. Hartford	01. Underwriting	20. Salaries—Home Office
2. Dallas	21. Columbus	02. Claim	21. Salaries—Special Agents
3. Atlanta	31. Havana,	03. General Executive	22. Salaries—Branch Office
4. Chicago	Cuba	04. Pay Roll Audit	30. Traveling—Home Office
5. San Francisco	41. Newark	05. Inspection	31. Traveling—Special Agents
6. Montreal	51. Phila. B. O.	06. Accounting	32. Traveling—Branch Office
7. Boston	61. Pittsburgh	07. Agency	40. Rent—Home Office
8. New York		08. Cashier	42. Rent—Branch Office
9. Syracuse		09. Filing	50. Allowance to Agents
GROUP		10. Statistical	51. Advertising
1. Sundry Claim Expenses		11. Stenographic	52. Auditing Fees
2. Acquisition & Field Supervision		12. Supply	53. Bureaus & Associations
3. General Administration		13. Printing	54. Confidential Reports
4. Pay Roll Audit		14. Mailing	55. Contingent Commissions
5. Inspections		15. Brokerage & Service	56. Directors' Fees
6. Bureaus & Associations		16. Cancellation & Reins.	57. Exchange
7. Taxes, Licenses & Fees		17. Abstract	58. Express
		18. 19. Miscellaneous	59. Furniture & Fixtures
LINE OF INSURANCE			
20. Accident & Health			60. Sundry Expense
21. Accident			61. Insurance
22. Health			62. Legal
30. Liability & Compensation			63. Medical Examination Fees
31. Liability (P. L. & P. D.) Auto & all Liab.			64. Postage
32. Automobile P. L., P. D. & Coll.			65. Printing & Stationery
33. Automobile Public Liability			66. Subscriptions & Publications
34. Automobile Property Damage			67. Surety Bonds
35. Automobile Collision			68. Telegrams
36. Liability other than Auto (P. L., P. D. & E. L.)			69. Telephone
37. Liability other than Auto (P. L. & E. L.)			70. Moving Expense 75.
38. Property Damage other than Auto			71. 76.
39. Workmen's Compensation			72. 77.
40. Fidelity & Surety			73. 78.
41. Fidelity			74. 79.
42. Surety			80. Agents Licenses & Fees
50. Plate Glass			81. Capital Stock Tax
60. Burglary & Theft			82. City & County Fees & Taxes
70. Steam Boiler, Engine & Machinery			83. Examination Fees
71. Steam Boiler			84. Income Tax (Federal)
72. Engine & Machinery			85. Insurance Dept. Licenses & Fees
80. Water Damage			86. Miscellaneous Fees & Taxes
90. Aviation—All lines		97. Aviation—Public Liability	87. Publication Fees
96. Aviation—Passenger Liability		98. Aviation—Property Damage	88. State Taxes on Premiums

ANALYSIS OF EXPENSES

EXHIBIT 3



CONSTITUTION INDEMNITY COMPANY
REQUISITION FOR CHECK

Check No. _____

To Cashier: Philadelphia, Pa. _____ 19____
 Draw Check to Order of _____
 For _____

VOUCHERS MUST BE CHECKED, APPROVED
AND COMPLETE IN EVERY DETAIL BE-
FORE PRESENTING TO THE CASHIER.

Made by _____
 Checked by _____
 Approved by _____

Regulation Stub CONSTITUTION INDEMNITY COMPANY, Check No. _____
 To Accounts Department Philadelphia, Pa. _____
 Payable To _____ Amount, \$ _____

CODIFICATION OF GENERAL EXPENSE						OTHER DISBURSEMENTS (Cont'd)		
Other Charges	Dep't	Ledger Account	Comp	Line	Account	Premiums Debit		Debit/Credit
					Accident			
					Health			
					Auto Liability			
					Public Auto Liability			
					Auto-Property Damage			
					Public Auto Property Damage			
					Auto Collision			
					Employers' Liability			
					Other Liability			
					Other Property Damage and Collision			
					Workmen's Compensation			
					Fidelity			
					Fidelity Bankers' Blanket			
					Surety			
					Plate Glass			
					Burglary			
					Steam Boiler			
					Engines and Machinery			
					Debit, Premiums O/S			
					Credit-Cumulative Surplus			
					Agents-Sundry Balances			
TOTAL General Expense								
OTHER DISBURSEMENTS								
Losses and Loss Expenses								
Personal Balance								
TOTAL						TOTAL		

Use 1911 and 1912

EXHIBITS AND SCHEDULES OF THE CASUALTY
ANNUAL STATEMENT BLANK

BY

THOMAS F. TARBELL

The paper entitled "Casualty Insurance Accounting and the Annual Statement Blank," *Proceedings*, Volume XV, Page 141, deals with the most important sections of the annual statement blank from the financial standpoint, namely, Income and Disbursements, Assets and Liabilities and the Underwriting and Investment Exhibit. The present paper is designed to supplement this by treating the various exhibits and supporting schedules of the blank* from the accounting point of view.

The exhibits and schedules herein described fall naturally into four groups:

Exhibits

- Exhibit of Premiums.
- Recapitulation (of Premiums).
- Business in (State) during the year.

Miscellaneous Schedules

- Special Deposit Schedule.
- Schedule of All Other Deposits.
- Schedule E—Reinsurance Recoverable.

Investment or Asset Schedules

- Schedule A—Real Estate.
- Schedule B—Mortgage Loans.
- Schedule C—Collateral Loans.
- Schedule D—Bonds and Stocks.
- Schedule N—Bank Balances.
- Schedule X—Unlisted Assets.

Underwriting and Reserve Schedules

- Schedule H—Salvage Recovered.
- Schedule G—Development of Unpaid Fidelity and Surety Losses and Claims Outstanding at the end of the seven prior calendar years.

*All references are to the "Convention Edition" blank for 1928. Since changes in the blank are made yearly, item number references may change in future editions. The changes effective for the 1929 blank are contained and discussed in an "Addenda," Page 167.

Schedule J—Current year's development of Unpaid Fidelity and Surety Losses and Claims Outstanding at the end of the previous year.

Schedule K—Fidelity and Surety Losses and Claims reported during the current year and outstanding at the end of the current year.

Schedule P—Liability and Compensation Loss Reserves.

Schedule O—Test of Loss Reserves (excluding Liability and Compensation) as of end of previous year in the light of developments during the current year.

The principal purposes of these exhibits and schedules are as follows:

- (1) To provide insurance departments with sufficient information to determine if companies are complying with state laws.
- (2) To provide insurance departments with sufficient data and details to permit a partial audit of the financial statement during the interim between regular periodic examinations which are usually made at intervals of from three to five years.
- (3) To afford information for the general public and policy-holders, particularly as respects a company's investments.

The exhibits and schedules are taken up individually in the order in which they appear in the statement blank.

SECTION VI—EXHIBIT OF PREMIUMS—RECAPITULATION—STATE BUSINESS (PAGE 7)

(See Exhibit 1, Page 133)

Exhibit of Premiums—This exhibit shows the development of gross premiums in force from the beginning to the end of the year.

Gross Business—Columns (1)-(5) The detail of the development of reinsurance ceded premiums is not provided for, the net amount of such premiums in force being entered in Column (6). The difference between Column (5) and Column (6) produces the net premiums in force, Column (7).

The purpose of this exhibit is to furnish a rough check of the correctness of the premiums in force. The accuracy of the unearned premium reserve is dependent upon the correctness of the data in this exhibit and since the unearned premium reserve

constitutes, on the average, about 40% of the total liabilities of a company, the importance of this exhibit is obvious.

The exhibit is subject to audit as follows:

Column (1) The amounts in this column check with the corresponding amounts in Column (5) of the previous year's exhibit.

Column (2) The amounts in this column check with the amounts in Items 4-20, Column (1), Page 2 of current statement.

Columns (4) and (6) upon which depend the correctness of Columns (5) and (7) are not subject to audit. Column (4) is made up of (a) gross premiums on expired policies; (b) net additional (or refund) premiums developed by audit on expired policies; (c) gross premiums on policies not taken and (d) gross (not return) premiums on policies canceled during the policy period. In general, it will be found that the amounts in Column (4) of the current year's statement will be substantially the same as those in Column (2) of the previous year's statement. This is a very rough and approximate rule and is not applicable where premium volume is rapidly increasing or decreasing or where there are unusual factors present such as a material change in the proportions of one year and three year business written. It does, however, furnish a rough check in most instances when applied to all lines combined. In case of Column (6) it will generally be found that the amounts vary according to premium writings. If net reinsurance premiums written increase during a particular year, the amount of reinsurance premiums in force will tend to increase in substantially the same ratio and vice versa. However, as in case of Column (4), this is a very rough and approximate rule and does not always hold.

Recapitulation. This exhibit is a summary of the unearned premium reserve computation. The sums of the amounts in

Columns (1), (3) and (5) check with the amounts in Column (6). The amounts in Column (6) check with the amounts in Column (7) of the "Exhibit of Premiums." The sums of the amounts in Columns (2), (4) and (5) check with the amounts in Column (7). The sum of the amounts in Column (7)—Item 35—checks with Item 25, Page 5 of statement.

Although this exhibit shows unearned premium results on a net (gross less reinsurance ceded) premium-in-force basis, it is the general practice of companies to compute the gross and reinsurance unearned premium reserves separately.

There are two methods of computing the unearned premium reserve—the half-yearly method and the semi-monthly method.* Under the first method the reserve under policies running for one year or less is $\frac{1}{2}$ or 50% of the premiums in force and under policies running more than one year the fraction for the unexpired term, assuming all policies to have been issued in the middle of the year. Using policies issued for a period of three years, for example, the unearned premium reserve factors are:

Policies issued in current year— $\frac{5}{6}$ ths
 " " one year prior— $\frac{3}{6}$ ths or $\frac{1}{2}$
 " " two years prior— $\frac{1}{6}$ th

Under the second method the reserve is computed for each month of issue (or expiration), assuming all policies to have been issued in the middle of the month. The unearned factors for one year policies are:

December issues— $\frac{23}{24}$ ths
 November issues— $\frac{21}{24}$ ths
 January issues — $\frac{1}{24}$ th

In case of three year policies the factors are:

December of current year..... $\frac{71}{72}$ nds
 November " "..... $\frac{69}{72}$ nds
 January of current year..... $\frac{49}{72}$ nds
 December one year previous..... $\frac{47}{72}$ nds
 November " "..... $\frac{45}{72}$ nds
 January one year previous..... $\frac{25}{72}$ nds
 December two years previous..... $\frac{23}{72}$ nds
 November " "..... $\frac{21}{72}$ nds
 January two years previous..... $\frac{1}{72}$ nd

*The semi-monthly method is sometimes referred to as the pro rata method.

In case of companies computing the unearned premium reserve by the half-yearly method, the amounts in Column (2) will, of course, be one-half the amounts in Column (1). No check can be applied to Column (2) in case of companies computing the unearned premium reserve by the semi-monthly method.

The reserve on December 31st will be greater or less than fifty per cent., according to whether a larger proportion of business is written in the second or first half of the year. In most cases, however, the total of Column (2) will be less than one-half the total of Column (1) since in case of Compensation and the Automobile lines the proportion of business written in the first half of the year is greater than the proportion written in the second half of the year.

Column (4) is not subject to check. In general, the amounts in Column (4) will approximate one-half the amounts in Column (3) regardless of whether the unearned premium is computed by the half-yearly or the semi-monthly method. However, many exceptions are found to this rule and no reliable check is available without referring to original unearned premium records.

Where a company employs the semi-monthly method the expression "50 per cent." in parenthesis in Column (2) should be changed to read either "semi-monthly basis" or "pro rata basis."

Business in during the year. This exhibit has no reference to nor does it check with any part of the financial statement. It is merely a statement of business transacted during the year in the particular state to which report is being made. The requirements of the various states are not uniform as respects the basis of compiling this exhibit. Most states provide for the reporting of gross premiums written (direct and reinsurance assumed) less reinsurance premiums ceded to companies authorized to transact business in the state and gross losses paid (direct and reinsurance assumed) less reinsurance received on business ceded to authorized companies. While no reference is made to salvage it is generally assumed that losses should be reduced by net salvage received. A few states require the compilation of the exhibit on the basis of earned premiums and incurred losses.

SPECIAL DEPOSIT SCHEDULE (PAGE 10)

As a condition precedent to receiving authority to transact business, certain states require that a deposit of securities* be made with a designated state official for the exclusive benefit of policyholders (and creditors) in the particular state. This schedule contains a description and other details of securities so deposited. It has no direct bearing upon the financial statement and is not of sufficient importance to justify its reproduction.

SCHEDULE OF ALL OTHER DEPOSITS (PAGE 10)

As a condition precedent to receiving authority to transact business, certain states require that a company must have a deposit of a certain amount in the form of approved securities with the proper official of its home state or some other state for the benefit of all policyholders (and creditors). United States branches of foreign companies are required to make similar deposits in some state in lieu of capital. The foregoing types of deposits are known as general deposits. As in the case of special deposits, they have no direct bearing upon the financial statement and, accordingly, the schedule is not reproduced.

SCHEDULE A (PAGES 11 AND 12 OF STATEMENT)

(See Exhibit 2, Page 138)

This schedule consists of three parts as follows:

Part 1—Real estate owned at the end of the year

“ 2—Real estate acquired (including additions and improvements) during the year

“ 3—Real estate sold (including payments on “sales under contract” during the year

The schedule as a whole balances between years according to the following formula:

*In lieu of a deposit of securities some states permit the filing of a corporate surety bond.

EXHIBIT 2

Form 2

ANNUAL STATEMENT FOR THE YEAR 1928 OF THE _____
(Write or stamp name of Company)

SCHEDULE A—Part 1

Showing all Real Estate OWNED December 31 of Current Year, the Cost, Book and Market Value thereof, the Nature and Amount of all Liens and Incumbrances thereon, including Interest Due and Accrued, Etc.

No.	QUANTITY, DIMENSIONS AND LOCATION OF LANDS; SIZE AND DESCRIPTION OF BUILDINGS (Nature of Incumbrances, if any, including interest due and accrued)	DATE ACQUIRED	NAME OF VENDOR	AMOUNT OF INCUMBRANCE	*ACTUAL COST	BOOK VALUE, LESS INCUMBRANCES	MARKET VALUE, LESS INCUMBRANCES	INCREASE, BY ADJUSTMENT, IN BOOK VALUE DURING THE YEAR	DECREASE, BY ADJUSTMENT, IN BOOK VALUE DURING THE YEAR	GROSS AND NET INCOME, TAXES, REPAIRS AND EXPENSES FOR EACH OF LAST THREE YEARS						RENTAL VALUE OF SAUCE OCCUPIED BY COMPANY	SUPERINTENDENT OF INSURANCE'S CERTIFICATE OF EXTENSION				
										1928			1927				1926			Date of Issue	Expiral To
										Gross Rental, Less Interest on Incumbrances	Expended for Taxes, Repairs and Expenses	Net Income	Gross Rental, Less Interest on Incumbrances	Expended for Taxes, Repairs and Expenses	Net Income		Gross Rental, Less Interest on Incumbrances	Expended for Taxes, Repairs and Expenses	Net Income		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
Totals				\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$		

*Including cost of acquiring title, and, if the property was acquired by foreclosure, such cost shall include the amounts expended for taxes, repairs and improvements prior to the date on which the company acquired the title.

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Form 3

ANNUAL STATEMENT FOR THE YEAR 1928 OF THE _____
(Write or stamp name of Company)

SCHEDULE A—Part 2

Showing all Real Estate ACQUIRED During Year, and Showing also Amounts Expended for Additions and Permanent Improvements Made During said Year to ALL Real Estate

No.	QUANTITY, DIMENSIONS AND LOCATION OF LANDS; SIZE AND DESCRIPTION OF BUILDINGS (OR) NATURE OF ADDITIONS AND PERMANENT IMPROVEMENTS MADE DURING YEAR (Nature of Incumbrances, if any)	DATE ACQUIRED	HOW ACQUIRED	NAME OF VENDOR	*COST TO COMPANY DURING YEAR	AMOUNT EXPENDED FOR ADDITIONS AND PERMANENT IMPROVEMENTS DURING YEAR	BOOK VALUE DEC. 31, LESS INCUMBRANCES
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Totals					\$	\$	\$

SCHEDULE A—Part 3

Showing all Real Estate SOLD During Year, Including Payments During Year on "Sales under Contract"

No.	QUANTITY, DIMENSIONS AND LOCATION OF LANDS; SIZE AND DESCRIPTION OF BUILDINGS (Nature of Incumbrances, if any)	DATE SOLD	NAME OF PURCHASER	*COST TO COMPANY	INCREASE, BY ADJUSTMENT, IN BOOK VALUE DURING YEAR	DECREASE, BY ADJUSTMENT, IN BOOK VALUE DURING YEAR	BOOK VALUE AT DATE OF SALE, LESS INCUMBRANCES	AMOUNT RECEIVED, INCLUDING PAYMENTS ON SALES UNDER CONTRACT	PROFIT ON SALE	LOSS ON SALE	GROSS RENTAL DURING YEAR, LESS INTEREST ON INCUMBRANCES	EXPENDED FOR TAXES, REPAIRS AND EXPENSES DURING YEAR
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Totals				\$	\$	\$	\$	\$	\$	\$	\$	\$

*Including cost of acquiring title, and, if the property was acquired by foreclosure, such cost shall include the amounts expended for taxes, repairs and improvements prior to the date on which the company acquired the title.
†Indicate payments on "sales under contract" in Part 3 by inserting the letter "P" after the number of the parcel.

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	Book Value December 31st of previous year	\$.....
Add:	Profit on sales, Part 3.....
	Increase by adjustment, Part 1.....
	Increase by adjustment, Part 3.....	.....
	Cost of acquisitions, Part 2—Columns (6) and (7).....	.....
	Decrease of encumbrances.....	.....
	Total.....	\$.....
Deduct:	Loss on sales, Part 3.....	\$.....
	Decrease by adjustment, Part 1..	.....
	Decrease by adjustment, Part 3..	.....
	Consideration received on sales, Part 3.....	.....
	Increase of encumbrances.....	<u>\$.....</u>
	Difference—equals book value December 31st, current year	\$.....

In addition to the general balance of the schedule, Part 3 balances as follows: The difference between the book value at date of sale and consideration received on sale equals the net profit or loss on sale, as the case may be.

In most instances the descriptions at the heads of the various columns are self-explanatory.* The following explanations and comments may be helpful to a clearer understanding of some parts of the schedule and some of the problems met with in practice in compiling the same.

PART 1

Column (6): This column (actual cost) shows the gross cost, including encumbrances assumed, if any.

Column (20): There is some uncertainty as to just what the description (rental value of space occupied by company) contemplates. Most companies report the amount actually charged during the year to agree with the amount included for company occupancy in Item 29, Page 2. However, it would seem more logical to report the annual rental charged itself by the company

*Column numbers are not contained in Schedules A, B, C, D and G as printed in the convention annual statement blank but for convenience of reference have been included in these schedules as reproduced in this paper.

as of the end of the year. This amount may or may not check with the amount included in Item 29, Page 2.

It should be noted that the amounts for company occupancy included in Items 29, Page 2, and 33, Page 3, will not agree since a portion of the rent expense is included in disbursement items other than Item 33, particularly in Items 19-22 and 32 (See *Proceedings*, Vol. XV, Number 32, Pages 152 and 153).

PART 2

Column (6): *Cost to Company during year.* This column calls for gross cost to company of real estate as it stands at date, or dates, of purchase, *i. e.*, the cost of the land, if unimproved, or cost of land and improvements, if improvements exist at date of purchase, including, of course, cost of acquiring title. It should not include any amounts expended for additions and permanent improvements subsequent to date of acquiring title.

Column (7): *Amount expended for Additions and Permanent Improvements during year.* This column calls for amounts expended during year for additions and permanent improvements made subsequent to acquiring title and which are charged to capital (asset) account. Ordinary repairs and expenses charged to expense account should not be reported in this column, but in Column (18) "Expended for taxes, repairs and expenses," of Part 1.

Column (8): *Book Value December 31 of current year, less encumbrances.* There is some uncertainty as to just what purpose this column serves, but it is probably intended to show by a comparison between cost and book value, whether or not adjustments of capital (asset) value are reasonable.

In filling out this column, only the book value corresponding to that portion of the real estate appearing on this part of the schedule should be considered. For example, if the transaction indicated on the schedule consists of capitalized permanent improvements, only the book value of the permanent improvements should be entered and not the total book value of the parcel.

PART 3

Where profit or loss adjustments are made to bring the book value to the sale price, the amount to be entered in the "Book

value at date of sale" column is the book value after the profit or loss adjustments have been made, *i. e.*, the sale price.

Where sale is made subject to existing encumbrances, the amount to be entered in the "Amount received" column is the sale price less the existing encumbrances.

Where, however, a sale is made of unencumbered real estate, the company taking a mortgage as part payment, the amount to be entered in the "Amount received" column is the gross sale price.

Sales under contract, while not of frequent occurrence, are very often incorrectly reported in the schedule. Where the agreed sale price and book value are the same, no complications arise. A pro rata amount is entered in the "Cost to company" column, and the amount of the payment in both the "Book value" and "Amount received" columns. Where the agreed sale price and book value differ, two methods of accounting are open.

It may be assumed that there is a proportionate profit or loss with each payment or it may be assumed that no profit or loss is to be considered until the final payment has been made.

In the first case, pro rata amounts of the cost and book value should be entered in the appropriate columns and the amount of the payment in the "Amount received" column. A pro rata profit or loss, according to whether the agreed sale price is more or less than the book value, will be shown in the profit or the loss column. In the second case, the amount of the payment (except for the final payment) should be entered in all three columns: "Cost," "Book value" and "Amount received." Proper adjustments of the amounts in the "Cost" and "Market value" columns of Schedule A, Part 1, should be made depending upon the accounting method adopted.

Checks between various data in the schedule and certain items of the financial statement follow:

The total of Column (7), Part 1—Book value less encumbrances—checks with Item 1, Page 4.

The difference between Columns (7) and (8)—Market value less encumbrances—Part 1, checks with Item 39 or Item 52, Page 4.

The sum of the totals of Column (9), Part 1 and Column (6), Part 3—Increase by adjustment in book value during year—checks with Item 39(a), Page 2.

The sum of the totals of Column (10), Part 1 and Column (7), Part 3—Decrease by adjustment in book value during year—checks with Item 57(a), Page 3.

The sum of the totals of Column (17), Part 1 and Column (12), Part 3—Gross rental less interest on encumbrances—checks with Item 29, Page 2.

The sum of the totals of Column (18), Part 1 and Column (13), Part 3—Expended for taxes, repairs and expenses during year—checks with the sum of Items 35 and 36, Page 3.

SCHEDULE B (PAGE 13 OF STATEMENT)

(See Exhibit 3, Page 143)

The schedule proper shows "all mortgage loans owned December 31 of current year, and all mortgage loans made, increased, discharged, reduced or disposed of during the year." In addition, there is provided a recapitulation or classification of loans by state and foreign country.

The schedule balances between years as follows:

	Amount unpaid December 31st of previous year—Column (8).....	\$.....
Add:	Amount loaned during year—Column (9)...	.....
	Total.....	\$.....
Deduct:	Amount paid on account or in full during year—Column (10).....	\$.....
	Difference—equals amount unpaid December 31st of current year—Column (11) \$.....	\$.....

The various checks between the schedule and the financial statement follow:

The total of Column (8)—Amount unpaid previous year—checks with the total of Column (11) of the previous year's statement and also with Item 2, Page 4 of the previous year's statement.

The total of Column (11)—Amount unpaid current year—checks with Item 2, Page 4.

The totals of Columns (14) and (15)—Interest due and accrued—check with the respective amounts in Item 32, Page 4.

The total of Column (17)—Paid for accrued interest—checks with the inside amount of Item 22, Page 2.

The total of Column (16)—Gross interest received—less the

EXHIBIT 3

Form 3

ANNUAL STATEMENT FOR THE YEAR 1928 OF THE

(Write or stamp name of Company)

SCHEDULE B

Showing all MORTGAGES OWNED December 31 of Current Year, and all Mortgage Loans Made, Increased, Discharged, Reduced or Disposed of During the Year

NUMBER	DATE		RECORD OF MORTGAGE				PRINCIPAL								INTEREST				VALUE OF LANDS MORTGAGED	VALUE OF BUILDINGS	AMOUNT OF FIRE INSURANCE TITLED BY COMPANY ON THE BUILDINGS	LOCATION AND DESCRIPTION (State if this mortgage is being foreclosed, or if there are any prior loans)						
	Year Given	Year Due	State	County	Book	Page	AMOUNT UNPAID DEC. 31 OF PREVIOUS YEAR		AMOUNT LOANED DURING YEAR (A)		AMOUNT PAID ON ACCOUNT OR IN FULL DURING YEAR (B)		AMOUNT UNPAID DEC. 31 OF CURRENT YEAR		DATE DUE	RATE OF	AMOUNT PAID DUE DEC. 31 OF CURRENT YEAR						AM'T ACCRUED DEC. 31 OF CURRENT YEAR		GROSS AM'T. REC'D DURING YEAR		Paid for accrued interest on mortgage interest during year	
							Dollars	Cts.	Dollars	Cts.	Dollars	Cts.	Dollars	Cts.			Dollars	Cts.					Dollars	Cts.	Dollars	Cts.	Dollars	Cts.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	
<i>Totals</i>																												

(A) Including all mortgages "purchased" or otherwise acquired during the year and all increases during the year on loans outstanding December 31 of previous year.
 (B) Including mortgages under which company has secured title and possession by foreclosure.

CLASSIFICATION

Showing the Total Amount of Mortgage Loans on Real Estate in each State and Foreign Country

STATE	AMOUNT	STATE	AMOUNT	STATE	AMOUNT	STATE	AMOUNT	FOREIGN COUNTRY	AMOUNT
	\$		\$		\$		\$		\$
<i>Totals,</i>	\$		\$		\$		\$		\$

total of Column (17)—Paid for accrued interest—checks with the extended amount of Item 22, Page 2.

As a rule, no difficulty is experienced in preparing this schedule. Where foreclosure is taken on a mortgage, mortgage loans account is credited with the amount of the mortgage and interest on mortgage loans with the amount of interest due, the corresponding debit being to real estate account. Occasionally a mortgage is sold or a compromise settlement accepted for less than the face amount. In such event, the face amount of the mortgage should be entered in the "Amount paid" column, as the schedule makes no provision for profit or loss, and a footnote added showing the details. The net loss should be entered under Item 56(d), Page 3 as follows:

Gross Loss on Sale or Maturity of Ledger Assets, Viz:
(d) *Mortgage Loans*

SCHEDULE C (PAGES 14 AND 15 OF STATEMENT)
(See Exhibit 4, Page 145)

This schedule consists of three parts as follows:

- Part 1—Collateral loans in force at end of year.
- “ 2—Collateral loans made during the year.
- “ 3—Collateral loans discharged in whole or in part during the year.

Provision is made in each part of the schedule for a record of all changes in collateral during the year. The purpose of this requirement is to show whether or not the collateral security was adequate at all times.

The schedule balances between years as follows:

Amount loaned December 31st of previous year.....	\$.....
Add: Amount loaned during the year, Part 2— Column (6).....	.....
Total.....	\$.....
Deduct: Amount repaid during the year, Part 3— Column (6).....	\$.....
Difference—equals amount loaned December 31st, current year.....	\$.....

EXHIBIT 4

Form 3

ANNUAL STATEMENT FOR THE YEAR 1928 OF THE _____

(Write or stamp name of Company)

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SCHEDULE C—Part 1

Showing all Collateral Loans IN FORCE December 31 of Current Year, and all Substitutions of Collateral Thereon During said Year

No.	DESCRIPTION OF SECURITIES HELD AS COLLATERAL DISCHARGED IN OF CURRENT YEAR (Give in this column the number of shares of each block of stock and rate of interest and year of maturity of each bond held as collateral)	PAR VALUE	RATE USED TO OBTAIN MARKET VALUE	MARKET VALUE DEC. 31 OF CURRENT YEAR	AMOUNT LOANED THEREON	DATE OF LOAN	MATURITY OF LOAN	INTEREST			SUBSTITUTIONS OF COLLATERAL, VIZ:								NAME OF ACTUAL BORROWER	
								RATE OF LOAN	Am't Paid Dec. 31 of Current Year	Am't Accrued Dec. 31 of Current Year	COLLATERAL SUBSTITUTED				COLLATERAL RELEASED					
											Description	Date	Par Value	Market Value	Description	Date	Par Value	Market Value		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
<i>Totals</i>		\$		\$	\$			\$	\$	\$		\$	\$	\$	\$		\$	\$		

Form 3

ANNUAL STATEMENT FOR THE YEAR 1928 OF THE _____

(Write or stamp name of Company)

SCHEDULE C—Part 2

Showing All Collateral Loans MADE During the Year, and All Substitutions of Collateral Thereon During Said Year

No.	DESCRIPTION OF SECURITY ACCEPTED AS COLLATERAL WHEN LOAN WAS MADE	PAR VALUE	RATE USED TO OBTAIN MARKET VALUE	MARKET VALUE AT DATE OF LOAN	AMOUNT LOANED THEREON	DATE OF LOAN	MATURITY OF LOAN	RATE OF INTEREST ON LOAN	SUBSTITUTIONS OF COLLATERAL, VIZ:								NAME OF ACTUAL BORROWER	
									COLLATERAL SUBSTITUTED				COLLATERAL RELEASED					
									Description	Date	Par Value	Market Value	Description	Date	Par Value	Market Value		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
<i>Totals</i>		\$		\$	\$					\$	\$	\$	\$	\$	\$	\$	\$	

Note—Substitutions of collateral need be shown in detail in only one exhibit. Refer in each of the other exhibits to the number of the loan in the exhibit in which the substitution is shown and show the substitutions in Part 1 when possible.

SCHEDULE C—Part 3

Showing All Collateral Loans DISCHARGED in Whole or in Part During the Year, and All Substitutions of Collateral Thereon During Said Year

No.	DESCRIPTION OF COLLATERAL RELEASED WHEN LOAN WAS DISCHARGED. (In case of partial payments enter collateral released only)	PAR VALUE	RATE USED TO OBTAIN MARKET VALUE	MARKET VALUE AT DATE OF DISCHARGE	AMOUNT OF LOAN REPAYED	DATE OF LOAN	DATE OF REPAYMENT	INTEREST		SUBSTITUTIONS OF COLLATERAL, VIZ:								NAME OF ACTUAL BORROWER
								RATE ON LOAN	AMOUNT RECEIVED DURING YEAR	COLLATERAL SUBSTITUTED				COLLATERAL RELEASED				
										Description	Date	Par Value	Market Value	Description	Date	Par Value	Market Value	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
<i>Totals</i>		\$		\$	\$			\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	

Note—Indicate partial payments in Part 3 by the letter "P" in number column.

The various checks between the schedule and the financial statement follow:

The total of Column (6), Part 1—Amount loaned—checks with Item 3, Page 4.

The totals of Columns (10) and (11), Part 1—Interest due and accrued—check with the respective amounts of Item 33, Page 4.

The sum of the totals of Column (12), Part 1 and Column (10), Part 3—Interest received—checks with Item 23, Page 2.

The preparation of this schedule presents no particular difficulties. In case a borrower defaults and the sale of the collateral does not realize a sufficient amount to pay off the loan, the loss should be shown in the manner indicated for showing the loss under a mortgage loan.

SCHEDULE D (PAGES 16, 17, 18 AND 19 OF STATEMENT)
(See Exhibit 5, Page 147)

This schedule consists of five parts as follows:

- Part 1—Bonds owned at the end of the year.
- “ 2—Stocks owned at the end of the year.
- “ 3—Bonds and stocks acquired during the year.
- “ 4—Bonds and stocks sold, redeemed or otherwise disposed of during the year.

Summary of bonds and stocks by classification.

The schedule as a whole, balances between years according to the following formula:

	Book Value December 31st of previous year . . .	\$.....
Add:	Profit on sales, Part 4 . . . . .	.....
	Increase by adjustment, Part 1 . . . . .	.....
	Increase by adjustment, Part 2 . . . . .	.....
	Increase by adjustment, Part 4 . . . . .	.....
	Cost of acquisitions, Part 3 . . . . .	.....
	Total	\$.....
Deduct:	Loss on sales, Part 4	\$.....
	Decrease by adjustment, Part 1 . . . . .	.....
	Decrease by adjustment, Part 2 . . . . .	.....
	Decrease by adjustment, Part 4 . . . . .	.....
	Consideration received on sales, Part 4	\$.....
	Difference—equals book value December 31st current year	\$.....

EXHIBIT 5

Form 3
Bonds to be grouped in following manner and each group arranged alphabetically:
Government
State, Province, County, and Municipal
Railroad
Public Utilities
Miscellaneous

ANNUAL STATEMENT FOR THE YEAR 1928 OF THE _____
SCHEDULE D—Part 1
(Write or stamp name of Company)
Showing All BONDS Owned December 31 of Current Year

DESCRIPTION <small>Give complete and accurate description of all bonds owned, including the location of all street railway and miscellaneous companies. If bonds are "bonds" issues, give a month recurring each year.</small>	INTEREST		YEAR OF		BOOK VALUE	PAR VALUE	RATE USED TO OBTAIN MARKET VALUE	MARKET VALUE (including accrued interest)	ACTUAL COST (excluding accrued interest)	INTEREST		INCREASE, BY ADJUSTMENT, IN BOOK VALUE DURING YEAR	DECREASE, BY ADJUSTMENT, IN BOOK VALUE DURING YEAR	AMOUNT OF INTEREST DUE AND ACCRUED DEC. 31, CURRENT YEAR, ON BONDS IN DEFAULT
	RATE OF	How Paid	Maturity	Option						Am't Due and Accrued Dec. 31 of Current Year, on Bonds Not in Default	Gross Amount Received During Year			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
<i>Totals</i>														

*Insert initial letters of months in which interest is payable

Form 3
Stocks to be grouped in the following order and each group arranged alphabetically:
Railroad
Public Utilities
Bank and Trust Company
Miscellaneous

ANNUAL STATEMENT FOR THE YEAR 1928 OF THE _____
SCHEDULE D—Part 2
(Write or stamp name of Company)
Showing All STOCKS Owned December 31 of Current Year

No. OF SHARES	DESCRIPTION <small>Give complete and accurate description of all stocks owned, including location of all street railway, bank, trust, and miscellaneous companies</small>	BOOK VALUE	PAR VALUE	RATE PER CENT. USED TO OBTAIN MARKET VALUE	MARKET VALUE	ACTUAL COST	DIVIDENDS			INCREASE, BY ADJUSTMENT, IN BOOK VALUE DURING YEAR	DECREASE, BY ADJUSTMENT, IN BOOK VALUE DURING YEAR	
							RATE OF IN EACH OF LAST THREE YEARS	AMOUNT RECEIVED DURING YEAR				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
<i>Totals</i>												17

Form 3
ANNUAL STATEMENT FOR THE YEAR 1928 OF THE _____
SCHEDULE D—Part 3
(Write or stamp name of Company)
Showing All Bonds and Stocks ACQUIRED During Year

DESCRIPTION <small>(Full name and number of shares of each block of stock, full name, rate of interest, and date of maturity of bonds)</small>	DATE ACQUIRED	NAME OF VENDOR	ACTUAL COST (excluding accrued interest on bonds)	PAR VALUE	PAID FOR ACCRUED INTEREST OF BONDS ACQUIRED DURING YEAR
(1)	(2)	(3)	(4)	(5)	(6)
<i>Totals</i>					

SCHEDULE D—Part 4
Showing All Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Year

DESCRIPTION <small>(Full name and number of shares of each block of stock, full name, rate of interest and date of maturity of bonds)</small>	DATE SOLD	NAME OF PURCHASER	CONSIDERATION (including accrued interest on bonds)	PAR VALUE	ACTUAL COST (including accrued interest on bonds)	BOOK VALUE AT DATE OF SALE	INCREASE, BY ADJUSTMENT, IN BOOK VALUE DURING YEAR	DECREASE, BY ADJUSTMENT, IN BOOK VALUE DURING YEAR	PROFIT ON SALE	LOSS ON SALE	INTEREST AND DIVIDENDS RECEIVED DURING YEAR (including accrued interest on bonds sold)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
<i>Totals</i>											

Part 4 of the schedule balances as follows: The difference between the book value at date of sale and consideration received on sale equals the net profit or loss on sale, as the case may be.

The following are the various checks between the schedule and the financial statement:

The total of Column (6), Part 1 checks with Item 4 (bonds), Page 4.

The total of Column (3), Part 2 checks with Item 4 (stocks), Page 4.

The difference between—(a) the sum of the totals of Column (6), Part 1 and Column (3), Part 2 (book values), and (b) the sum of the totals of Column (9), Part 1, and Column (6) Part 2 (market values) checks with Item 40 or Item 53, Page 4.

The total of Column (11), Part 1—Interest due and accrued—checks with the extended amount of Item 34, Page 4.

The total of Column (6), Part 3—Paid for accrued interest—checks with the inside amount of Item 24, Page 2.*

The sum of the totals of Column (12), Part 1, Column (11), Part 2, and Column (12), Part 4—Gross interest and dividends received—less the total of Column (6), Part 3 checks with the extended amount of Item 24, Page 2.*

The sum of the totals of Column (13), Part 1 and the bond portion of Column (8), Part 4—Increases by adjustment—checks with Item 39(b), Page 2.

The sum of the totals of Column (12), Part 2 and the stock portion of Column (8), Part 4—Increases by adjustment—checks with Item 39(c), Page 2.

The sum of the totals of Column (14), Part 1 and the bond portion of Column (9), Part 4—Decreases by adjustment—checks with Item 57(b), Page 3.

The sum of the totals of Column (13), Part 2 and the stock portion of Column (9), Part 4—Decreases by adjustment—checks with Item 57(c), Page 3.

The bond portion of Column (10), Part 4 checks with Item 38(b), Page 2.

The stock portion of Column (10), Part 4 checks with Item 38(c), Page 2.

*These checks will not apply for the 1929 statement blank because of changes to become effective in 1929. See "Addenda," Page 167 for superseding checks.

The bond portion of Column (11), Part 4 checks with Item 56(b), Page 3.

The stock portion of Column (11), Part 4 checks with Item 56(c), Page 3.

The schedule summary is of no particular consequence and is inserted merely for the convenience of insurance departments, some of which print this summary in lieu of a complete list of security holdings.

Before passing to other features of this schedule, reference should be made to the reporting of additional details in case of companies valuing bonds upon the amortization basis. The increases for accrual of discount and amortization of premiums are usually included in Columns (13) and (14), Part 1, and Columns (8) and (9), Part 4, with increases or decreases made for any other purpose (such as increases or decreases to adjust the book value up or down to the market value in case of bonds not subject to amortization, *i. e.*, perpetual bonds, bonds in default as to principle or interest and bonds not amply secured). Schedule D, Part 1 of the Life annual statement blank (Convention edition) contains additional columns for reporting the increases or decreases resulting exclusively from the amortized basis of valuation. These columns, however, are not incorporated in the Convention edition of the Miscellaneous (or Casualty) blank. They are, however, incorporated in the Connecticut blank and provide for the following data:

1. Effective rate of interest at which purchase was made.
2. Amortized or investment value December 31st of current year.
3. Increase in amortized value during the year.
4. Decrease in amortized value during the year.

Where a company values its bonds on the amortized basis, changes in market values do not affect surplus except in case of bonds not subject to amortization, and for the purposes of determining the amounts to be entered in Items 40 or 53, Page 4, as respects bonds, the book values are compared with the amortized values. The book and amortized values will be the same, provided a company adjusts its book values to market values in case of bonds not subject to amortization, since for such bonds the market value must be used as the amortized value. Otherwise, there will be an excess in favor of one or the other basis.

Where a company values its bonds on the amortization basis, it is usual to amend the wordings of Items 40 and 53, Page 4, to indicate that bond values are upon the amortized rather than the market basis.

The following amended phraseology for Items 40 and 53, Page 4, is sometimes used:

Item 40—“Amortized value (not including interest in Item 34) of bonds and market value of stocks over book value, per Schedule D.”

Item 53—“Book value of bonds over amortized value and of stocks over market value, per Schedule D.”

In general, the column headings of the various parts of the schedule are self-explanatory and require no further elaboration.

In case of Columns (8), (9) and (10), Part 2, (dividend rates) the rates to be entered are the annual rates of dividend (or annual amounts per share on stock of no par value) paid during each of the three years that the company has held the stock. In case of a stock purchased during the period the full annual rate or amount should be entered for the year of purchase, even though the company actually received dividends for only a fraction of the year.

In case of Column (7), Part 4 (book value at date of sale) where profit or loss adjustments are made to bring the book value to the sale price, the amount to be entered is the book value after the profit or loss adjustments have been made, *i. e.*, the sale price.

Infrequent and unusual transactions sometimes present questions as to the proper reporting of the same in the various parts of the schedule, keeping in mind that the schedule must always balance between years according to the formula set out on Page 146. The following comments cover the schedule entries for such transactions as are most generally met with in practice:

Stock Dividends. Since the Supreme Court of the United States has ruled that stock dividends are not income, the proper method of reporting the same in the schedule is to enter them on Part 3, giving description, date acquired and par value as called for. Under name of vendor, the notation “Stock Dividend” should be made. The cost to Company should be “0.”

Sale of Rights. The total proceeds from sale of stock rights do not, as sometimes erroneously believed, represent profit. The major portion of the proceeds represents a return of capital and

the profit or loss is usually a comparatively small amount. For this reason the simplest method of handling the annual statement accounting for the proceeds from sale of stock rights is to assume no profit or loss but to credit book value with the full amount of the proceeds. In such case the entries in Schedule D, Part 4, are as follows:

In the description column, the number of "Rights" should be inserted before the name of the stock; "0" in the par value column; the consideration received (proceeds) in both the cost to company and the book value at date of sale columns.

The actual profit or loss may be determined, if such refinement is desired, in accordance with the method outlined in "Regulations 74—Income Tax—Revenue Act of 1928," Article 58, Pages 14 and 15. It should be borne in mind that in determining the profit or loss for annual statement purposes the same is predicated upon book value rather than upon actual cost. It is the general, although not universal practice, of companies to carry the actual cost as the book value and where this condition exists the annual statement profit or loss will be the same as profit or loss for Federal Income Tax purposes.

Transfers to Schedule X. The approved method of treating transfers to Schedule X—Unlisted Assets (see Page 165)—is to decrease the book value to "0" by profit and loss entry. The usual entries are made in Part 4 of the schedule, "0" being entered in the consideration and book value at date of sale columns; the date charged off in the date sold column; and the notation "Transferred to Schedule X" in the name of purchaser column.

Transfers from Schedule X. Transfers from Schedule X must pass through Part 3. The following entries should be made:

The usual entries will be made in the description and par value columns; the date of transfer in the date acquired column; the notation "Transferred from Schedule X" in the name of vendor column and "0" in the cost to company column. An increase by adjustment must be made in Part 1 to establish the book value; also the original cost should be entered in the actual cost column of Part 1.

Receipts in Form of Securities.—Receipts are not always in cash but sometimes consist of securities. This frequently happens where reinsurance of all the outstanding risks of a company is

effected. In such cases the value fixed upon the securities should be considered as the purchase price and properly entered in Schedule D, Part 3, in case of the accepting company, or as the sale price and properly entered in Schedule D, Part 4, in case of the ceding company.

A similar rule would apply to any securities received as salvage. The fair market value would be reported as salvage received—Items 1-17, Column (2), Page 3—and such value entered in the “Cost to Company” column of Schedule D, Part 3, since the transaction (from an accounting standpoint) is exactly the same as if the company received the amount of cash and immediately invested it in the security in question.

Exchange of Securities. Exchanges of securities may arise from pure “swaps” carried out through a broker, but more frequently result from “reorganizations.” The schedule accounting procedure in general is as follows:

Part 4—The book value of the old securities at the date of exchange should be considered as the sale price.

Part 3—The book value of the old securities at the date of exchange, minus the cash received or plus the cash paid, if any, should be considered as the purchase price (cost to company) of the new securities and the book value for Part 1.

Note that the foregoing assumes no profit or loss involved in the transaction. This will be the situation in most instances. The rule, however, does not apply if a book profit or loss is involved, and in such rare instances each transaction must be handled in accordance with the circumstances.

Where bonds are exchanged for part bonds and part stock, an apportionment of the book value of the old securities (bonds) will be necessary for determining the respective costs of the new securities (bonds and stocks), taking into consideration also any cash received or paid in connection with the exchange. No fixed rule can be given. In some instances stock received on reorganization represents potential future value only, and where this is the case it is a question of whether or not the new stock should be assigned any book value or cost. Each transaction must be considered on its merits.

“Stock Split-Ups.” Where stock of a certain (or no) par value is exchanged for a larger number of shares of the same class of stock of a smaller (or no) par value, the transaction should be

carried through Parts 3 and 4 of Schedule D, treating the book value at the date of exchange as the sale price for Part 4 and the purchase price for Part 3. As the change is one of form only, no profit or loss on sale should be considered and on Part 2 of the schedule the amount to be entered in the cost to company column should be the original cost of the stock.

SCHEDULE H—SALVAGE—(PAGE 20 OF STATEMENT)

This schedule provides for showing all salvage received during the calendar year either in cash or property, according to the following sub-divisions:

- (a) On losses incurred and paid in the current year.
- (b) On losses incurred in previous years but paid in the current year.
- (c) On losses incurred and paid in previous years.

The total salvage received (cash and property) checks with Items 1-17, Column (2), Page 3 of statement.

The schedule is not of material value and is not reproduced.

In case of salvage received in the form of property, a description thereof is called for. The purpose of this is to enable insurance departments to formulate an opinion as to the reasonableness of the value assigned to such property.

As a general rule, salvage in the form of property rarely appears in this schedule for the reason that most property salvage is converted immediately into cash and reported as cash salvage or, if not immediately so converted, no credit is taken until the property is actually sold.

Where, however, the amount of property salvage is substantial and market conditions are such as to make it desirable to defer sale of the same, the property would be reported in the schedule and brought into the assets in the manner indicated under the heading "Receipts in form of securities," Page 151.

SCHEDULE E—REINSURANCE RECOVERABLE ON PAID AND UNPAID LOSSES—(PAGE 21 OF STATEMENT)

(See Exhibit 6, Page 154)

The headings of this schedule are self-explanatory. Checks with the financial statement are as follows:

The total of Column (1) checks with "Reinsurance recoverable

on paid losses" as reported in lines 28-30 or 42-43, Page 4, depending upon whether such reinsurance is carried as a "ledger" or a "non-ledger" asset.

The total of Column (2) checks with Item 15, Column (3), Page 5.

SCHEDULE G—DEVELOPMENT OF UNPAID FIDELITY AND SURETY
LOSSES AND CLAIMS—(PAGE 21 OF STATEMENT)

(See Exhibit 6, Page 154)

This schedule shows the developments to date of unpaid losses and claims outstanding as of the ends of the seven calendar years prior to the year of statement. Its purpose is to indicate whether or not a company is maintaining adequate loss and claim reserves for these lines of business. The test for any particular year's reserve consists of comparing the total of the amount paid to date plus the present (current year) liability or reserve with the reserve as of December 31st of the year under consideration.

For example, to determine the adequacy of the reserve as of December 31, 1921, in view of subsequent developments the total amount paid during the period 1922-1928 on losses and claims outstanding December 31, 1921, plus the liability or reserve on such losses and claims still unpaid December 31, 1928, is compared with the liability or reserve set up as of December 31, 1921.

The schedule, beginning with calendar year 1927, is based upon known losses and claims outstanding, *i. e.*, excludes reserves for losses and claims incurred but not reported.

The amounts unpaid December 31st, for calendar years 1926 and prior check with the amounts in Items 5 and 6, Column (7)*, Page 5 of the respective statements. The amounts unpaid December 31, 1927, check with Items 5 and 6—Column (7) minus Column (3)†, Page 5 of the 1927 statement.

*Column (7) of the 1927 statement corresponds to Column (6) of the 1928 statement.

†Column (7) minus Column (3) of the 1927 statement corresponds to Column (4) of the 1928 statement.

SCHEDULES J & K (PAGES 22 AND 23 OF STATEMENT)

(See Exhibit 7, Page 157)

These two schedules are considered as a group since they both deal with unpaid fidelity and surety losses and claims. The headings of the various columns are self-explanatory.

Schedule J provides for showing the developments during the calendar year of all losses and claims unpaid—Column (8)—at the end of the previous calendar year, *i. e.*, the amount paid, if settled,—Columns (9), (10) and (11)—or the current year's reserve, if still outstanding—Column (12).

Schedule K provides for showing the reserve at the end of the current year—Column (8)—for all losses and claims unpaid which occurred (were reported) in the current year.

Losses and claims where the penalty of the bond is in excess of \$5000 are reported in detail. Those involving a penalty of \$5000 or less are grouped.

The schedules beginning with 1928 embrace only known losses and claims, *i. e.*, exclude the reserve for incurred but not reported losses and claims.

The various checks between the schedules and the financial statement and with preceding schedules are as follows:

The total of Column (8) of Schedule J checks with the sum of the totals of Column (12) of Schedule J and Column (8) of Schedule K of the previous year and with Items 5 and 6, Column (4)*, Page 5 of the previous year's statement. (Cases appearing in Schedule K of the current year's statement are transferred to Schedule J of the following year's statement.)

The total of Column (8) of Schedule J checks with the amount shown as unpaid at the end of the previous year in Column (1) of Schedule G.

The total of Column (11) of Schedule J checks with the amount paid during the current calendar year, Column (8) of Schedule G, with respect to unpaid losses and claims of the previous calendar year.

The total of Column (12) of Schedule J checks with losses and claims still unpaid, Column (9) of Schedule G, with respect to unpaid losses and claims of the previous calendar year.

The sum of the totals of Column (12) of Schedule J and Column

*Column (7) minus Column (3) of the 1927 statement.

EXHIBIT 7

Form 3

ANNUAL STATEMENT FOR THE YEAR 1928 OF THE _____ (Write or stamp name of Company)

SCHEDULE J

Showing all Fidelity and Surety losses and claims (with itemized list of claims on bonds in excess of \$5,000 penalty) unpaid December 31 of previous year, including ALL NOTICES received by the company of the occurrence of any event which may result in a loss under Fidelity and Surety contracts and the disposition of same

Table with 17 columns: (1) CLAIM NUMBER, (2) Date on which first notice was received, (3) NAME OF OBLIGEE, (4) NAME OF PRINCIPAL, (5) State, (6) Amount Claimed, (7) Gross penalty of bond without deduction for reinsurance, (8) Estimated liability Dec. 31 of previous year, (9-11) AMOUNT PAID DURING CURRENT YEAR (GROSS, Reinsurance and Salvage, NET), (12) Estimated liability Dec. 31 of current year, (13) REMARKS, (14) REINSURANCE, (15) Amount of liability of each such reinsuring company, (16) CO-INSURANCE, (17) Amount of co-insurance liability in each such company.

*In reporting reinsurance on New York Excise bonds, insert the words "Excise reinsuring companies" in place of naming individual companies. †Reinsuring companies' proportion of gross estimated liability. In reporting reinsurance on New York Excise bonds state in each case amount of liability of all such reinsuring companies. ‡The totals of these columns in schedules J and K combined must agree with the totals of page 6, lines 6 and 6, column 4.

(a) Excluding reserves and development under incurred but not reported claims.

Form 3

ANNUAL STATEMENT FOR THE YEAR 1928 OF THE _____ (Write or stamp name of Company)

SCHEDULE K

Showing all Fidelity and Surety losses and claims (with itemized list of claims on bonds in excess of \$5,000 penalty) of which notice was received during the year, including ALL NOTICES received by the company of the occurrence of any event which may result in a loss under Fidelity and Surety contracts and which remain unpaid or not disposed of December 31 of current year

Table with 15 columns: (1) Claim Number, (2) Date on which first notice was received, (3) NAME OF OBLIGEE, (4) NAME OF PRINCIPAL, (5) State, (6) Amount claimed, (7) Gross penalty of bond without deduction for reinsurance, (8) Estimated liability Dec. 31 of current year, (9) REMARKS, (10) REINSURANCE, (11) Amount of liability of each such reinsuring company, (12) CO-INSURANCE, (13) Name of company or companies carrying co-insurance, (14) Amount of co-insurance liability in each such company.

*In reporting reinsurance on New York Excise bonds insert the words "Excise reinsuring companies" in place of naming individual companies. †Reinsuring companies' proportion of gross estimated liability. In reporting reinsurance on New York Excise bonds state in each case amount of liability of all such reinsuring companies. ‡The totals of these columns in Schedules J and K combined must agree with the totals of page 6, lines 5 and 6, column 4.

(a) Exclude reserve for claims incurred but not reported

(8) of Schedule K checks with Items 5 and 6, Column (4), Page 5 of statement.

SCHEDULE P (PAGES 24, 25, 26, 27, 28 AND 29 OF STATEMENT)

The make-up of this schedule conforms in general to the requirements of the standard liability and compensation loss reserves laws. (See for example New York Insurance Law, Section 86, sub-section 2-C).

This schedule is divided into five parts as follows:

Part 1 Liability loss reserve.

“ 2—Compensation loss reserve.

“ 3—Total liability and compensation loss reserve.

“ 4—Distribution of unallocated liability claim expenses.

“ 5—Distribution of unallocated compensation claim expenses.

Parts 1, 2 and 3 only are reproduced (See Exhibits 8 and 9, Pages 159 and 160).

PART 1

The headings of the various columns are self-explanatory with the possible exception of Column (12) “Total estimated reserve for liability losses; case-basis.” There is a question as to whether or not the reserves in this column should include provision for unpaid allocated and unallocated claim expense. Strictly speaking, there can be no case-basis unallocated claim expense. However, since the reserve on the prescribed formula basis for the three most recent policy years is predicated upon an arbitrary loss ratio of 60%, including loss and both allocated and unallocated claim expense, it is reasonable to assume that Column (12) should embrace both allocated and unallocated claim expense.

The various checks to which this part of the schedule is subject are as follows:

The difference between the totals of Column (1) of the current and previous year's schedules checks with the sum of Items 7 and 8, Column (6), Page 2 of the current year's statement.

The difference between the total of Column (1) and the unearned premium reserve—sum of Items 22 and 23, Column (7), Page 7—checks with the total of Column (2).

The difference between the totals of Column (3) of the current

EXHIBIT 8

Form 3

ANNUAL STATEMENT FOR THE YEAR 1928 OF THE

(Write or stamp name of Company)

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SCHEDULE P—Part 1
Special Reserve for Unpaid Liability Losses December 31 of Current Year

SCHEDULE OF EXPERIENCE

Years in which liability policies were issued	(a) Gross liability premiums on policies written or renewed (1)	Amount of earned liability premiums (See notes b and c) (2)	(d) Liability loss payments (3)	(c) LIABILITY LOSS EXPENSE PAYMENTS			Liability loss and loss expense payments (Col. 5 plus Col. 6) (7)	Percentage of payments to premiums earned (Col. 7 divided by Col. 2) (8)	LIABILITY SUITS PENDING DECEMBER 31 OF CURRENT YEAR			Total estimated reserve for liability losses: case-basis (12)	Total liability losses (Sum of Items in Cols. 7 and 12) (13)	Liability loss ratio (Col. 13 divided by Col. 2) % (14)
				Allocated (4)	Unallocated (5)	Total (Col. 4 plus Col. 5) (6)			Number of suits (9)	Amount charged for each suit (10)	Total suit liability (Col. 9 times Col. 10) (11)			
1st period														
Prior to 1919										1500				
2nd period														
1919										1000				
1920										1000				
1921										1000				
1922										1000				
1923										1000				
1924										850				
1925										850				
Total 2nd period														
3rd period														
1926										750				
1927										750				
1928										750				
Total 3rd period														
Grand totals														

COMPUTATION OF RESERVE FOR UNPAID LIABILITY LOSSES

Years in which liability policies were issued	60% of earned premiums stated in Col. 2, third period (15)	Deduct loss payments and expense stated in Col. 7, third period (16)	Reminder (Col. 15 less Col. 16) If negative enter "O." (17)	Liability suits at \$750 each (Col. 11, third period) (18)	Carry out for year 1926 amount stated in Col. 17 or 18, whichever is greater, and for years 1927-1928 amount stated in Col. 17 (10)	AS COMPUTED BY THE COMPANY			
						Voluntary additional reserves for unpaid liability losses (20)	Total liability loss reserves (Col. 19 plus Col. 20) (21)	Total incurred liability losses (Col. 16 plus Col. 21) (22)	Incurred loss ratio (Col. 22 divided by Col. 2) % (23)
1926									
1927									
1928									
Totals									

(24) Reserve for suits pending on policies issued prior to 1919 (Col. 11 first period)	\$	
(25) Reserve for suits pending on policies issued during second period (Col. 11, total second period)		
(26) Reserve for third period (total of Col. 21)		
(27) Total reserve for unpaid liability losses	\$	

EXHIBIT 9

Form 3

ANNUAL STATEMENT FOR THE YEAR 1928 OF THE

(Write or stamp name of Company)

SCHEDULE P—Part 2

Special Reserve for Unpaid Workmen's Compensation Losses December 31 of Current Year

SCHEDULE OF EXPERIENCE

Years in which compensation policies were issued	(a) Gross compensation premiums on policies written or renewed (28)	Amount of earned compensation premiums (See notes b and c) (29)	(d) Compensation loss payments (30)	(c) COMPENSATION LOSS EXPENSE PAYMENTS			Compensation loss and loss expense payments (Col. 30 plus Col. 33) (34)	Percentage of payments to premiums earned (Col. 34 divided by Col. 29) (35)	Unpaid compensation claims December 31 of current year		Total compensation losses (sum of items in Cols. 34 and 37) (38)	Compensation loss ratio (Col. 38 divided by Col. 29) % (39)
				Allocated (31)	Unallocated (32)	Total (33)			No. (36)	Present value at 4 per centum interest of estimated future payments (37)		
First period Prior to 1919												
1919												
1920												
1921												
1922												
1923												
1924												
1925												
Total first period												
Second period												
1926												
1927												
1928												
Total second period												
Grand totals												

COMPUTATION OF RESERVE FOR UNPAID COMPENSATION LOSSES

Years in which compensation policies were issued	85% of earned premiums stated in column 29 (40)	Deduct loss payments and expense stated in column 34 (41)	Remainder (Col. 40 less Col. 41. If negative enter "0") (42)	Unpaid compensation claims (Col. 37) (43)	Carry over for years 1926, 1927 and 1928 amount stated in Col. 42 or 43, whichever is greater (44)	AS COMPUTED BY THE COMPANY			
						Voluntary additional reserve for unpaid compensation losses (45)	Total compensation loss reserves (Col. 44 plus Col. 45) (46)	Total incurred compensation losses (Col. 41 plus Col. 46) (47)	Incurred loss ratio (Col. 47 divided by Col. 29) % (48)
1926									
1927									
1928									
Totals									
(40) Reserve for unpaid compensation losses first period (Col. 37, total first period)									
(40) Reserve for unpaid compensation losses second period (Total of Col. 43)									
(51) Total reserve for unpaid compensation losses									

SCHEDULE P—Part 3

(52) Carry over total reserve for unpaid liability losses (Total line 37, Part 1 or Total of column 12, whichever is greater)		
(53) Total reserve for unpaid compensation losses (Total line 51, Part 2)		
(54) Total reserve for unpaid liability and compensation losses (carry total to page 5, line 16 of the statement)		

Notes: (a) There should be included in this column the gross premiums on policies written or renewed in each of the respective years plus the additional premiums on said policies, less the return premiums, abatement of premiums and reinsurance. Are they so returned in this schedule? Answer: 1
 (b) Earned premiums must include gross premiums charged on all policies written during said period, including all determined excess and additional premiums, less return premiums, other than premiums returned to policyholders as dividends, and less reinsurance premiums and premiums on policies canceled, and less unearned premiums on policies in force. Such premiums must be credited or charged to calendar years in which policies were written. Are they so returned in this statement? Answer: 1
 (c) Any participating company which has charged in its premiums a loading solely for dividends shall not be required to include such loading in its earned premiums, provided a statement of the amount of such loading has been filed with and approved by the superintendent of insurance.
 (d) There should be included with "Loss payments" all payments for first aid and medical attendance. Are they so returned in this statement? Answer: 1
 (e) There should be included with "Loss expense payments" all payments for legal expenses, including attorney's and witness fees and court costs, salaries and expenses of investigators, adjusters and field men, rents, stationary, telegraph and telephone charges, postage, salaries and expenses of office employees, home office expenses and all other payments under or on account of such injuries, whether the payments are allocated to specific claims or are unallocated. Are they so returned in this statement? Answer: 1

and previous year's schedules checks with the sum of Items 4 and 5, Column (5), Page 3 of the current year's statement.

The amounts in Columns (4) and (5) of the schedule do not check individually with the financial statement, since no division between allocated and unallocated claim expense is called for on Page 3. The calendar year unallocated claim expense is, however, shown separately on Part 4 of Schedule P where it is distributed to policy years upon the percentages prescribed in the standard liability loss reserve laws. Deducting the calendar year unallocated claim expense from the total claim expense included in Items 19 and 20, Page 3 of statement produces the calendar year allocated claim expense, included in Column (4) of the schedule. This permits the checking of Columns (4) and (5) between years similar to the check applied to Columns (1) and (3). In case of Column (6) the difference between the totals of Column (6) of the current and previous year's schedules checks with the total loss expense included in Items 19 and 20, Page 3 of the current year's statement.

PART 2

The various checks to which this part of the schedule is subject are similar to those to which Part 1 is subject and are as follows:

The difference between the totals of Column (28) of the current and previous year's schedules checks with Item 9, Column (6), Page 2 of the current year's statement.

The difference between the total of Column (28) and the unearned premium reserve—Item 24, Column (7), Page 7—checks with the total of Column (29).

The difference between the totals of Column (30) of the current and previous year's schedules checks with Item 6, Column (5), Page 3 of the current year's statement.

As in the case of Columns (4) and (5) of Part 1, the amounts in Columns (31) and (32) of this part do not check individually with the financial statement. The calendar year unallocated claim expense is shown separately on Part 5 of the schedule and distributed to policy years upon the percentages prescribed in the standard compensation loss reserve laws. This permits the checking of Columns (31) and (32) between years similar to the check applied to Columns (4) and (5) of Part 1. In case of Column (33) the difference between the totals of Column (33) of

the current and previous year's schedules checks with the total loss expense included in Item 20, Page 3 of the current year's statement.

PART 3

This part of the schedule brings together the total liability and compensation loss reserves. It will be noted that Item 52 requires the use of the liability reserve on that basis which produces the higher reserve—the "formula" basis, Item 27, or the case basis, total of Column (12).

Items 52, 53 and 54 check with the corresponding amounts called for in Item 16, Page 5 of statement.*

PARTS 4 AND 5

These two parts of the schedule, as previously mentioned, show the distribution of calendar year unallocated claim expenses to policy years for liability and compensation respectively. Each part is divided into two sections—one for use of companies which have been transacting the lines in question fourteen years or more in case of liability and thirteen years or more in case of compensation and the other for companies which have been transacting the lines for less than fourteen years in case of liability and less than thirteen years in case of compensation. The total current calendar year's unallocated liability claim expense included in Part 4 checks with the difference between the grand total of Column (5) of Part 1 of the current and prior year's schedules. The total current calendar year's compensation unallocated claim expense included in Part 5 checks with the difference between the grand totals of Column (32) of Part 1 of the current and prior year's schedules.

SCHEDULE O (PAGE 30) (See Exhibit 10, Page 163)

This schedule is designed to test by lines of business (excluding liability and compensation) the adequacy of loss and claim reserves set up in the previous year's statement viewed in the light of developments one year later—as of the date of the current year's statement. For lines other than fidelity and surety the test is made upon the basis of the total loss reserve (the

*These checks will not apply for the 1929 statement blank because of changes to become effective in 1929. See "Addenda," Page 169 for superseding checks.

EXHIBIT 10

Form 3

ANNUAL STATEMENT FOR THE YEAR 1928 OF THE

(Write or stamp name of Company)

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SCHEDULE O

Losses and Claims Other Than Liability and Workmen's Compensation Claims

(1)	(2) Estimated liability on unpaid losses and claims Dec. 31 of previous year, per items 2 to 14 inclusive, columns 7 and 8, and item 17, page 5 of last annual statement (b)	(3) Increase or decrease in such estimated liability, (Indicate decrease by minus sign)	(4) Total (Columns 2 and 3)	(5) Losses and claims incurred during the year, less reinsurance and salvage on such losses and claims	(6) Total (Columns 4 and 5)	(7) Losses and claims paid during the year less salvage and reinsurance received thereon during the year		(9) Salvage and reinsurance received in the current year on losses paid prior thereto	(10) Net disbursements for losses and claims paid during the year, net of items 1-15, col. 5, page 5 (Code 7-10-9)	(11) Losses and claims unpaid Dec. 31 of current year, viz:		(12) Total (Columns 11 and 12)
						(7) On losses and claims incurred prior to Jan. 1 of current year	(8) On losses and claims incurred during the year			(11) On losses and claims unpaid Dec. 31 of previous year, less reinsurance thereon	(12) On losses and claims incurred during the year, less reinsurance thereon	
1. Accident	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
2. Health												
3. Non-Cancellable Accident and Health												
4. Fidelity	*										*	*
5. Surety	*										*	*
6. Plate Glass												
7. Burglary and Theft												
8. Steam Boiler												
9. Machinery												
10. Auto Prop'y Damage												
11. Auto Collision												
12. Property Damage and Collision other than Auto												
13. (a)												
14. Totals	*\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	*\$	*\$

*Exclude reserves for Fidelity and Surety losses and claims incurred but not reported.

†Including all losses and claims reported in the current year where the loss was incurred prior thereto.

(a) Enter "Credit" { Item 14 } page 5, "Live Stock" or { Item 17 } "Sprinkler"

NOTE: Salvage and reinsurance as used in columns 7 and 8 include (1) received in cash, and (2) recoverable (charged during year of statement) if carried as a ledger asset; as used in column 9 include (1) received in cash and not carried as a ledger asset in previous statements, and (2) recoverable (charged during year of statement) if carried as a ledger asset.

(b) Fidelity and Surety estimated liability obtained by deducting column (3) lines 5 and 6 from column (7) lines 5 and 6 respectively on page 5 of the 1927 statement.

(c) Fidelity and Surety reserves obtained from column (4), lines 5 and 6, page 5.

reserve for known claims plus the estimated reserve for incurred but not reported claims). In case of fidelity and surety the test is made upon the basis of the loss reserve for known claims only.

The schedule contains much data which is not essential to producing the results desired but which is incorporated for purposes of check and audit with the financial section and other schedules.

Briefly, the rationale of the test is as follows: The excess or deficiency in reserve, Column (3), is equal to the difference between (a) the reserve at the end of the previous year, Column (2), and (b) the sum of the amount paid during the current year on previous years' claims, Column (7) and the loss reserve on previous years' claims still outstanding at the end of the current year, Column (11); or to summarize algebraically:

$$\text{Column (3)} = \text{Column (2)} - [\text{Column (7)} + \text{Column (11)}].$$

The preparation of the schedule requires the maintenance of certain special statistical records which it may be of interest to note.

Gross amount paid for losses must be divided as follows:

- (a)—on losses incurred in previous years.
- (b)—on losses incurred in the current year.

Reinsurance recovered during the current year must be subdivided as follows:

- (a)—on losses incurred in the current year and paid in the current year.
- (b)—on losses incurred in previous years but paid in the current year.
- (c)—on losses incurred in previous years and paid in previous years.

Salvage recovered during the current year must be subdivided in the same manner as reinsurance. This subdivision of salvage is also required for Schedule H as brought out on Page 153.

The schedule is subject to the following checks with the financial section and other schedules.

Column (2) checks by line with Items 2-14, Column (7)*, Page 5 of the previous year's statement except for fidelity and surety where the check is with the difference between the amounts in Column (7) and Column (3). †

*Column (7) of the 1927 statement corresponds to Column (6) of the 1928 statement.

†Column (7) minus Column (3) of the 1927 statement corresponds to Column (4) of the 1928 statement.

It follows that Column (2) in case of fidelity and surety (individually) checks with the amounts shown in Column (1) of Schedule G of the current year's statement as outstanding at the end of the previous year.

It also follows that Column (2) in case of fidelity and surety (combined) checks with the sum of the totals of Column (12) of Schedule J and Column (8) of Schedule K of the previous year's statement.

Column (7) in case of fidelity and surety combined checks with Column (11) of Schedule J of the current year's statement.

Column (10) checks by line with Items 1-3 and 7-16, Column (5), Page 3 of statement.

It follows that Column (7) in case of fidelity and surety (individually and combined) checks with Column (8) of Schedule G of the current year's statement with respect to losses and claims unpaid December 31 of the previous year.

Column (11) in case of fidelity and surety (individually and combined) checks with the amounts shown in Column (10) of Schedule G with respect to the immediately preceding calendar year.

Column (13) checks by line with Items 2-14, Column (6), Page 5 of the current year's statement except for fidelity and surety where the check is with Column (4).

It follows that Column (13) in case of fidelity and surety combined checks with the sum of the totals of Column (12) of Schedule J and Column (8) of Schedule K of the current year's statement.

The following inter-schedule checks not specifically indicated should be noted:

Column (5) checks with the sum of Columns (8) and (12).

Column (6) checks with the sum of Columns (7), (8) and (13).

It will be noted that Column (9) does not enter into the determination of the adequacy of the loss reserve—Column (3) but is incorporated for checking purposes only; Column (10) which equals Column (7), plus Column (8), minus Column (9) checks with Items 1-3 and 7-16, Column (5), Page 3 of statement. While the salvage and reinsurance recovered during the current year included in Column (9) does not apply to losses outstanding at the end of the previous year, it is, nevertheless, an undisclosed credit as of such date and should logically be considered in deter-

mining the true status of the loss reserve at such date. In other words, the true excess or deficiency in reserve should be measured, not by Column (3) but by the algebraic sum of Columns (3) and (9).

SCHEDULE N (PAGE 31)

This schedule shows the bank balances in each of the Company's depositories (according to the books of the company) at the end of each month of the calendar year; also the rate of interest on each account and the amount of interest received during the year. It is not an important schedule and is not reproduced. The amount of interest received checks with Item 25, Page 2 of statement.

SCHEDULE X—UNLISTED ASSETS (PAGE 32)

This schedule provides for showing the details of "all property owned by the company or in which it had any interest, on December 31st of current year, which is not entered on any other schedule and which is not included in the financial statement for the current year"—*i. e.*, property or assets not carried on the company books. The information is similar to that contained in the various investment schedules (A, B, C and D). In addition, the schedule calls for the reasons for not carrying the property on the books. The schedule is not an important one and, accordingly, is not reproduced.

The schedule, as indicated, is designed to show a record of assets charged off the books of the company as of no or doubtful value. In some instances the schedule is used to record potential salvage assets.

Occasionally small amounts of income are derived from the assets carried in this schedule. In such cases, excluding salvage transactions, the income should be reported in the proper item on Page 2 and an appropriate change made in the description of the item. For example, if a dividend is received on a stock carried in this schedule, the income should be included in Item 24, Page 2 and the wording of the item changed to read:—

"Gross interest on bonds and dividends on stocks, less \$. accrued interest on bonds acquired during the year, per Schedules D and X."

Where salvage assets are carried in this schedule any outlays thereon should be charged to losses and any income or proceeds on sale credited to salvage and also included in the salvage schedule (Schedule H).

Transfers of securities to or from Schedule X have been treated in the consideration of infrequent or unusual transactions involving Schedule D.

ADDENDA

Since the foregoing was prepared the changes in the annual statement blank effective for the 1929 statement have become available. Those of consequence and the resultant modifications and amendments in the texts of this paper and the paper which it supplements follow:

Item 24, Page 2 of statement now reading—

“Gross interest on bonds and dividends on stocks, less \$. accrued interest on bonds acquired during the year, per Schedule D”
has been changed to read—

“Gross interest on bonds \$. and dividends on stocks \$. less \$. accrued interest on bonds acquired during the year, per Schedule D.”

The purpose of this change, as contained in the report of the Committee on Blanks of the National Convention of Insurance Commissioners, is “in order that the yield on various classes of assets may readily be obtained.”

Schedule D—Part 4 (Page 19 of statement) has been amended in two respects. The heading of Column 12 now reading—

“Interest and dividends received during year (including accrued interest on bonds sold)”

has been changed to read—

“Interest on bonds received during year (including accrued interest on bonds sold)”

A new column—Column (13)—has been added, reading—

“Dividends on stocks received during the year”

The purpose of the two above changes as contained in the report of the Committee are “to facilitate the audit of the bond and stock interest and dividend items on Page 2.”

Checks between Schedule D and Item 24, Page 2 as a result of the three above changes will be as follows in the 1929 statement:—

The sum of the totals of Column (12), Part 1 and amended Column (12) Part 4, will check with the first inside amount of Item 24, Page 2.

The sum of the totals of Column (11), Part 2 and new Column (13), Part 4 will check with the second inside amount of Item 24, Page 2.

The total of Column (6), Part 3 (paid for accrued interest) will check with the third inside amount of Item 24, Page 2.

Minor changes have been made in Schedule P looking to the simplification of Parts 4 and 5 of the schedule (distributions of unallocated claim expenses).

The following differences between the 1929 and 1928 forms are noted:

Part 1—Columns or Items (1)-(27) remain unchanged except that the instruction now contained in Item 52 of Part 3 and reading "Total Line 27, Part 1, or Column (12), whichever is greater" has been transferred to Item 27 and changed to read "Carry to Page 5, Line 16 of the statement, this total or total of Column (12), whichever is greater." The distribution of unallocated claim expense for all calendar years prior to the current year combined and for the current calendar year separately for companies which have written the liability line for five years or more has been taken out of Part 4 and appended to Part 1.

Part 2—Columns or Items (28)-(51) remain unchanged. The distribution of unallocated claim expense for all calendar years prior to the current year combined and for the current year separately for companies which have written the compensation line for four years or more has been taken out of Part 5 and appended to Part 2.

Part 3 of the 1928 form has been eliminated as unnecessary.

Part 3 of the 1929 form replaces Part 4 of the 1928 form as respects the distribution of unallocated claim expenses for companies which have been writing the liability line for less than five years.

Part 4 of the 1929 form replaces Part 5 of the 1928 form as respects the distribution of unallocated claim expenses for companies which have been writing the compensation line for less than four years.

The total current calendar year's unallocated liability claim expense included in either the section appended to Part 1 or in new Part 3 will check with the difference between the grand total of Column (5) of Part 1 of the current and prior year's schedules. The total current calendar year's compensation unallocated claim expense included in either the section appended to Part 2 or in new Part 4 will check with the difference between the grand total of Column (32) of Part 2 of the current and prior year's schedules.

The checks between previous Part 3 and the financial section mentioned on Page 162 are now superseded by the following checks:

PART 1

Item 27 will check with the corresponding liability amount in Item 16, Page 5 of statement.

Item 51 will check with the corresponding compensation amount in Item 16, Page 5 of statement.

RELATION OF ACCIDENT STATISTICS TO INDUSTRIAL ACCIDENT PREVENTION

BY

H. W. HEINRICH*

ASSISTANT SUPERINTENDENT, ENGINEERING AND INSPECTION
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Industrial accident prevention has far outgrown its swaddling clothes and has reached the stage where the services of statisticians may be employed to good advantage in determining what has already been accomplished and in indicating what further action is needed to increase the effectiveness of safety work. Statistical data are of value only as they are used, and the form in which they are to be presented should therefore be determined by the purpose for which they are compiled.

Information relating to industrial accidents is gathered for several purposes. From the cost of the accidents we obtain casualty pure premiums upon which base rates are calculated. From accident-cost data we also obtain differentiation in rate by classification of industry. Experience rating and schedule rating in compensation insurance are directly governed by statistical assignment of costs to classifications and to individual risks within classifications.

Heretofore, the statistical recording of accidents according to the machine or other agency or means by which they occurred has been the basis of the factors, charges, and credits that appear in the industrial compensation-rating schedules by which the individual risk is measured and either credited or penalized. But more important to insurance and to society as a whole is that phase of statistics which deals with accident prevention. Unfortunately this phase is one which has been slow to develop and even now stands in need of careful consideration.

Bear in mind that insurance is a business and like other kinds of business can endure only so long as a profit is forthcoming. Happily, our business is one that is more beneficial to the individual and to the community than it is to itself. Although we

*This paper presented by invitation of the Program Committee.

collect dollars from policyholders, we return dollars to them when misfortunes occur. A still more gratifying result (paradoxical though it may seem) consists in the fact that when we spend a sum of money in the prevention of accidents, to guard ourselves against loss, we at the same time save approximately four times the amount of the loss for the policyholder; because by preventing accidents we eliminate the hidden costs associated with them, which as careful research has proved, are in the aggregate several times greater than the first or direct cost as represented by compensation benefits.

In illustration, assume that we in this room are employees, all busily engaged earning wages or salary and producing a profit for our employer. Certain fixed expenses for light, heat, power, executive salaries, and non-productive payroll are incurred and are ordinarily lumped together under the term "overhead cost". Suppose that one man receives an injury and cries out in pain, surprise, and fright. Quite naturally, one or more of his fellow employees will go to his assistance, and several or all of the workmen in the near vicinity may stop work for a while. Meanwhile overhead cost goes merrily on. Therefore, when an accident occurs it is fair to say that a portion of the annual overhead cost divided by the total number of man-hours worked (overhead cost per man-hour) is unearned, is not compensated by productive work for which it is expended, and is therefore wasted and should be charged to the accident.

The same reasoning applies to production profit or machine profit. Further incidental cost is created by breakage of tools and equipment, lowered morale, training new men, loss of orders, clerical work, delays, and a host of other things that constitute an almost endless train of events originated by the accident itself. It is no longer a mere theory but an established truth that the employer (and ultimately the general public as well) pays at least four dollars for every one dollar that is expended in compensation benefits for accidents.

Casualty companies that write compensation insurance use the Workmen's Compensation Statistical Plan issued by the National Council and effective January 1, 1923. The "cause-of-accident" part of this plan is admittedly for the purpose of producing data needed for determining values required in schedule rating. It is not designed primarily for accident prevention, yet the "cause-of-

accident" code is amplified by "manner of occurrence," which may be of little assistance in schedule rating.

An employee, in direct violation of instructions, may remove a guard from the gears of a lathe and be injured. With our present system that injury and accident would be recorded under Section 2 of the Statistical Plan as a working-machine accident and be charged successively to metal-working machines, to lathes, and to gears. All of these data are helpful from the viewpoint of classification, manual rating, and schedule rating, but are of relatively little value to accident-prevention engineers. The machine was guarded, but the employee violated instructions when he removed the guard. The cause, therefore, which we must of necessity determine before we can hope to remove it, must be recorded as disregard of instruction.

In short, the so-called cause-of-accident code is not a cause code at all. The title is misleading. Nor are there any other codes that deal with actual accident causes. The code advocated by the International Association of Industrial Accident Boards and Commissions, as printed in Bulletin No. 276 of the United States Department of Labor, likewise contains a list of causes. Here again the term is misleading because the list merely gives names of machines and parts of machines, and other physical hazards. In the case of this particular code and other codes used by the Labor Departments of individual states, the primary purpose is "accident prevention." Notwithstanding this expressed purpose, the data derived are meager and are of little value to the accident-prevention engineer, chiefly because they do not supply the information implied by the name "accident-cause data." An accident-cause sub-committee is now functioning under the direction of the Committee on Statistics and Compensation Insurance Cost, which is considering the practicability of such revision as will produce data on real causes.

It may be of interest at this point to discuss what I have referred to as real accident causes. An injury is almost invariably preceded by (1) a cause and (2) an accident. These three things—namely, cause, accident, and injury,—are separate and distinct. There is no overlapping. An employee wilfully indulges in an unsafe practice—that is the cause; as a result he collides with a fixed object—that is the accident; he sustains a broken arm—that is the injury. Information concerning the nature and

severity of the injury, the operation being performed, the machine and part of machine or other object with which he came in contact, the industrial classification of the risk, and the cost of the injury, is interesting and valuable to raters and underwriters but is of little use in accident prevention.

The occurrence of accidents involving personal injury or property damage (or both) is the foundation upon which casualty insurance is based. It is the reason for the existence of your work and mine. We know that we can never attain perfection—that we can never achieve the ideal; and we know, therefore, that accidents will continue to occur in sufficient numbers to keep the wheels of insurance turning. But more to the point is the fact that because of their broad experience with accidents and the claims resulting from them, casualty-insurance companies have a moral and a legal obligation (as well as a sincere desire) to serve their policyholders—and through them the public—by putting their knowledge to work in preventing accidental deaths, injuries, and property damage. Incidentally, we all know that profit to insurance carriers is greater when insurance rates are on a downward trend than when the opposite is true. We, therefore, have a double incentive for our efforts in preventing accidents.

Accident-prevention engineers are seriously handicapped by the lack of suitable and definite accident-cause statistics. The engineer approaches a huge steel mill or a small bake shop with no statistical knowledge whatever concerning the causes of accidents in these places. He is not forewarned and consequently is not forearmed. To be sure, it is possible for him to learn from statistical records that slips and falls or burns predominate or that certain machines are more frequently involved, but he does not know why. Nevertheless, he must determine probable causes of accidents before he can hope to service the risk intelligently. His field and his exposure are confined to the one risk that he is then visiting, and the probability of error is increased by his lack of statistical cause-data applying to the classification as a whole.

The thoughts I have expressed in this discussion may be summarized as follows:

Accident occurrence is the reason for the existence of casualty insurance.

Compensation for the losses sustained in accidents is our contractual obligation. It is our moral duty to do as much as we can

to prevent accidents; and therefore all of us—whether we be underwriters, actuaries, statisticians, or engineers—are faced with the necessity of playing our parts in such manner as to accomplish this laudable end as quickly and effectively as possible.

Accident prevention is handicapped by lack of statistics. We now have an abundance of data to assist us in rating and classification, but rating and classification are merely the mechanics of insurance. Thousands of lives and billions of dollars are lost annually because of accidents. I assert, therefore, that prevention is the all-important function of casualty insurance.

The insurance companies are anxious to prevent accidents, for their own good, and are morally obligated to do as much as possible in that direction. Furthermore, they realize that however much their own interests may be advanced, the benefits to their policyholders will be immensely greater.

There exists, therefore, a splendid opportunity for the statistician to consider further the purposes and the uses of statistical accident data, so that no opportunity for practicable improvement may be overlooked.

ABSTRACT OF THE DISCUSSION OF PAPERS READ
AT THE PREVIOUS MEETING

A SUGGESTED METHOD FOR DEVELOPING AUTOMOBILE
RATES—HARMON T. BARBER

VOL. XV., PAGE 191

WRITTEN DISCUSSION

MR. WILLIAM J. CONSTABLE:

The presentation of Mr. Barber's paper on Automobile Rate Making came at a most opportune time, for the methods underlying the determination of Automobile Rates are being analyzed and studied from all sides.

In Massachusetts there is a Recess Commission engaged in a study of Compulsory Automobile Liability Insurance and this Commission has gone deeply into the rate making question. In Ontario there is a Royal Commissioner now investigating the question of Financial Responsibility and he too is delving into rate making. In other places too there are investigations going on which will necessarily require an analysis of rate making methods.

As Mr. Barber points out in his paper, the severest criticism of rates is always directed at the points which were determined on a more or less judgment basis. One of the weak points, of course, is the determination of what constitutes a dependable volume of exposure. For many years this dependable volume of exposure was measured wholly in terms of the number of car years insured. Mr. Barber points out that in addition to having an exposure in car years insured there must also be an exposure in number of claims before having a dependable volume of experience to determine a loss cost. The credibility formula used by Mr. Barber gives for varying claim frequencies the number of car years exposure needed so that in 99 cases out of 100 the pure premium indication will be within 5 per cent. of the true average pure premium. There may be a difference of opinion as to whether or not these are the correct limits to be used. Some may prefer a permissible variation of 10 per cent. instead of 5 per cent.,

while others may prefer a permissible variation of 5 per cent. in 90 cases out of 100 instead of 99 out of 100. Regardless of these varying opinions I believe the formula as worked out by Mr. Barber is satisfactory to nearly everybody, including company actuaries and state officials.

While having no official standing, the credibility tables based on this formula were used in the last Massachusetts Rate Revision. This formula was not followed absolutely, but was considered many times during the revision of rates.

The credibility tables shown in Appendix A of Mr. Barber's paper give the exposure necessary only to a claim frequency of 12 per 100. In Massachusetts we had some higher claim frequencies on fairly large exposures. I am attaching a table which we found helpful.

- Column (1) shows the claim frequencies to 30 per 100.
- Column (2) shows the number of car years exposure necessary for 100 per cent. credibility for the corresponding claim frequency.
- Column (3) shows the factor to be used for determining the credibility of less than 100 per cent., using the credibility values shown for claim frequency of 5.

The procedure follows:

1. Multiply actual car years exposure by factor shown in column (3) at proper claim frequency.
2. The credibility percentage shown in table under claim frequency 5 for the modified exposure will be the proper credibility for the actual exposure at the actual claim frequency.

Example: Exposure 2474.8 car years at claim frequency 21.0
 2474.8×5.051 (column (3) for claim frequency 21.0) = 12500. At claim frequency 5 — $12500 = 50$ per cent. credibility. Therefore, 2474.8 car years exposure at 21.0 claim frequency is entitled to 50 per cent. credibility.

CREDIBILITY TABLES

(1)	(2)	(3)	(1)	(2)	(3)
1.0	260.500	.192	16.0	13.800	3.623
1.5	172.800	.289	16.5	13.300	3.759
2.0	128.950	.388	17.0	12.850	3.891
2.5	102.600	.487	17.5	12.400	4.032
3.0	85.100	.588	18.0	12.000	4.167
3.5	72.550	.689	18.5	11.600	4.310
4.0	63.150	.792	19.0	11.200	4.464
4.5	55.800	.896	19.5	10.850	4.608
5.0	50.000	1.000	20.0	10.500	4.762
5.5	45.200	1.106	20.5	10.200	4.902
6.0	41.250	1.212	21.0	9.900	5.051
6.5	37.850	1.321	21.5	9.600	5.208
7.0	34.950	1.431	22.0	9.350	5.348
7.5	32.450	1.541	22.5	9.050	5.525
8.0	30.250	1.653	23.0	8.800	5.682
8.5	28.300	1.767	23.5	8.600	5.814
9.0	26.600	1.880	24.0	8.350	5.988
9.5	25.100	1.992	24.5	8.100	6.173
10.0	23.700	2.110	25.0	7.900	6.329
10.5	22.400	2.232	25.5	7.700	6.494
11.0	21.300	2.347	26.0	7.500	6.667
11.5	20.250	2.469	26.5	7.300	6.849
12.0	19.300	2.591	27.0	7.100	7.042
12.5	18.400	2.717	27.5	6.950	7.194
13.0	17.600	2.841	28.0	6.750	7.407
13.5	16.850	2.967	28.5	6.600	7.576
14.0	16.150	3.096	29.0	6.450	7.752
14.5	15.500	3.226	29.5	6.300	7.937
15.0	14.900	3.356	30.0	6.100	8.197
15.5	14.350	3.484			

MR. CHARLES J. HAUGH:

The procedure outlined by Mr. Barber is designed to reduce to a minimum the element of judgment in rate making and to base rates for the individual state, so far as possible, on the state's experience. There is expressed at the outset the thought that the substitution of mechanical methods in lieu of judgment will go far towards allaying the "growing restiveness as regards automobile rates" on the part of both supervisory officials and individual carriers.

Unquestionably the rate making procedure followed prior

to 1928 is open to criticism on several points, among which might be mentioned the grouping of widely separated territories, keying to a countrywide level and failure to recognize variations in claim frequency in the determination of credibility. While the method suggested corrects these defects it also provides for certain other fundamental changes with some of which the writer must disagree.

Although one of the fundamental objectives underlying the suggested method is the elimination of judgment, the initial step in the procedure, namely, the assignment of states to districts appears to be influenced largely by judgment. Admittedly, the grouping of states to form districts must of necessity be influenced somewhat by judgment, but it appears to be a more orderly and logical procedure to establish as the criterion for a district the exposure required for 100% credibility rather than to adopt an arbitrary exposure of from 250,000 to 300,000 car years.

The second step in the procedure, the composition of rate groups, provides for the calculation of territory differentials for the purpose of assigning territories to rate groups. These territory differentials are calculated as the ratios of actual losses to the expected losses obtained by applying district pure premiums by class to the individual territory exposures and are designed to eliminate possible distortion due to variations in class distribution. While in theory such a procedure is required, it is doubtful whether in actual practice it would be found to be of any particular value, particularly where the district consists of a single state. Here we have little reason to expect a very appreciable difference in distribution by class among similar types of territories with the possible exception of territories which have an extremely limited exposure, and in such instances the value of a differential determined in this manner is doubtful. Where the district comprises several states it may very reasonably be expected that the exposures in individual territories will be extremely limited and here again the question arises as to the degree of credence which can be placed in the differentials.

In the calculation of pure premiums each district rate group is presumed to include sufficient exposure to be entitled to 100% credibility where the district is an individual state. The relativity among district rate groups is that indicated by the four-year

average pure premiums of the district rate groups and credibility is not introduced. Where the district comprises several states the district rate groups are broken into state rate groups and the indicated pure premium for the state rate group is modified by the application of credibility to the departure of the indication of the state rate group from that of the district rate group. This difference in treatment between a district which includes a single state and one which includes more than one state constitutes a very serious defect in the suggested method. It is difficult to see wherein 100% credibility should be presumed for each rate group where the district comprises only a single state. It is quite possible under this procedure that a rate group consisting of a given number of cars and developing a given claim frequency in a state which comprises its own district will be given automatically 100% credibility, whereas another rate group located in a district comprising two or more states will be given less than 100% credibility, although it may have as many or more cars and may have as high or higher claim frequency.

Relativity by class (WXY) is predicated upon the actual indication of the individual district rate group. It is stated, however, that "in certain instances where there was insufficient volume in a single district rate group to produce reliable results, the differentials were based upon a combination of two or more district rate groups, located, of course, within the same district." As has been previously noted, it is quite possible that district rate groups will not contain the exposure required for 100% credibility. If the district rate group as a whole is not entitled to 100% credibility, there is little reason to believe that the indicated class differentials are entitled to sufficient credence to warrant the adoption of the indications. It appears more reasonable to require 100% credibility for each individual class before adopting the indicated differentials of an individual district rate group. As a matter of fact, experience leads one to the conclusion that the territories in the country fall rather readily into four groups so far as relativity by class is concerned. To be sure there are exceptions, but in general, experience bears out the reasonableness of establishing a comparatively small number of basic differentials.

It may well be that some departures from these basic differentials should be made where the individual territory or district rate group contains sufficient experience to warrant a departure.

It is suggested that consideration might be given to applying credibility to the departure of the indicated differentials of the individual district rate group from basic differentials established for several classes of territories, such, for example, as those in use at the present time.

The pure premiums developed for the individual state rate groups are adjusted uniformly by means of a correction factor which represents the ratio of total actual losses for the individual state to the expected losses developed by the pure premiums. This uniform adjustment is made for each individual state having a sufficient exposure and sufficient exposure is defined as approximately 50,000 earned cars. Here again no account is taken of the degree of credence which can be assigned the individual state but instead an arbitrary exposure is established as the criterion. A very serious objection to this adjustment is that it applies uniformly to all state rate groups. Inasmuch as the need for the adjustment is brought about through the application of credibility, it would appear to be much more desirable to apply no adjustment to those rate groups which were assigned 100% credibility. This thought might be carried even further in order to vary the effect of the adjustment factor in such a manner as to recognize variations in credibility, although in practice this might be found to lead to the application of an extremely large adjustment factor applicable to territories with a small volume of experience where the great majority of the rate groups were assigned very high degrees of credibility.

The suggested method provides that in the determination of the so-called earned factors to be applied to the latest policy year, the factor shall be so determined as to recognize the variations by state so far as the exposure element is concerned and to combine this with the loss element developed on a countrywide basis. Under the existing procedure the earned factors are developed by comparing pure premiums at the end of 12 months, representing the ratio of losses incurred to written cars, with pure premiums at the end of 24 months. The ratio of the pure premium at the end of 12 months to that developed at the end of 24 months produces the earned factor which would have been required to exactly reproduce the 24 months' pure premium. It is obvious that this method provides for recognition of both the elements which affect the factor, the exposure element and

the loss element. The factors among individual states show an extremely wide range, much greater than that shown in Exhibit IV of Mr. Barber's paper. Recently a comparison of earned factors developed upon a basis similar to that outlined by Mr. Barber and the actual indications as followed in the existing rate making procedure was made and the results confirmed the opinion that the variations were not alone in the exposure element but were also found in the loss element. Certainly the development of earned factors wholly upon the indications of the individual district are more in accord with the objective of the suggested procedure than is the method described in that procedure.

The suggested procedure provides for keying the rates to the level of the latest year or the latest two years. There is no question but that in these lines of insurance which are developing rapidly and where conditions are changing constantly, it is essential that the rates reflect as nearly as possible current conditions. It might reasonably be expected that the indications of the most recent year for which experience is available would most closely approximate current conditions. Unfortunately, however, that year is on an incomplete basis and on this account is less reliable than any of the other years entering into the experience period. The indications of the incomplete year are apt to be unstable and to lead to constant fluctuations in rates. On the other hand, keying to the level of the latest two years introduces a greater degree of stability in the level but permits a less prompt recognition of changing conditions. Under existing conditions it is doubtful whether keying to the level of the latest year or the latest two years is in general an improvement over the existing procedure which provides for the selection of state-wide pure premiums for the purpose of determining rate level.

Mr. Barber very properly points out that in the determination of credibility recognition should be given variation in claim frequency, and in developing the credibility table shown in Exhibit V, such recognition is made of variations in claim frequency. The table, however, is extended to show the requisite exposures for a given claim frequency for varying degrees of credibility ranging from 1% to 100%. Heretofore, a minimum point below which no credibility will be given has been in effect and the establishment of such a minimum is desirable. Within certain limits the general formula followed in determining credibility

works well but it is doubtful whether any appreciable degree of credence should be assigned data wherein the probability is very small that the indications are reasonably close to the true values. For example, heretofore, no credibility has been assigned where the exposure is such that the probability is less than .90 that the indications are within 10% of the true value. This assumption fixes the minimum credibility at 32%. While it is conceded that the fixing of the minimum point must of necessity be influenced by judgment, it is contended that there should be some minimum point. If no minimum point is adopted then there seems to be no sound reason for combining statistical territories into state rate groups, since for any given exposure, however small, some degree of credibility can be assigned. The carrying of this process to its logical conclusion will have the tendency to greatly enlarge the number of rate schedules and to produce rate schedules which vary by comparatively small amounts.

The suggested method provides for applying credibility to the departure of the state rate group from the district rate group in contrast to the existing procedure wherein credibility is applied to the departure of the indicated rate for the individual territory from the existing rate in that territory. One may well question whether the suggested procedure in general represents an improvement over the existing procedure. As previously pointed out, no credibility at all enters into the determination of the average pure premium for the district rate group where the district comprises a single state. In other words, 100% credibility is assumed in such instances. Where the district comprises two or more states the district rate groups are subdivided into state rate groups and here credibility does enter in. One is inclined to doubt whether the application of credibility to the departure of the state rate group from the district rate group produces results which in the last analysis are more nearly indicative of conditions of the state rate group than would be produced by measuring the departure of the indications of the state rate group from costs as reflected in existing conditions. This is particularly true where rates have been reviewed periodically. In choosing between existing rates and an average indication of a group of territories located in different states as a base from which to measure departure, consideration should be given the fact that the former, by the virtue of its very existence, is at least of

equal value, if not greater value than the latter, which may be the result of a combination of more or less homogeneous data. As stated by Mr. Barber, the procedure followed in the past has tended to promote stability in rates. However, one cannot fully agree with Mr. Barber's further statement that the procedure outlined in his paper tends to strengthen the experience indications of an inadequate volume. Such a statement presumes a degree of homogeneity of data within the district rate group which may not be found in actual practice.

The objections to those features of the suggested method which appear to be particularly subject to criticism are summarized below:

1. The procedure is frankly intended as one which will substitute mechanical methods for judgment. In view of this fact it would appear feasible and desirable to eliminate judgment, at least, in determining what states shall be set up as individual districts; the exposure required in order for a given group of states to qualify as a district; and the exposure required in an individual state before correcting preliminary class pure premiums of that state.

2. It is quite possible under the suggested method to develop district rate groups which in themselves do not have sufficient exposure to be assigned 100% credibility, yet in every instance a credibility of 100% is assumed for the district rate group.

3. The procedure provides for the use of the indicated class differentials of the individual district rate group. While it is stated that in certain instances combinations of district rate groups within the same district were made for the purpose of developing class differentials, nevertheless, it may reasonably be expected that in an appreciable number of instances these differentials might be based upon individual class experience which in itself is not sufficiently broad to be indicative.

4. In correcting state rate group pure premiums a flat correction factor applicable to all territories within the state is developed, irrespective of the fact that some territories within the state may have been assigned 100% credibility. Such a procedure hardly seems defensible. A similar process had been included prior to 1928 in the rate making procedure but has been abandoned.

5. The calculation of territory differentials for the purpose of assigning individual statistical territories to rate groups is necessary in theory, but it is doubtful whether it would be found

to be of very great value in actual practice. As a matter of fact, a test of such a process in the State of New York showed that the assignment based on consideration of the average pure premiums differed from that produced by the application of territory differentials only in a few territories developing very small exposures, and in these instances it was necessary to inject judgment under either method. One is inclined to believe that the value to be derived from this particular part of the procedure is not sufficient to warrant the additional work involved.

6. The establishing of territorial relativity by accepting the average indication of the experience period has a tendency to defeat one of the fundamental objectives of the suggested method, namely, the assurance that rates are neither redundant nor inadequate, and the elimination of any temptation on the part of individual carriers to depart from standard practice. As Mr. Barber points out, automobile public liability and property damage lines are susceptible to rapidly changing conditions which have a material influence on loss costs. These changing conditions may or may not be uniform state-wide and it is quite possible that they may vary appreciably among territories within a given state. For example, it is quite conceivable that within two different territories within a given state, each developing an appreciable volume of experience, there may be directly opposite trends. In one, conditions may have been improving consistently throughout the experience period—in the other, conditions may have been consistently growing worse. It is not possible, however, under the suggested procedure, to recognize these trends within the individual territory, yet an individual carrier who was aware of these conditions might very logically reach the conclusion that rates developed under such a procedure were redundant in one territory and inadequate in another, despite the fact that for the state as a whole, the rates might be neither redundant nor inadequate.

7. The procedure outlined in the suggested method for developing the earned factor to be applied to the latest policy year is very much influenced by countrywide experience and disregards entirely any possible variation by state in the loss element of that factor. It would appear preferable to develop these factors by districts.

8. In the determination of credibility no limit is set on the

minimum point below which no credibility will be assigned. The adoption of such a point seems not only desirable but essential, otherwise, there appears to be no particular justification for including in state rate groups more than one statistical territory, since it might well be argued that credibility could as well be applied to the departure of the indication of that individual territory from the district rate group.

The procedure as outlined by Mr. Barber and as discussed herein has been considered only in its application to private passenger public liability. The application of such a procedure to commercial public and property damage liability undoubtedly would raise problems which would not be encountered in its application to private passenger cars due to a greater refinement by classification and a much more limited volume of experience.

While the writer does not agree that the suggested procedure is as a whole a feasible one, he does believe that Mr. Barber's paper is a timely one and that it serves an extremely useful purpose in directing attention to the subject of automobile rate making. It is hoped that Mr. Barber's lead will be followed and that future volumes of the *Proceedings* will include additional papers on this subject.

AUTHOR'S REVIEW OF DISCUSSION

MR. HARMON T. BARBER:

The interesting discussion which Mr. Haugh has prepared reflects careful analysis and study of the suggested method for determining automobile rates. While the writer regrets that we are not in agreement on numerous points which are largely matters of opinion, he is grateful for the liberal criticism, which should serve to stimulate others to further thought on an important subject.

Under present day circumstances an acceptable plan for making automobile rates of necessity is a strange combination of theory and expediency, and this occasionally leads to noticeable deviations from a rigorous treatment of experience data. The writer freely admits that there are several points in the suggested method where precedence is given to practicability at the expense of theoretical exactness. It is probable that several of the deficiencies in the suggested method for developing automobile rates noted by Mr. Haugh arise from this choice of alternatives. As a matter of fact Mr. Haugh's remarks show evidence of this

same type of apparent inconsistency. He questions whether or not the suggested method exceeds the limit of sound practice in using various rate-group data at face value and yet later recommends that the experience of a still smaller unit—policy year experience by territory—be followed in recognizing experience trends. Since automobile rates unlike life insurance rates are usually short lived, it is not of great consequence whether an approximation is accepted in lieu of an exact treatment of the data, providing the interests of the public do not suffer by the less exact process.

Referring specifically to Mr. Haugh's remarks, the point is made that the composition of districts and rate-groups is not founded on a sufficiently definite statistical basis under the suggested method. It is expected that the composition of these subdivisions would be more or less permanent if the suggested method were to be followed for a period of years and that precedent would be a substantial factor in this phase of rate making.

Objection is raised to the use of a flat correction factor applicable to the rate-group pure premiums of each state. In the study which resulted in the development of the suggested method it was found that in no instance was this factor of appreciable size. If a projection process is superimposed on pure premium selection for rate level purposes as is provided for in the suggested method, it becomes necessary to know what experience level is represented by the final pure premiums. The flat correction factor accomplishes the purpose of tying the final pure premiums to a definite experience level. Also it provides a welcome argument in justifying rates to supervisory officials and others since it can be stated that the adopted pure premiums are exactly equivalent to the actual losses per unit of exposure experienced within the state.

The value of calculating territorial differentials for purposes of assigning territories to rate-groups has been questioned. While the writer agrees with Mr. Haugh that this step is not essential in most instances the retention of the step is justified on the grounds that it might uncover an unusual situation which would otherwise be overlooked. It is true that the elimination of this step might result in the saving of some labor, but in the opinion of the writer this advantage is offset by the assurance that an unusual distribution of cars by classification has not influenced the assignment of a particular territory to its rate-group.

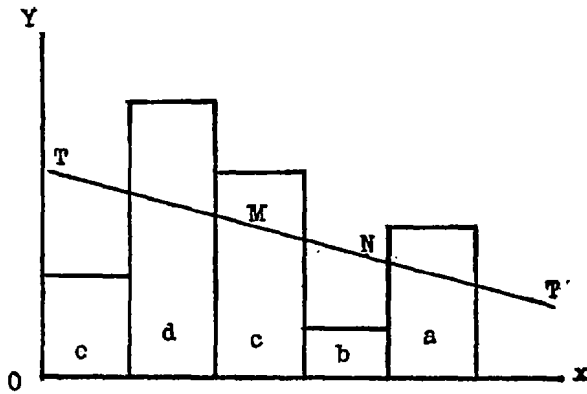
The suggestion that the loss element in the earned factor should be based upon district experience rather than on countrywide experience represents a desirable change if arrangements can be made to secure the basic data in appropriate form. Such a program would probably require a series of annual reportings of detailed experience on open claims. The countrywide basis was followed in the suggested method largely because of a lack of more refined experience.

Mr. Haugh suggests that it might be advantageous to recognize the trend of experience within individual territories in establishing pure premiums. The principal objection to such a plan lies in the fact that the experience of most territories is too limited in volume to give much significance to the experience indications of each policy year. Also since the actual exposure of an insured automobile is not confined to the territory wherein it is principally garaged, it is felt that the territory to which a car is assigned is one of the less definite characteristics of the risk hazard. For these reasons the recognition of trend in territory experience may represent an unwarranted refinement in the rate making plan.

The recognition of experience trends within rate-groups or districts appeals to the writer as a distinct improvement to the suggested method. As a matter of fact if the trend of experience by district is established by a definite process the trend might be incorporated in the rate making procedure in connection with the determination of rate levels in lieu of using the latest or two latest years of experience as the key to the level of revised rates. With the trend of experience definitely established by a sequence of four or five policy years' experience it would be possible to extend the trend indication for another year beyond the latest for which experience is available with conservative results. This would have the effect of partially bridging the gap of two or more years which now exists between the period of time for which actual experience is available and the period during which revised rates are to be effective. These are matters for the further deliberation of those responsible for making automobile rates, for undoubtedly there are certain disadvantages as well as benefits which might result from such a procedure.

As mentioned previously it is highly desirable that a definite basis be selected for recognizing trend whether the trend is that for territory, rate-group, or district. To depict the trend of a

group of statistical data use is frequently made of a straight line drawn through the graphical representation of the data in such a way as to bisect the area or field covered by the data. To apply a similar treatment to the pure premiums for a series of five policy years the pure premiums may be plotted as in the following diagram as a series of adjacent rectangles, each with a unit base (representing a policy year) and with altitudes corresponding to the amount of the pure premium.



If the trend line ($T T'$) is constructed so that the area between the trend line and the pure premium curve for the five years is equally distributed on either side of the trend line, it will be found that the trend line passes through the point (M) whose coordinates are 2.5 and m , where m equals the mean of the five pure premiums. Likewise if it is further stipulated that the trend line shall be so constructed that the area between the trend line and the pure premium curve for the last half of the five year period shall be equally distributed on either side of the trend line, it will be found that the trend line passes through the point (N) whose coordinates are 3.75 and n , where n equals the mean pure premium for the last two and one-half years of the period. The trend line is definitely established by these two points.

It is a simple matter to derive an algebraic formula to obtain the policy year or annual change represented by the trend line.

For if $a = 1928$ pure premium
 $b = 1927$ " "
 $c = 1926$ " "
 $d = 1925$ " "
 $e = 1924$ " "

$$\text{Then } m = \frac{a + b + c + d + e}{5}$$

$$\text{and } n = \frac{a + b + c/2}{2.5}$$

By a comparison of the coordinates of the two points it follows that:
 Annual change

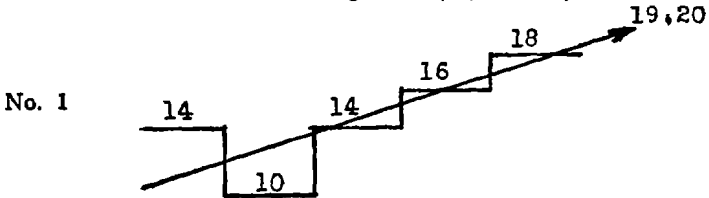
$$\begin{aligned} &= \left[\frac{a + b + c/2}{2.5} - \frac{a + b + c + d + e}{5} \right] \frac{1}{3.75 - 2.5} \\ &= \frac{a + b - d - e}{5} \times \frac{1}{1.25} \\ &= .16 (a + b - d - e) \end{aligned}$$

Knowing the annual change indicated by the trend line, it is possible to progress from the mean pure premium for the five year period to any point in the future on an extension of the trend line. For example, if it is desired to ascertain what pure premium is indicated by the trend line for the policy year just subsequent to the latest of the five for which actual experience is available, three times the annual change should be applied to the mean pure premium for the five years. The accompanying exhibit illustrates graphically the results obtained by this procedure under various circumstances.

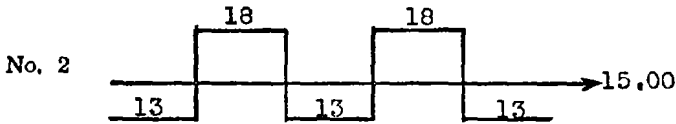
It will be found that the trend established by this formula is responsive to consistent experience trends. On the other hand if applied to a series of widely varying pure premiums the formula will produce conservative results. In its application in automobile rate making a formula of this nature has the advantage of providing a definite and standard method of giving recognition to the trend of experience for each rate-group or district in place of relying on a designedly consistent use of judgment for this purpose.

APPLICATION OF TREND FORMULA TO PURE PREMIUMS FOR FIVE POLICY YEARS

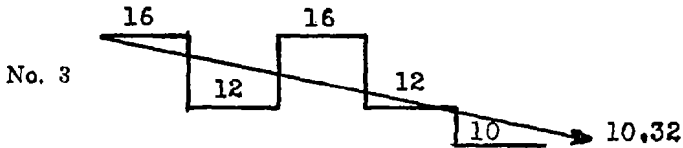
To Obtain Pure Premium Indicated for the Subsequent Year
 Indicated Pure Premium equals Mean plus three times annual change
Annual Change = .16 (a + b - d - e)



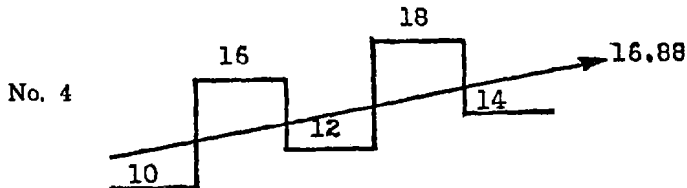
$$\begin{aligned} \text{Annual Increase} &= .16 (18 + 16 - 10 - 14) = + 1.60 \\ \text{Mean Pure Premium} &= 14.40 \\ 3 \times \text{Annual Increase} &= 4.80 \\ \text{Indicated Pure Premium} &= 19.20 \end{aligned}$$



$$\begin{aligned} \text{Annual Change} &= .16 (13 + 18 - 18 - 13) = 0 \\ \text{Mean Pure Premium} &= 15.00 \\ 3 \times \text{Annual Change} &= 0 \\ \text{Indicated Pure Premium} &= 15.00 \end{aligned}$$



$$\begin{aligned} \text{Annual Decrease} &= .16 (10 + 12 - 12 - 16) = - .96 \\ \text{Mean Pure Premium} &= 13.20 \\ 3 \times \text{Annual Decrease} &= -2.88 \\ \text{Indicated Pure Premium} &= 10.32 \end{aligned}$$



$$\begin{aligned} \text{Annual Increase} &= .16 (14 + 18 - 16 - 10) = + .96 \\ \text{Mean Pure Premium} &= 14.00 \\ 3 \times \text{Annual Increase} &= +2.88 \\ \text{Indicated Pure Premium} &= 16.88 \end{aligned}$$

CASUALTY INSURANCE ACCOUNTING AND THE ANNUAL STATEMENT
BLANK—THOMAS F. TARBELL

VOL. XV, PAGE 141

WRITTEN DISCUSSION

MR. E. ALFRED DAVIES:

In his paper on "Casualty Insurance Accounting and the Annual Statement Blank," Mr. Tarbell has tackled right well a difficult matter, and one of exceeding importance. There is at present no textbook on casualty insurance accounting, in the sense of a complete covering of that subject. The Society has approached the question through the medium of individual papers appearing in its *Proceedings* as follows:

"Cost Accounting in Casualty Insurance," by Claude E. Scattergood (Vol. II).

"The Allocation of Administrative Expenses by Lines for Casualty Insurance Companies," by R. S. Hull (Vol. IX).

"Allocation of Expenses," by James D. Craig (Vol. X).

"The Allocation of Adjusting Expense to Line of Insurance", by William B. Bailey (Vol. XIV), as well as two earlier papers by Mr. Tarbell himself:

"Determination of Acquisition and Field Supervision Cost by Lines of Business for Casualty Insurance" (Vol. X).

"Accounting Methods for Casualty Companies by use of the Hollerith System" (Vol. XII).

However, these papers cover principally the expense angle, and only parts of that; they do not handle the whole problem of the accounting work, both that which is required for purposes of the annual statement, and that which is needed to give additional data for the companies' guidance. Mr. Hull had material in preparation I believe, for such a text, and I know that another accounting man in the casualty insurance field has prepared a manuscript on the subject. There is, therefore, a "moving of the waters" in connection with the proposition, and Mr. Tarbell's paper is welcome, as an introduction by one who is thoroughly familiar with the requirements of the annual statement. It is interesting to note that some of the companies are meeting, at intervals, to exchange views on various aspects of casualty insur-

ance accounting—as first one company, and then another, experiments with other methods, and can pass on the experience gained, the whole field of insurance is benefited. For men whose primary purpose is the working out, the checking, and the assurance of adequate rates and income, actuaries are surely well within their field in fostering and encouraging the acme of accuracy, combined with simplicity and promptness, in the accounting work of their companies.

A knowledge of general accounting principles and practice, while not essential to the peculiarities of the annual statement, yet is very valuable in aiding comprehension of the reasons back of the statement as it is now drawn up, and in following the relationships established between the different sections and schedules. It is probably true that men whose only knowledge of casualty accounting is derived from years of work on the "Convention" blank, would be more hostile to change, and more set in their views, than would men whose approach is that of accountants familiar with all phases of accounting. To the former, a change of wording, of location, or of set-up, alters what has been done for years, and to them the result cannot be foreseen; to the latter group, however, the principle is recognized, and the medium of presentation is always open to improvement. For these reasons one would suggest to Mr. Tarbell a little more emphasis on the value of all-around accounting training for the casualty insurance accountant.

In his paper, Mr. Tarbell has not indicated the type of individual for which he planned it—did he visualize the young clerk, working in and around the accounting department, who will, in course of time, step up into the accountant's shoes?; or had he in mind the alert clerk, taking time to study outside of office hours, and planning to become of greater value to his organization?; was it written for the actuary, familiar with several of the schedules, but perhaps not so well acquainted with the rest of the statement?; or perchance, for the executive, knowing, in a general way, all about the Statement but not sure, specifically, of some portions of it? The question comes to mind because there seems a lack of definitions for certain of the terms and phrases, *e. g.*, "Ledger Assets"; while some of the explanations are very elementary (the fourth paragraph on page 141); and, yet, again, certain points are left incomplete. The large amount

of detail in this subject is doubtless the answer, and probably Mr. Tarbell has already incorporated changes in his manuscripts, if he is preparing them for wider distribution. This discussion deals mainly with the angle of presentation, since the subject-matter is so well handled in the paper.

On page 145, the reference to Item 3 omits the explanation that for a mutual company this item is left blank. A cross-reference would be helpful to Mr. Tarbell's further discussion of the treatment of capital stock, on page 147, Items 31-34. Similarly, Items 4-20 on the same page, might be tied up with Item 48, Page 162, to bring out at once, instead of the suggestion on page 146, the fact that 90-day accounts are later excluded from Assets. Items 22-28 on Page 146 could perhaps include an explanation of what would be the treatment if "Bond interest accrued" had been debited, as is suggested.

Item 37, Page 148 might be cross-referenced to Page 154, Item 55, and vice versa; in both instances of course, the posting would be done in such a way as to indicate on the individual agent's ledger account that while he had, at one time, been closed out as a bad debt, yet payment, partial or in full, as the case may be, had been received on the stated date; if this is not done, then the record on the particular ledger card would not tell the true story, and future business, if deemed desirable, might be refused, or an incorrect answer given in case of character-inquiries. It is shown on page 145 that premiums are charged to "Premiums in course of collection" (or, as it is sometimes known, to "Premiums receivable"), but the bad debt and the bad debt salvage are marked as credits to "Agents' balances"; maybe a short paragraph would bring out the method whereby the premiums are recorded as Agents' balances.

On this same page (148), Item 38 might be helped by an inclusion of, or reference to, the amortization discussion which comes in three later places in the article, as those arguments would explain the parenthetical statement "not the actual cost." In speaking of the amortization principle (pages 149 and 155), Mr. Tarbell makes his adjusting entries as credits or debits to Profit and Loss; on page 170 he mentions that the net of these adjustments is carried to Interest in Item 43, page 9. But this latter Item is a transfer from Item 30, page 2, and on page 146 of the article it is said that these receipts are the net cash from

interest, although he adds, on page 149, that this treatment is an exception to the "cash basis." Would there not have to be an adjusting entry, so that these amortization items were recorded as Interest, in which case, Item 30, page 2 of statement, would have to be other than net cash. This would mean also, that the matter entering into the annual statement can be varied from the form, in which case the uniformity is not complete. Probably, in a later paper Mr. Tarbell will explain the fitting-in of these interest adjustments to Schedule D, Part I, *i. e.*, in what way the amortization adjustments are recorded in the "Gross interest received" so that the insurance departments can check this amount of interest by applying the Rate to the par value; also, how the footing of the column of Interest, so adjusted, is made to agree with Item 30, page 2. However, the amortization method is not universally used by companies, because there is quite a bit of work involved, and the benefit is relatively small.

The remark, on page 149, that some companies adjust, at each year end, to bring book values up to approximate market values, is of course made in order to cover all phases of this particular section—however, probably it should be added that such practice is not common, and that, as described on page 161 of the article, there is a special section of the statement in which any excess of market price may be shown as a non-ledger asset. And there might be mentioned, also, the special reserves established by most of the more conservative companies, to take out of assets the market appreciation on securities.

In the reference to the cost accounting principles involved in an analysis of expense (page 153), Mr. Tarbell modestly refrains from referring to his own previous papers on the subject, although that might well have been done, with the added references to the other articles in the *Proceedings*, as listed in the first paragraph of the present discussion. A few more words of explanation would perhaps bring out more clearly just why it is obvious that the salaries, traveling expense, and so on, will not agree with the trial balance—as a matter of fact, do all companies charge all salaries to one salary account, all travel to one travel account, etc., and then split those accounts once a year to claim, inspection, or whatever it might be, or is it not sometimes arranged that the expense is split as it is paid, and charged directly to the departments? On the method used will depend whether or not

the trial balance is to agree with the figures used in the annual statement.

Items 6 and 7, page 158, Mr. Tarbell differentiates cash and checks to an extent which seems almost over-emphasis, since the term cash is fairly universally used to include checks, money-orders, and so forth. The general practice is probably to record every receipt, cash or check, in one "Cash-book" and then through columns to do the analysis into accounts to be credited, as well as to show the bank in which the deposits are made; sometimes subsidiary books are kept for the banking records. It is evidently the *effect* of this analysis which Mr. Tarbell had in mind when he says "Checks received are usually charged to cash, through the medium of the cash-book, and subsequently credited to cash and charged to the bank of deposit," because actual entries of that nature are probably rare. It is not clear what the author had in mind by the sentence "Debit may be and frequently is, made direct to the bank without the intermediate step of passing through the cash-book." On its face that would imply a multiplicity of posting media, depending on the number of banks, and to cause difficulty in getting controls with which to balance.

Page 159 brings out the practice, at time of collection, to debit cash and credit Premiums in course of collection; at the same time, of course, the individual agent's account is credited—or, for a mutual company, the policyholder's account.

Item 39, page 161, could give the explanation that, in compiling these market figures the companies use the prices set forth in the Insurance Commissioners' volume, which, as an interesting fact, has become a book of considerable size.

Mr. Tarbell's comment on Items 46 and 47, page 162, is to the point, and his conclusion well phrased. There is, as a result of this attitude toward inventories, an additional reserve in the hands of the companies, and one which might well be substantial in amount, considering the large number of expensive machines which are used in the modern offices. A few companies do set up their purchases as Assets, and then offset them as Non-admitted; of course, if this be the method adopted, then the companies should charge into each year's expense a depreciation item, the asset being reduced accordingly, and the non-admitted changing correspondingly.

In his subsequent papers, Mr. Tarbell will doubtless discuss

the subsidiary books of account which are necessary in order to give the companies a knowledge of income and expense and net profit, by districts or offices, or whatever be the unit adopted; and also by the separate lines of insurance. Control amounts of premiums and of losses have been handled in the current article—but there are break-ups of those amounts into months and years of issue as well as into lines, and these call for many books of record. There is the difference in earned premium methods to be explained—the method used in the annual statement as contrasted with the company estimate way of estimating the increase or decrease in outstanding audits, for workmen's compensation principally. Statutory versus company estimate loss reserve brings the subject into a wide field. In the handling of expense records, there are the varying plans to be weighed, and the bringing down-to-date of the papers already given on this phase of the accounting. The budget is also a section of the general question which might receive attention. Yes, Mr. Tarbell has well begun, and all will listen with great interest and profit as he continues.

AUTHOR'S REVIEW OF DISCUSSION

MR. THOMAS F. TARBELL:

The author appreciates the careful and thorough consideration of his paper as evidenced by the criticisms and suggestions contained in the discussion of Mr. Davies.

No doubt many of the points brought out and questions raised would have been answered had the purpose of the paper, as set out in the third paragraph thereof (page 141), been somewhat elaborated upon and the intended "audience" defined. Considering these points in reverse order, the paper was prepared primarily for students of our Society engaged in statistical and actuarial work and having some text-book knowledge of bookkeeping and accounting but little, if any, contact with the company books of account. The paper was intended to show briefly the rationale of the annual statement and the application of bookkeeping and accounting principles to the various insurance accounts. The author purposely avoided a consideration of the many various books of account and accounting forms, mainly, as indicated by Mr. Davies, because other texts are now in preparation which

will give particular attention to these phases of the subject and also because even a brief consideration of them would have extended the paper to an undue length. The paper was, in fact, intended to temporarily supply the need for some text which would briefly cover the transition from general accounting procedure as treated in the ordinary variety of text-book to insurance accounting procedure, with its many peculiarities, and fill the gap until better and more extensive texts are available.

The author heartily endorses Mr. Davies' comment upon the value of all-around accounting training for the casualty insurance accountant. He is a specialist in his line and, like all specialists, should be thoroughly grounded in all features of his particular business or profession.

With regard to the treatment of bond interest accrued referred to in connection with Items 22-28 (page 146), the entries upon collection of the coupon as illustrated apply to the case where a single bond interest account is maintained. If two accounts are maintained—one for bond interest received and another for paid bond interest accrued—the entries upon collection of the coupon become:

Debit: Cash \$25.00

Credit: Bond interest \$12.50

Credit: Bond interest accrued \$12.50

The use of a single bond interest account is to be preferred because of its simplicity. In fact, the use of a separate account for paid bond interest accrued is rarely met with and the reference to such an account might well have been omitted.

Item 37—"*From Agents' Balances Previously Charged Off*" (page 148) and Item 55—"*Agents' Balances Charged Off*" (page 154) were not treated along the lines suggested because of their relative unimportance. The ledger account "Agents' balances" may arise from two sources; agents' sundry balances, referred to on page 160, and premiums collected by an agent but not remitted by him to the company (defalcations). Since in the second instance the premiums have been paid, they must be taken out of "Premiums in course of collection." This is done by means of the following entries (supported by a dummy paid premium report):

Debit: Agents' balances

Credit: Premiums in course of collection

To subsequently clear the ledger asset account the following entries are necessary:

Debit: Profit and Loss (Agents' balances)
Credit: Agents' balances

It should be pointed out that one set of entries will cover the whole transaction without the necessity of setting up an asset account. The entries in such case would be:

Debit: Profit and loss (Agents' balances)
Credit: Premiums in course of collection

The agents' balance account is sometimes used to charge off premiums which the agent has been unable to collect from the assured. The more usual practice, however, is to handle such premiums through the return premium account, although, strictly speaking, they are not return premiums. In such cases the entries are:

Debit: Return premiums
Credit: Premiums in course of collection

Mr. Davies raises the point that in case of some companies the various items of disbursement may check directly with the trial balance. If so, this, from the author's experience and observations, would be the exception rather than the rule.

There are several other points of interest and importance which have been raised, some of which could be discussed in considerable detail. Most of them, however, are beyond the intended scope of the paper and will be left for those contemplating a more detailed and comprehensive treatment of the subject of casualty insurance accounting.

REVIEWS OF PUBLICATIONS

RALPH H. BLANCHARD, BOOK REVIEW EDITOR

Unemployment Insurance in Germany. Mollie Ray Carroll.
The Brookings Institution, Washington, D. C., 1929.
Pp. x, 137.

The scope of this book is entirely descriptive. Its object is to give a detailed account of all the steps which have been undertaken in Germany to alleviate the problem of unemployment with chief emphasis laid on the present elaborate system of compulsory unemployment insurance. The book is written from an impartial standpoint and no attempt has been made to give a philosophic discussion of the general social problems of unemployment, nor to criticize any of the many expedients which have been tried in Germany.

To present such a mass of detailed statistical and financial material and still to furnish a fairly readable narrative is not easy. Considerable thought has evidently been devoted to the solution of this problem, and with much success. The greater part of the numerical data presented has been relegated to the numerous foot notes, leaving the running text fairly clear of all but the most essential statistics.

The first portion of the book deals with experiments in the control of unemployment previous to the adoption of the National Insurance System and is chiefly historical. The second part describes the experience to date of the National System and includes complete financial details relating to it.

Compulsory unemployment insurance in Germany is provided by equal compulsory contributions by employers and workers at a maximum combined rate of 3% of salary. The maximum rate is being currently paid, and is to be maintained until a large reserve has been accumulated. The Health Insurance fund collects these contributions along with its own. The amount of the benefits is based on the previous wage rate and on the number of dependents of the unemployed worker, and ranges from 35% to 80% of earnings. The percentage is graded by both the wage class and the number of dependents. Eligibility for benefits normally obtains after a person has worked twenty-six weeks during the

preceding year in an insured occupation and is, of course, conditioned on ability and willingness to work. Benefits are limited to twenty-six weeks, although emergency unemployment allowances in addition to regular benefits are allowed under certain conditions. Provision is made so that an insured cannot obtain benefits simultaneously under both the unemployment and health insurance schemes.

The student of the practical phase of unemployment insurance will find Chapter 8 very valuable for the discussion concerning the important part which the national employment exchanges have in the scheme, as well as Chapters 12 and 13, wherein are discussed the perplexing problems which have arisen in connection with the administration of unemployment insurance in Germany as well as elsewhere. These problems are eligibility, especially in connection with industrial disputes; seasonal employment; the agricultural workers, who, contrary to the procedure elsewhere, are included in the German Insurance Act; the clerical and professional workers, among whom in Germany there has been particular distress; and juvenile and female employees. The author's general conclusion is the following:

Germany, therefore, in common with England, has a population far in excess of the number for whom work can be provided. The loss of man-power during the war and the declining birth rate have not compensated for the discrepancy between occupational opportunities and persons wanting employment. This situation has necessitated the development of a thorough-going system of unemployment insurance at the same time that it has created conditions with which no unemployment insurance system alone can cope. The ultimate answer must be more far-reaching, and its solution seems to lie along the lines of the development of the home market and of sound international industrial coordination.

The book is well written and well printed. It is furnished with a satisfactorily complete index and with a bibliography (the references are almost exclusively in the German language).

The German unemployment insurance scheme is one of the most important, if not the most important, of social insurance projects in recent years. Its development will be of especial interest because of several important differences from the British scheme, which are that benefits are graded by earnings instead of a fixed amount, that much greater emphasis is placed on preventive measures, and that remarkably close alliance exists

between the employment exchanges and the insurance scheme. Apparently the administration is free of politics and, as in the case of British scheme, unusually efficient for a government project. The American reader cannot avoid being impressed by the thorough and scientific manner in which Germany is attempting to solve the employment placement problem on a national scale.

This volume is recommended without reservation to any student of social insurance and is one of the most valuable contributions which has as yet appeared on this subject in this country.

JAMES D. CRAIG.

Memorandum: Rules and Financial Provisions of Industrial Pension Plans. Industrial Relations Section, Princeton University, Princeton, N. J. Pp. 38.

As "a summary of existing material on certain phases of the pension problem" this report accomplishes its purpose admirably.

The report outlines the general provisions of existing formal pension plans but, because it is a summary of existing information rather than a discussion of the problem, it does not lay stress upon the fact that the recent scientifically constructed pension plans do not follow closely the provisions of the majority of the old plans. A person unfamiliar with the subject may have some difficulty in differentiating between the plan which may be regarded as a proper precedent to follow and one which is not.

Until very recent years few pension plans were scientifically constructed. A large number of those in existence were established upon the basis of unsound precedents already existing in other plans and some were copied, almost verbatim, from the provisions of unsound plans. Therefore, the difficulty in using a report such as that under discussion where the provisions of existing plans are summarized without much warning to the effect that these provisions may not represent modern scientific pension thought, is that the tendency to adopt old unsound precedents may be perpetuated. The authors have definitely pointed out, however, that the memorandum is "a summary of existing material on certain phases of the pension problem rather than an original contribution to the subject" and that "it is the aim of the memorandum to analyze the existing studies on the subject as concisely as possible for the benefit of those concerned

with the problem of industrial pensions who have but little time to give to research," so that they can hardly be criticized for failing to do that which is clearly outside the scope of the memorandum.

The memorandum is in four sections with a short bibliography appended. It discusses informal pension plans, the general provisions of formal pension plans, the funding of the pension obligation and analyzes certain typical pension plans. The discussion of the general provisions of the formal pension plans includes short discussions of age and service requirements for retirement on pension, the amount of pension payments, the provisions in case of disability, the question of employees' contributions, the reasons for which a pension once entered upon may be discontinued, and the limitation of employer's liability.

Under the heading of "Funding the Pension Obligation" the memorandum points out the danger of charging pension payments, as payments are made, to current expense without considering accruing liabilities on account of active employees. It calls attention to the fact that few of the existing plans provide for scientific financing. It discusses the question of reinsured plans and the scientific funding of self-insured pension plans. The final section is an analysis of typical pension plans, including that of the Atchison, Topeka and Santa Fe Railway, the Bethlehem Steel Corporation and subsidiary companies, The Edison Electric Illuminating Company of Boston, the Gorham Manufacturing Company and the Gorham Company, the All America Cables, Inc., and The Equitable Trust Company of New York.

For the actuarial student the report is of value only in that it gives a short summary of some of the existing information in connection with pensions. The student who has done no practical work with pension plans may find it of use in giving him a brief resumé of some of the problems involved, and the outline of six pension plans now operating. In view of the fact that the report does not attempt to discuss the problems with any degree of thoroughness it will be of use to the student only as a background. It would manifestly be unfair to quote individual statements from the report in support of any given argument because the report itself already condenses the original articles from which it has been prepared to such a degree that to take individual statements from the report and out of their proper setting would

detract seriously from their meaning. To have included so much information in the short space of 38 pages and to have touched upon so many varied phases of the subject is an accomplishment which makes this memorandum of value to one seeking some of the high lights of the pension problem from a layman's viewpoint.

GEORGE B. BUCK.

Report of the Joint Legislative Committee of the Senate and Assembly of the State of California relating to Traffic Hazards and Problems and Motor Vehicle Public Liability Insurance. Sacramento, 1929. Pp. 93.

The Committee was appointed in 1927 and reported to the 1929 Legislature. Its duties were to investigate traffic conditions in California, to study the prevention of traffic accidents, to make any desired recommendations as to changes in or enforcement of traffic laws, and in particular to report on the advisability of the adoption of a law requiring financial security on the part of operators of motor vehicles. The Committee was composed of six members of the Legislature, with Edgar C. Levey of San Francisco, Speaker of the Assembly, as chairman. Geo. W. White, of the Maryland State Roads Commission, acted as the Committee's executive officer and traffic expert, and supervised the preparation of the report.

In its investigation of the facts, the Committee was hampered by lack of reliable data as to injuries caused by automobile accidents, and found that even the records of traffic deaths were not as complete as could be desired. The major portion of the report presents and analyzes statistics on automobile fatalities in California, comparing them with deaths from other causes and in other states. A number of graphs are included which add materially to the report.

Deaths from automobile accidents per 100,000 population in California and the United States as a whole for the period 1922-1927 inclusive are summed up as follows:

California: An increase from 25.8 in 1922 to 38.2 in 1927.

United States: An increase from 12.5 in 1922 to 19.6 in 1927.

It is interesting to note a recent statement by Dr. Henry W. Cook, speaking before the Association of Life Insurance Presi-

dents, that the 1929 death rate from the automobile has affected insurance companies to the extent of 20.5 per 100,000 policy-holders.

Statistics gathered by the Automobile Club of Southern California are presented, showing the various types of fatal automobile accidents. Accidents involving pedestrians are shown as causing 37% of automobile deaths in California, as against a country-wide figure of 65% for the same item; on the other hand, fatalities from collisions of two automobiles, and from upsets, are of much greater relative importance in California than throughout the country. The report contains a brief discussion of the apparent causes of fatalities in the 4,024 cases tabulated by the Southern California club, which showed the major causes, in the order named, to be careless driving, carelessness on the part of a pedestrian, speeding, and incompetence.

The Committee is convinced that alleged enormous losses resulting from unpaid automobile claims are greatly exaggerated. It emphatically rejects "the proposal of compulsory automobile insurance, so-called, as no safety or accident-prevention measure, and as but a partial and highly ineffective means of protection against pecuniary loss."

The second section of the report gives a brief outline of the Massachusetts compulsory automobile insurance law, and the financial security measures adopted by or proposed in other states.

The Committee recommendations center around the belief that safety, rather than financial security, is the all-important problem. Its principal recommendations are:

1. Compulsion and uniformity in reporting accidents is essential. To this end a special traffic bureau should be created to gather and analyze statistics, and to serve as a fact-finding agency for the entire problem.

2. The Motor Vehicle law should be continually revised in the light of developing experience. Conformity with the National Uniform Vehicle Code should be secured. Various detailed changes in the state law are suggested.

3. Enforcement of law should be vigorous and unremitting. The organization of a state-wide Motor Police is recommended.

4. If a final judgment establishing negligence in motor vehicle operation has been entered against an individual, it should

be promptly satisfied; otherwise his driving license should be revoked. Such a person should also furnish security against future liability, this security to be an insurance policy or cash.

The report concludes with proposed legislation to carry into effect these recommendations. Practically the entire program, including the "financial-responsibility" and "State-police" measures, was adopted by the Legislature and signed by the Governor.

The impression created by the report is that it is a "progress" report in the nation-wide study of the problem of modern traffic accidents and safety. Its statistics are admittedly fragmentary, but will prove interesting for comparative purposes. The Committee was evidently predisposed against "compulsory" automobile insurance, but appears to have given careful consideration to all facts which it was able to discover, or which were presented to it, and its conclusions are well-supported.

BARRETT N. COATES.

Compulsory Automobile Insurance. Edison L. Bowers. The H. W. Wilson Company, New York, 1929. Pp. cclix, 259.

This book is a part of the Handbook series and is the first volume of this series (consisting of thirty-three volumes) which has come to my particular attention. The entire series covers a very wide range of subjects, all of which are extremely vital, and if this particular volume can be taken as typical of the entire series, must be invaluable in a student's or business man's library.

Probably the most important experiment of the present day in social insurance is compulsory automobile insurance. Many arguments bearing on the subject, either in the form of addresses or articles, are available, but the student, business man or legislator seeking complete information both for and against compulsory automobile insurance is forced to search diligently for such information.

Mr. Bowers in his book has provided a place to get the arguments of both proponents and opponents in one place. The book holds no opinion either for or against compulsory automobile insurance. Particular pains is taken to show the difference between compulsory automobile liability insurance and compulsory automobile compensation insurance.

The book begins with a brief outlining the introduction, affirmative and negative presentation on the question "Resolved: That Compulsory Automobile Insurance Legislation be Enacted".

The outline of the affirmative and negative arguments is very complete. Many arguments both for and against compulsory automobile insurance are cited, and extreme care is taken to differentiate in all the arguments between liability and compensation coverages.

Following the brief are three sections captioned General Discussion, Affirmative Discussion and Negative Discussion. Under each of these headings are groups of selected articles bearing on the particular phase under consideration. The selection of articles have been very carefully made and they have been drawn from a great variety of sources.

The final section of the book is made up of a resumé of alternative proposals, outlining the various provisions of such proposals.

No opinion is expressed as to the merits of either side of the argument nor as to the merits of alternative proposals. The editor simply has collected a large amount of arguments on all sides of the question and made it available in one place for the benefit of anyone wishing to become familiar with the problem.

It was a very great pleasure to me to read the book and I heartily recommend it to all members as a welcome addition to any library.

WILLIAM J. CONSTABLE.

Encyclopedia of Insurance Law. George J. Couch. The Lawyers Cooperative Publishing Co., Rochester, N. Y., 1929. 3 volumes published.

This work is published by the Lawyers Cooperative Publishing Company of Rochester, New York. The author is George J. Couch, LL.B. (Cornell), who has been Insurance Specialist of the Lawyers Cooperative Publishing Company's Editorial Staff for over twenty years. The set will be complete in eight large volumes containing over 7500 pages, four volumes of which have already been issued. It is said that Volume 8 will contain a complete and exhaustive index of the catch-word type, the index having been compiled by the author personally.

The writer has "sought to create a treatise that will serve both as a text and a search book" and to present a text statement of the law based on the principles laid down in the leading cases, with such detailed precedents as are necessary to illustrate the same, together with what is said to be a practically exhaustive treatment of the cases decided within the past ten or twelve years. He has not attempted to give the statute law except as the same has been construed by the courts or to illustrate the types of statutes which have been enacted. With the exception of governmental war risk insurance the several kinds of insurance have not been treated separately but the writer has presented a classification based upon principle. It is said that this arrangement permits of a more logical treatment, in that one may begin with the origin, nature and kinds of insurance and proceed naturally with a discussion of the requisites of the contract, its formation and construction, the beneficiaries thereof, the remuneration therefor, the particular provisions thereof and the rights and liabilities created thereby, the attachment, duration and termination of the risk, including renewals, revivals and reinstatements, the alteration and modification or reformation of the contract, its rescission, cancelation, abandonment, surrender, assignment, etc., down to the insured's rights under his contract as a whole, including loss and the adjustment thereof, and the corresponding rights of the insurer, including notice and proof of loss, appraisal, arbitration and award, the right to repair or reconstruct, and the adjustment and measure of damages, and finally to a discussion of the various legal and equitable remedies open to the parties, the jurisdiction of the courts and parties to actions, pleading, practice, defenses, evidence, etc.

The footnotes have been arranged in alphabetical order according to jurisdiction with the name of the state, province or country in which the respective cases were decided printed in larger black-faced type.

Another feature comparatively new in the law book field, is the cumulative pocket supplement, for which provision is made in the back of each volume and by means of which it is said the whole treatise will be annually supplemented by inclusion of the new decisions under the original captions, thereby keeping it down to date.

Such volumes as have been already published indicate that the

work has received careful and comprehensive treatment but that owing to the size of the work and the extent of the subject covered it would probably be more useful as a book of research than as a textbook. The pre-publication price is \$75 and upon publication of Volume 8 the price will be advanced to at least \$80. The publishers state that for the first five years the price of the supplement will not exceed \$5.00 a year.

WILLIAM BROSMITH.

Business Statistics. Joseph Lyons Snider. McGraw-Hill Book Co., New York, 1929. Pp. ix, 524.

This is a rather unique departure in the field covered by the all-inclusive designation of statistical texts. It is a book of cases and materials, including statistical studies and the description of sources relating both to individual industries and to business in general. Being a case-book, it consists for the most part of selected articles by various authors or analyses carried on by statistical organizations. By its very nature, the uses of the text must lie in the field of descriptive statistics—it makes no attempt to enter the province of analytical (mathematical) statistics.

The author's thesis is that two of the major factors affecting the success of the individual business man or investor are: (1) the current condition and outlook in the particular industry in which he is interested, and (2) the current condition and outlook of business in general. In the words of Professor Snider, "the book has been prepared in the hope of developing the student's capacity for independent interpretation in both fields."

The first part of the book considers materials relating to the more important individual industries—leather, automobiles, petroleum and gasoline, iron and steel, non-ferrous metals, agriculture, cement, construction, and railroads. Actual studies made in the industries are given, and by questions placed at the end of each article and, it is assumed, by classroom discussion, the student is led to develop for himself the principles and technique of interpretative criticism. The latter part treats of general business and financial conditions, and, as may be expected in any present-day text on business statistics, of business forecasting. In this portion of the book are included chapters on the volume of manufacture, commodity prices, commodity inven-

tories, retail and foreign trade, profits, general and regional business activity, the federal reserve system, the money market, security markets, and general business forecasting.

It has been stated above that the book does not concern itself with the field of analytical or mathematical statistics. Certain statistical tools, however, are considered by the author to be essential to an understanding of the significance of data for business purposes. The treatment of this subject is brief and for the most part descriptive. In the introductory paragraph of Chapter IV "Seasonal Variation, Secular Trend, and Adjusted Relatives," Professor Snider is careful to point out that: "The aim is to enable the student to interpret intelligently business data which come to his attention in the form of adjusted relatives, etc., *rather than to train him in the independent application of these tools of statistical analysis. Consequently, many problems which confront the statistical worker are not touched upon.*" (Italics are the reviewer's.) It is to be hoped that the reader will bear in mind Professor Snider's admonition. Chapter XIV is devoted to a description of the construction of index numbers.

Enough has been said to indicate that the book is intended for the student of business who will use statistics rather than for the student of the science of statistics. In the hands of mature minded students of business who have the advantage of rigorous classroom discussion under competent guidance, it should serve its purpose well—namely, to bring about intelligent and critical interpretation of business statistics.

H. J. GINSBURGH.

Accounting By Machine Methods. H. G. Schnackel and Henry B. Lang. The Ronald Press Co., New York, 1929. Pp. xii, 563.

Insurance accountants have long been familiar with many of the possibilities of machine methods in accounting and statistical work. In fact it is generally recognized that for an insurance company such methods are necessary in the production of the records that are required in the operation of the company, if costs are to be kept within the limits which will make profitable operation possible. The book under review pertains chiefly to lines of business other than insurance, in which the value of

approved mechanical devices has perhaps been less generally recognized than among insurance companies.

The book opens with a chapter on "Fundamentals of Modern Constructive Accounting Methods" in which the author describes some general requirements of a systematic survey of account and office routine, and calls attention to the necessity for proper account classification and comprehensive standard practice instructions.

Chapter II treats of "Characteristics of Mechanical Accounting Equipment." The principal attention is given to accounting machines with the adding and subtracting features and the application of these machines to various kinds of work including multiple duplications and use on bound books. The authors are evidently strongly in favor of certain definite types of machines, but the practical value and the clearness of the explanations are somewhat limited by the effort to avoid the appearance of advertising any special make of machine. A few illustrations of machines would be a help towards a clear understanding of the possibilities of the equipment. Much of the equipment described has been tried out or is in use by various insurance companies.

Five pages are given to a description of tabulating machines, and in the following chapter on "Accounting Machine Form Analysis and Design," the 45-column punch card is illustrated both for "Single Developed Cards," carrying only punched information, and "Dual Developed Cards," carrying both punched and written information. Few insurance accountants or statisticians would find anything presented here which would be new to them.

Chapters III to XV describe, and illustrate by forms, uses of mechanical equipment for various kinds of work pertaining to commercial and manufacturing accounts. While the authors give a little space to the routine survey preparatory to setting up a mechanical accounting system for an insurance agency, they beg to be excused on the plea of limited space from attempting to do likewise for insurance home offices.

Chapter XVI on "Statistical and Miscellaneous Applications" shows a form of fire insurance premium card, and outlines the production of a premium register by agencies for the purpose of checking the accounts current, after which "Full control of

month's premiums and return premiums is checked by the Statistical Department before proceeding to subsequent tabulations" at which point the authors pass on to the next subject.

In this chapter a rather interesting outline is presented of a punch-card record of outstanding losses which is similar to that in operation in some companies.

The final chapter of the book deals with "Wage and Bonus Plan for Accounting Machine Operators" which is a subject that has probably been too little considered by insurance office managers. The reason for instituting such plans, the factors involved in establishing wage and incentive plans, and the application of standard wage systems to accounting machine operators, are treated. Since so much of insurance statistical and accounting work is handled by machine, and so involves problems of quantity production, many of the ideas presented in this chapter should be well worth the attention of men who are faced with these problems.

While the direct value of most of this book to insurance statisticians or accountants would probably be small, one who is searching for new mechanical short-cuts would probably find hints which would suggest new applications of machines to his problems. The method outlined for a survey of existing methods and forms with a view to simplification and economy should be capable of extended application to insurance companies, though the authors shrink from the task of covering that particular field in the work under review.

ROBERT S. HULL.

From the Physical to the Social Sciences. Introduction to a Study of Economic and Ethical Theory. Jacques Rueff. Translated by Herman Green. The Johns Hopkins Press, Baltimore, 1929. Pp. xxxii, 159.

Apparently there is almost universal appreciation of the unprecedented developments in the so-called "exact" sciences, particularly regarding their contributions to an understanding of the world and the control over nature. But attention is beginning to swing from results to methods, with a view to their application in other fields. In the social sciences, for example, there is a strong movement urging the adoption of those exact standards of mea-

surement hitherto employed so successfully in the physical and natural sciences.

In the recent literature attempting to bridge the gulf between the physical and the social sciences appears the interesting little book by Jacques Rueff which evaluates the methods of thinking employed by the scientists. The book is essentially an abstract presentation of a philosophy and methodology of science. But it serves not only to draw attention to methods; it bridges the gulf between the two groups of sciences.

To separate the social from the physical sciences is considered arbitrary and unreal. Essentially all the sciences are alike in that they employ the same basic method of thinking. But each science has within its own realm an "empirical branch" which observes phenomena, conducts experiments, gleams facts, and extracts empirical rules or laws therefrom, and a "rational or theoretical branch" which "creates causes" to explain the origin of the phenomena observed by the empirical branch.

To speak of "creating causes" seems startling and revolutionary to the uninitiated, but reveals nothing essentially new to the philosopher. This notion of "cause" is the central theme of Rueff's work. There is no particular difficulty, for example, in saying that the Law of Identity is a law of the mind; everybody is willing to accept that. But when it comes to "causes" we feel somehow that they must be objectively real.

Such a distinction, however, is illusory, we are told, for a "cause," likewise, is nothing more or less than a creation of our minds. Both the Law of Identity and the Law of Causality are basic ways of thinking. It is as impossible to think of phenomena as "causeless" as it is to entertain contradictory elements in one and the same definition. But the point is that these things are impossible for the mind of man. If that had been different, no doubt our knowledge also would have been different.

A "cause," then, is something subjective—a proposition, an axiom or postulate, a premise or definition entertained by the mind to explain and make reasonable what has already been observed. Whether or not there are comparable objective causes is not a scientific, but a metaphysical problem. It need not concern the scientist because he is satisfied if his "causes" coincide with the procession of events observed by the empirical branch. They may be fictitious or objectively real, as long as they work.

This conception of "cause" is applied to all the sciences, physical or social. In each instance the cause of events is created. This is true of the molecule in chemistry, the electron in physics, evolution in biology, the subconscious in psychology, and "pleasure" in Hedonistic ethics. In economics the "economic man" is the cause—the axiom or postulate which explains phenomena such as the fluctuations of prices. The "economic man" is that man who "constantly seeks what he believes to be the greatest satisfaction of his wants and those of his family, by the means which he thinks call for the least effort." (The quotation is from C. Colson). It is interesting to note in this connection that Rueff is not at all disturbed by the usual criticism launched against economists for postulating so inhuman and fictitious an entity as the "economic man." That entity is sufficient if it rationalizes the phenomena observed by the economists.

Now any number of systems of axioms or postulates may be created, all of them logical enough, but only one of them true, *viz.*, that one which takes account of the greatest number of phenomena. Systems that are merely logical Rueff calls "Non-Euclidean" in contrast with the "Euclidean" or true theories. The socialism of Karl Marx, for example, is logical, but not true, because it fails to explain what we daily experience as competition. Rule out competition and set up a collectivist society and Karl Marx would come into his own and his theory would become "Euclidean."

There is something fascinating about such brilliant, logical reasoning, and such fine distinctions. Rueff's clear-cut sentences reveal a lucid mind in the habit of that precise kind of thinking so characteristic of the logician and mathematician. The book will naturally make an appeal to those who enjoy the niceties of logic, but it will not be appreciated very much by the practical man who is interested primarily in the doings of the empirical branch of science. Unfortunately, for the latter, Rueff puts his entire emphasis on that abstract realm of "causes" which is the delight of the philosopher.

WILLIAM B. BAILEY.

Reviews of the following books appear in *Transactions* of the Actuarial Society of America, Vol. XXX, Part Two.*

Central Banks: A Study of the Constitutions of Banks of Issue with an analysis of Representative Charters. C. H. Kisch and W. A. Elkins. Macmillan & Company. 1928, Pp. x + 394.

Studies in the History of Statistical Method (with special reference to certain educational problems). By Helen M. Walker, Ph.D. Williams & Wilkins Company, Baltimore, 1929. Pp. 229.

Recent Economic Changes in the United States. (Two volumes.) McGraw-Hill Book Company, Inc., New York, 1929. Pp. xxxvi + 950.

Pensions for Industrial and Business Employees. Volume II: Pensions and other old age Benefits for Trade Union members in the United States and Canada—"Preliminary Report" (issued February, 1929). By Murray W. Latimer. 52 pages and 24 tables and schedules appended. *Volume III: Railroad Pensions in the United States and Canada—"Preliminary Report"* (issued April, 1929). By Bryce M. Stewart and Murray W. Latimer. 55 pages and 10 schedules appended. Industrial Relations Counsellors, Inc., 165 Broadway, New York City.

Occupation Study—Report of the Joint Committee on Mortality of The Association of Life Insurance Medical Directors and The Actuarial Society of America, New York, 1929. Pp. 191.

*Arrangements have been made with the Actuarial Society of America for exchange of book reviews. Reviews appearing in the *Transactions* may occasionally be reprinted in the *Proceedings* but it is believed that reference to the former publication will, in most cases, be sufficient.

CURRENT NOTES

ARTHUR N. MATTHEWS, CURRENT NOTES EDITOR

NATIONAL SAFETY COUNCIL HAS NEW STATISTICS SECTION

On Tuesday, October 1, 1929, at the eighteenth annual meeting of the National Safety Council, Chicago, the newly constituted statistics section of the Council conducted its first regular session. Dr. Louis I. Dublin is the General Chairman of the Section and Mr. R. L. Forney is Secretary. The morning meeting, under the chairmanship of Mr. Leon Aronowitz (New York State Bureau of Motor Vehicles) included papers by Mr. W. W. Matthews, Miss Ethel Usher and Mr. W. C. Brent on practical problems in the organization of state and city statistical services. The afternoon meeting under the chairmanship of Dr. Dublin was a unit session on "Yardsticks of Safety." Papers were presented by E. W. Kopf on the classification of accidents in general; W. Thurber Fales on non-traffic accidents; Fred Rosseland on motor vehicle accidents; E. S. Fallow on home accidents; David Beyer on industrial accidents; and Lewis S. DeBlois on criteria for the increase or decline in industrial accidents.

In 1929, the Section's Committee on Supplementary Reports of Accidental Causes of Death, E. W. Kopf, Chairman, conducted inquiries with two committees of the American Public Health Association in respect to the revision of the accident titles in the International List of Causes of Death. The revised titles will be submitted to the International Commission for the Revision of the International List of Causes of Death, Paris, October, 1929.

Membership in the new Section is open to any person employed in the preparation and publication of accident statistics. Mr. R. L. Forney, 108 E. Ohio Street, Chicago, Ill.; or Mr. W. W. Matthews, State Bureau of Motor Vehicles, Harrisburg, Pa., will be glad to welcome new members.

NEW OWNERS', LANDLORDS' AND TENANTS' RATES IN NEW YORK

Effective July 22, 1929, the National Bureau of Casualty and Surety Underwriters issued revised rates for public liability insurance covering apartments and tenements, boarding or

rooming houses in New York City which on an average represented a decrease of 22% from the prevailing rates.

The last revision had been made some two years before, when because of the unfavorable trend in loss experience rates had been substantially increased. The more favorable experience developed since then and resulting in the latest decrease may be largely attributable to an investigation carried on under the auspices of the Appellate Divisions of the First and Second Judicial Departments in which that group of attorneys who have been specializing in encouraging and magnifying damage cases of this kind have to a large extent been discouraged from their activities. Furthermore, the landlords have used more care in seeing that their premises are kept in proper repair and have been more selective of their employees responsible for the ordinary up-keep of the premises.

The new rates are based on the classification experience for the four latest policy years and represent the largest volume of statistical data that have as yet been compiled for a revision of rates effecting this class of business. This experience indicated a total exposure of 2,608,217,732 square feet of area and 13,248,516 feet of frontage with total incurred losses amounting to \$10,307,950.

There also have been changes in underwriting rules, important among which is the new provision that buildings designed for or occupied for store, mercantile manufacturing or other business purposes and in addition by one or two families as a residence, the business portion is classified as "Building or Premises—Mercantile or Manufacturing" unless occupied by the assured, in which case it shall be classified according to occupancy. The rates for appropriate apartment house classifications apply to the remainder of the risk. Inasmuch as under the old rules the use of apartment house rates for the entire building inclusive of the portion occupied for business purposes was required, this change will in many instances result in substantial savings to assureds.

NEW PLATE GLASS MANUAL

Effective December 1, 1929, the National Bureau of Casualty and Surety Underwriters announced an entirely new plate glass manual. This new manual was prepared in order to surmount

some of the difficulties presented in the old manual and to place the general rating of plate glass risks on a more simple basis.

The table rates have been completely revised, resulting in a net reduction in premium, especially on the larger plates of glass. As a further means of simplifying the application of the rules in the manual, the territorial differentials have been rounded off so that they are easy of application.

Rates on glass located 60 feet back from and not adjoining the front plates in street entrances to buildings have been reduced 50%, as have the rates on glass located in arcades, corridors and lobbies.

The flat rate on a valuation basis for glass ornamentation, lettering and designs has been replaced by state, city and zone differentials, and in this way the exposure hazard is more closely measured. It is felt that this will have the effect of reducing rates for this particular group as much as 25% in many cases.

The rate for glass in private passenger closed cars is reduced from \$6.00 to \$5.00 per car and a policy may be written for three years. Private passenger open cars carry the same rate as previously.

Along with the manual the companies have revised the policies. All exclusions (except that relating to loss by fire) have been deleted and now the insuring public will practically have an all loss policy.

Policies may now be written for a three year period at two and one-half times the annual premium if paid in advance, or at a discount of 10% for instalment payments.

It is expected that these revisions will bring about radical changes in the glass insurance field and that producers will be more cognizant of the possibilities in this field.

COMPULSORY AUTOMOBILE INSURANCE IN OTHER COUNTRIES

Compelled protection is to be the rule in Sweden after January 1, 1930, according to current rumors. It is understood that a new compulsory automobile law is to go into effect there at that date. This law is said to provide that in case the car which causes the accident cannot be found, the injured party can collect from all the insurance companies entitled to write automobile insurance which will be held jointly liable.

Under the motor vehicles act which has just gone into force in New Zealand, owners of motor vehicles have now to take out an insurance policy against third-party risks when applying for a license. The payment of the prescribed premium automatically effects a contract of insurance which continues in force for the period during which the license holds good. The owner of the vehicle is required on the form provided to nominate the insurance company with which he wishes to insure.

Compulsory auto liability insurance against third party risks has loomed up again in London, appearing in the report of the London and Home Countries Traffic Advisory Committee on street accidents, which has been published there.

A bill providing for compulsory automobile insurance has been introduced in the French Chamber of Deputies. There has been a rapid increase in the number of motor cars in Paris and throughout the country, but outside of Paris there is an astonishing lack of road control. French roads are long, wide, straight and generally excellent and an inducement to high speed. The result is a rapidly mounting percentage of accidents. Smaller towns have adopted the expedient of digging a trench about a foot wide and nine inches deep across the roads at the town entrance.

RESULTS OF MERIT RATING PLAN ARE BEING STUDIED

Companies writing automobile liability business have been gathering together statistics since the so-called merit rating plan was put into effect to see what the results have been. So far it would seem that 80 per cent. of the policyholders are getting the benefit of the reduced rates. Most offices find that the plan is not consistently applied, as anyone with a little pressure can get the 10 per cent. reduction.

The decrease in rates naturally has affected the loss ratio because of a lessened premium income. Since this reduction in premium income has brought about a lower average rate, there is a general feeling that if the merit rating plan is not to be consistently applied some readjustment should be made.

GERMANY'S PLAN FOR SUPERVISION OF INSURANCE COMPANIES

While the full text of the German Government bill soon to be adopted regarding the supervision of insurance companies has

not yet been published, it is known, however, that it will require all insurance companies, except small mutuals, to have their accounts audited by certified public accountants, the report of these audits to be submitted both to the Supervising Government official and also to the board of directors.

The examination will embrace also subsidiary or allied corporations, even though they do not themselves transact insurance business. The supervising Government official, after this bill goes into effect, must be informed as to what extent insurance companies are interested in other insurance companies, banks or other corporations, and he must be advised forthwith of changes of material importance. These provisions apply to the management of insurance companies in regard to their individual participation in businesses of the above nature, and the supervising Government official has the authority to decide whether these relations shall be liquidated.

A provision which will be valuable to the strong companies is that premium reserves in future will be set aside and earmarked as such. Such investments are to be under the control of a specially appointed trustee nominated by the company and approved by the German Government and when an investment has been set aside in the premium reserve register it cannot be sold or released except with the formal consent of the trustee in writing.

This act will protect the interests of policyholders, as it will in the case of a failure, decidedly help in the sale of the direct business to the strong companies. In case of insurance companies that are not able satisfactorily to pass the examination of the German authorities under the rigid provisions of this act it will mean at least a transfer of the outstanding direct business to strong companies or a liquidation.

EFFECT OF STOCK MARKET CRASH ON FIDELITY LOSSES

The recent crash of the stock market (October-November) is being reflected in increased fidelity losses that will probably cost the surety companies quite a few millions of dollars.

From a survey of the situation among various home offices, these facts were revealed—(1) The foundation of business has been proved sound in spite of the crash—(2) The stock market

speculation seems to have been confined mainly to the Atlantic Seaboard and running as far west as the Mississippi.

It was pointed out by an official of one of the companies that the effect of such a sudden and disastrous drop in the market is reflected in the fidelity business in one of four ways: bankers' blanket bonds; brokers' blanket bonds; straight fidelity bonds (on bookkeepers, cashiers, etc.) and fiduciary bonds.

The present market crash has found losses coming in on only two of the above—bankers' and brokers' blanket bonds. Straight fidelity bonds show very few or no losses, indicating that the average employee is not only honest, but that he also did not gamble in the market.

Some companies report that most of the losses are due to the bankers' blanket bonds, while the experience of others has been that brokers' blanket bonds are the cause, all of which tends to the belief that these two are about equal. The losses have been large in number and amount and all were from the large cities, principally from the east.

According to several of the companies, the crash in the market revealed that a number of bank officials have been using fictitious accounts to play the market and that the crash exposed this condition.

Most of the company executives pointed out that on bankers' and brokers' blanket bonds the companies retain very little, reinsuring most of the bond and that this condition means that any large increase in losses will be felt by all the companies.

INVESTIGATIONS OF VIOLATIONS OF NEW YORK COMPENSATION LAW

New York State Industrial Commissioner Frances Perkins made plans several months ago for the prosecution of those employers failing to provide Compensation insurance. A separate division to handle claims in which employers are without Compensation coverage has been set up and special investigators have been assigned to this new division.

Nearly 20,000 factories, mercantile establishments and construction contractors have been canvassed by these Inspectors in their investigation of this condition.

As a result of this program launched by Industrial Com-

missioner Perkins, more than 4,000 employers have been summoned before the department officials for failure to secure the required insurance. The small employer with two or three persons on his payroll predominated in the list of violators, although the canvass revealed a total of 11,000 workmen unprotected by insurance for accidental disability or death.

Of the establishments covered, 13,000 were factories, 5,000 mercantile enterprises and 20,000 building construction contractors. The percentage of employers who failed to meet the insurance obligations was found to be practically the same in each of these classes of industry. Miss Perkins in an address at the opening of the Convention of the International Association of Industrial Accident Boards and Commissions expressed the need of jail sentences for those employers who violate the law. In the Metropolitan District, Chief Magistrate McAdoo will hold a special term of court for such cases and the department will ask for prison sentences for the most flagrant violators.

The problem seems to be especially acute in New York, because of the numerous temporary contractors. They provide no insurance for workers and thus are able to underbid their competitors. Another class buys insurance but fails to pay the premium.

AUTOMOBILE LEGISLATIVE MEASURES DURING 1929

The largest total of insurance measures ever introduced in the various state legislatures, according to the report of the secretary of the Insurance Federation of America, was during the year ending October 31, 1929. Casualty legislative proposals were responsible for the brunt of the increase, 1,244 being introduced in 1929 as compared to 671 in 1927 (the same legislative bodies were in session in 1927 as in 1929). Automobile insurance has worked its way into the very forefront of legislation in almost every state, says the report. More than 75 proposals to effect compulsory automobile insurance were placed before the 45 legislatures in session this year. None of them were passed. Many, however, failed by a narrow margin.

The growing tendency is to drop the idea of compulsory automobile liability insurance along the Massachusetts plan and substitute the scheme based upon the operation of the workmen's

compensation act. "It is apparent," says the report, "that the compensation plan is gaining momentum rapidly and that it will undoubtedly constitute the bulk of the compulsory automobile projects from this time on. This scheme sidesteps the objections offered by the problem of establishing liability, which has bothered all proponents of compulsion no little. In itself it is open to serious objections, notably the terrific cost, which of course is ignored by its advocates who blithely proffer a rate of \$10 a car in most of the proposals."

The federation's secretary predicts that the legislatures meeting in 1930 will have some kind of schemes for compelling automobile owners to insure their cars offered to them.

Continuation of attempts to put into force monopolistic state workmen's compensation insurance by the labor organizations marked 1929, although the efforts have been unsuccessful.

The report emphasizes the need for enactment of ambulance chasing laws in the more populous states. A number of co-defendant bills were introduced in 1929 proposing the joining of insurance companies in actions brought against the policyholders. The object is to secure larger verdicts, as undoubtedly the juries would be so influenced.

THE PRINCIPLES UNDERLYING STAFF SUPERANNUATION FUNDS*

REASONS FOR THEIR ESTABLISHMENT

The smoke of the war still seems to linger over the subject of Staff Superannuation Funds and the free wind of discussion may perchance help to blow some of it away.

Staff Superannuation Funds organized by or with the assistance of the employer have existed for many years, and there is evidence that they are becoming increasingly popular.

Although a fair amount has been written upon the pros and cons of the question whether the employer's motive in supporting them is a conception of moral duty towards his employees, it is easy to find economic and practical reasons for his participation.

No doubt they usually come into existence when some of the

*This paper by Mr. A. T. Traversi, a Fellow of this Society, was read before the Actuarial Society of Australasia at Sydney and Melbourne on August 27, 1928.

employees are becoming too old to discharge their duties efficiently, thus giving color to the idea of moral duty. But, apart from the fact that it would be practically difficult for a business concern with the eyes of the community upon it to throw an old or incapacitated servant into the street, and apart from the bad effect such an action would have upon the remaining members of the staff, we know that a good Staff Superannuation system offers a great inducement for the staff to remain in the service, and at the same time facilitates retirement of employees when past their best usefulness.

In other ways it can be shown that the real motive of the employer is an enlightened self interest. Employers as a rule do not remunerate their staffs upon moral grounds, but rather upon practical considerations, and it is difficult to see why they should be supposed to depart suddenly from the principles of business just when some of their employees reach old age.

I therefore express agreement with a recent American writer who says, "On the whole, staff pensions are a matter of expediency rather than of moral obligation."

The matter is also well put by the Joint Committee on the Carnegie Foundation: "The obligation of the employer to cooperate in sustaining a pension system is primarily a financial one, and secondly, a moral one."

The Departmental Committee upon Railway Funds in England may also be fittingly quoted: "From the point of view of the railway company the main purpose of the arrangement entered into is to keep the whole service in an efficient condition, and with that object to acquire freedom to place upon the retired list those men who from any cause have become permanently unfit for duty without being embarrassed by claims for compassionate allowances in respect of servants so retired. By facilitating retirement the existence of a Superannuation Fund tends to increase the flow of promotion and conduces to the efficiency of the service. . . . A Superannuation Fund has the further advantage of identifying the interests of the staff with those of the company, and so binding them to the service with the result of improved efficiency of the staff generally."

Again, Sir Joseph Burn, F. I. A., and F. P. Symmons, F. I. A.: "From the financial standpoint it may certainly be argued that the employer's contribution to the Pension Fund is an excellent

investment, since it results in a much more effective service than could be obtained by merely giving increases in wages."

Mr. Manly (Past President of the Institute of Actuaries) may be quoted: "A fund maintained in a sound financial condition is a blessing to both employer and employed. His (the employer's) salary list is a good 5 per cent.—I am inclined to think, in many cases, nearer 10 per cent.—less than it would be if there were no fund, and I do not think, therefore, that he can reasonably object to subscribe 5 or 6 per cent. of salaries to the fund."

To these it might be added that the fund becomes a potent weapon in the hands of the employer, enabling him often to retain or gain a capable officer, and generally to engage better servants.

I have laid a little stress upon this matter of the employer's motive. It may seem elementary, but like many elementary matters, it is important. For once the principle is admitted that his participation follows from an enlightened self-interest, we are infallibly led to a certain line of reasoning regarding the benefits, and also regarding the contributions of the staff. Moreover a clear conception herein enables us to analyze much more critically the arguments of Mr. Whittall to which I shall refer later on and other cognate propositions.

No doubt we should all have a sentimental feeling of pleasure could we believe employers to be self-effacing, benevolent, and altruistic to the extent implied by some writers, but I am sure that as actuaries we feel more satisfied to found our work upon business grounds and in pursuance of business objects.

OBJECTS OF THE FUND

Since Staff Superannuation schemes as a rule come into existence only with the help of the employer, who forms the pivot upon which the whole thing turns, it follows that his contribution should be laid out in the manner that will best achieve his object. As he is apparently giving something for nothing, he has a fairly strong voice in the matter. This leads to the question, what objects does the employer desire to gain? The quotations given above indicate the position, but it may be said that the main object can be plainly read from the fact already mentioned, that these funds almost invariably originate when retirements are in

contemplation. The main object, clearly, then, is the provision of a superannuation allowance such as will make easier the task of the employer in retiring the older members of the staff. The same reasoning applies to the members who have to be retired upon grounds of ill-health.

Like other elementary matters this is easily overlooked, and we often find superannuation funds designed to do other things very well, and yet to achieve the main object of such a fund very badly indeed. In my view it is the first duty of the Actuary to point out to the employer that if he spends money on other objects before achieving this one, he is courting trouble of a fundamental kind.

Another important object, almost implied in the above, is that if he is calling upon the staff to contribute, the system of contributions should be such that it will not, by continual increases operate against the smooth co-operation of the staff. For example, the ideal contribution system, as well as the commonest, is a fixed percentage of the salary. Further on I shall deal with the opposite case of increasing percentages of the salary. It would indeed be even better still to have a fixed level contribution as in the case of a life assurance policy, but there are practical difficulties in the way.

As is well known, some eminent actuaries, particularly the late Mr. Manly, considered that it paid the employer better to require no contributions from the staff.

It is my belief that on the whole the interests of the staff are usually served admirably when the objects of the employer are carried out. No doubt, however, there is in some respects a conflict of interest: for example, the staff naturally desire something in the nature of a vested interest. In this connection the return of the employee's own contributions on leaving the service is usually provided for, with certain returns on death. Apart from this, anyone with experience of these matters knows how likely the rank and file are to be attracted by benefits of a nearer, even if less valuable, nature than the pension. It has been my experience that a staff will often jump at a scheme whose benefits are obviously unlikely to serve the permanent interests either of themselves or the employer. Some of these benefits may have to be conceded, such, for example, as widows' pensions, or insurance, and other benefits that are really outside the scope of such a

fund, and can be readily supplied otherwise. At age 25, however, the path to 65 seems long, and a few flowers, even artificial flowers, by the wayside, assist in presenting a more pleasant outlook; and the employer may find it judicious to agree to some of these. I do not personally like annuities to widows, because, if small, they give rise to discontent, whilst if large they are costly. An assurance benefit while less costly, looks larger, and satisfies the staff much better—a good exemplification of what I have said above regarding the tendencies of staffs in selecting benefits.

I see no objection to a plethora of these benefits, provided the main object is first fulfilled and the employer is willing to pay for them; but it is a mistake to put into these money which should be utilized in the fundamental purposes of the fund.

As the Departmental Committee point out—"It is to be borne in mind that every subsidiary benefit, however small, given out of the fund diminishes to a corresponding degree the amount available to provide the main benefits."

This view of the object of a fund is endorsed by others. The Carnegie Foundation Trustees Committee say: "The function of a pension system is to secure to the individual who participates in it protection against the risk of dependence due to old age or disability."

The Departmental Committee on Railway Funds say: "The main objects of a Superannuation Fund are (1) To provide a comfortable maintenance in old age for those who retire after many years' service. . . . and (2) to provide for the future maintenance of those rendered permanently unable to work through sickness or accident. It may be, and in practice generally is, found expedient to provide for certain further benefits, but the above are the essential objects for which such funds are instituted."

PLANS OF OPERATION

Before proceeding to a review of the different systems, it may be well to point out that many unsound staff superannuation schemes have in the past been founded upon estimates and calculations made by arithmeticians and even accountants who have utterly failed to grasp the factors of vitality, time, interest, etc., involved. Many of the criticisms levelled at particular systems

should have been pointed at the unsoundness of the foundations. The commonest fallacy no doubt is that of assuming that the distribution of the staff in point of age will always remain the same as at the time of inception. Even the most elementary reasoning at once shows that this is rarely in accordance with the facts.

Messrs. Burn and Symmons truly say: "Still more remarkable is it that even at the present time there should be business men who will venture to initiate Pension Funds without first seeking expert advice." And the following quotation from the report of the Board of Administration of the San Francisco City Employees Retirement System will bear emphasizing: "The Board early came to the conclusion that the principal cause of insolvency and inability to pay claims in the case of the numerous retirement systems in this and other countries has been the lack at the time of establishment of a forecast of the costs of the benefits provided, and consequently the failure to make provision for meeting those costs. As with fraternal insurance, the cost is low when the organization is young, but every year brings increases until in the case of some systems in Europe the cost has risen as high as forty-two per cent. (42%) of the payroll.

"The fallacy in the retirement systems in Europe and this country, except in the case of a few established in the last few years, is that obligations have been provided for as they mature rather than as they are incurred."

The three main plans upon which superannuation systems are based are:—

- (1) The final salary system.
- (2) The average salary system.
- (3) The money purchase, or money value, plan.

I have for the moment adopted the current classification, but as will be seen further on, there are strong reasons for regarding it as confusing and unsound.

Besides these plans there are some which, though often described as superannuation schemes, are not truly so described:—

- (4) The system of endowment assurance policies.
- (5) The system of accumulated savings.

System 4 consists in effecting endowment assurance policies payable at age 65 or other suitable age or prior death, on the lives of members of the staffs. Obviously this system cannot effect the object of a superannuation fund, and I have known of several

cases where it has had to be abandoned for that reason. So far as I know, no life assurance office ever bases its own staff superannuation on the endowment assurance system, and this would appear to be an effective commentary upon it.

System 5 consists in accumulating at compound interest deductions at the rate of 5 per cent. or other figure, from salaries, supplemented by the employer, an account being kept for each employee separately. This system is also defective, even more so than system 4.

Systems 4 and 5 do not provide for the case of incapacity nor for that of long service. They both assume that a retired member of the staff at, say, 65 can safely and adequately invest a capital sum, and they present him with the dilemma that if he does not trench upon the capital, his income is too small, whereas if he does, he may miscalculate the length of his life. They do not fit exactly as a pension does.

Dismissing plans 4 and 5 I will now deal with the other plans more specifically.

THE FINAL SALARY AND THE AVERAGE SALARY SYSTEMS

The Final and the Average Salary systems are much the same in principle since the main benefit, the pension, is based upon the average salary over some given term of years. Certainly the final salary method may be based upon the salary of the last year only, but this is not usual: it is more common to take the average salary of the last three, five, seven, or other number of years. In the average salary plan, on the other hand, the average is taken over the whole period of service or of contributing service, or over the last 40 or other long period of years.

Taking a common case where the pension is one-sixtieth for each year of service, with a maximum of forty-sixtieths, it can readily be seen that the resultant pension would be considerably greater if based on the average salary of the last few years than if taken on the average of the whole period of service. The two systems can, however, be financially equated by adopting a lower proportion of salary when based upon the final salary method. It is therefore incorrect to say, as is usually done, that the final salary method is more expensive than the other. That is only

true if the same proportion of salary (producing larger pensions) is taken.

The real difference between the two plans lies in the fact that the final salary system produces a pension bearing a closer relation to the salary at the time of retirement, and therefore gives a greater pension to those employees whose salaries become larger as their service grows. These officers are on the whole the best and precisely the most difficult to retire upon an inadequate pension. The final salary system, moreover, by giving marked increases in pension rights along with their promotion keeps a strong hold on them just when they are starred as being especially useful.

There can be no doubt that the final salary system with a pension bearing a reasonable relation to the salary at the time of retirement is the one which most nearly achieves the object of a staff superannuation fund. The history of the subject shows that wherever a scheme falls very far short of this ideal it has been difficult logically and practically to resist the arguments for supplementing the pensions or deferring the retirements, and thus blocking promotions.

It has its imperfections, as have all superannuation systems, but these are mostly related to secondary and minor considerations such, for example, as equity, where the faults of other systems are in reference to the very thing-in-itself, the essential *raison d'être* of a staff superannuation fund.

In this connection I must emphasize strong dissent from the ridiculous limitations often put upon the maximum pension, and there is an element of humor in the situation when one has to deal with two different funds almost simultaneously wherein one has a minimum pension of £300 and the other a maximum of that amount. Such a limitation of the maximum simply means that the fund tends to defeat its own object, in respect of the higher salaried employees, and is truly like spoiling the ship for a ha'p'orth of tar.

The main disadvantages of the final salary method are (1) that those members of the staff who receive little or no increase in salary late in life may feel themselves aggrieved because the system seems to favor others.

From a considerable experience with large funds involving many thousands of employees I can say that complaints of this

kind have been rare: I had almost said entirely absent, but that I recollect some little evidence of them at inception of a scheme. They can be and have been effectively answered by pointing out that the employer has paid his contribution to secure certain results, and inviting the complainant to show how those results can be secured in any better way: by challenging the production of a criticism-free scheme: by pointing out that every member gets more than he pays for: that the employer has the right to cast his bounty where he will: and that if the pensions are not proportioned to final salary the retirement of higher officers is blocked and promotion retarded. My own experience shows that this "equity" bogey dies down quickly, so effectively that ten or twelve years pass without hearing of it.

(2) That the system involves more uncertainty than the average salary method.

If two funds equal in other respects have the proportion of pension so adjusted, in the one case to final, and in the other to average salary, so as to produce identical valuation results (or financial equality), it can be seen that so long as the ratio

$$\frac{\text{final salary}}{\text{average salary}}$$

remains equal the results of the two methods

will be equal. The final salary method being concerned with, say, the last seven years and the average salary plan with the last forty years, it follows that the denominator of the above fraction moves much more slowly than the numerator in the case of changes in the general level of wages and salaries. Accordingly the War disturbance and inflation produced a relatively greater change in the numerator, and scored one against the final salary plan. On the other hand, if a deflation were to take place, the reverse would be the case: the average salary would for years to come be affected by the War inflation, whilst the final salary would be free of it more rapidly. Undoubtedly, however, the average salary is a more slowly moving and therefore more stable function than the final salary, and spreads the results of any disturbance over a longer period.

(3) That it may throw a strain on the fund by accelerating retirements.

The system should, of course, be framed to produce the retirements just when they are required: and, if these be properly

allowed for in the calculations, no strain can come. Argument No. 3 is in fact applicable to the case where a change over is made from average to final salaries; but there is little point in it otherwise.

The average salary plan in return for the greater steadiness sacrifices something of the attainment of the employer's object. There is abundant evidence that where pensions are on this plan, retirements of higher officers are apt to be deferred. This, while balancing inequities, interferes with main objects. Here, again, we see the conflict between attainment of object and equity: the two things are incompatible. We may always be suspicious of any scheme that boasts of equity because that connotes ineffectiveness in major requirements.

As between the final and the average salary plans in an individual scheme there is no necessity to dogmatize. Circumstances must be taken into account. The departmental Committee on Railway Funds, for example, while frankly recognizing the fact that the final salaries method more nearly effected the objects of the companies, resolved to recommend the average method "in all the circumstances."

It should not be (though it is) commonly overlooked, that this recommendation was arrived at in respect of a series of funds that were all in a state of financial embarrassment. It is difficult to see how, under these circumstances, a different conclusion could have been arrived at. To have adopted a final salary method giving equivalent costing would have meant a recasting of the benefits; whilst to have retained the same pension-proportions would have increased the cost, and therefore the difficulties, confronting the embarrassed funds. The conclusion was plain common-sense.

THE MONEY PURCHASE PLAN

Some philosopher, I think it was Hobbes, pointed out that a fine discrimination was the pivot of correct knowledge. It is also true that incorrect nomenclature is the trapdoor to confusion of thought.

Both axioms come to one's mind in dealing with the money purchase or money value plan (which is also sometimes called the contractual plan).

As commonly understood, this plan consists in applying the

contributions of the employee and employer to buy a series of pensions. Each year, or each salary increment, or each attainment of a specified amount of salary increment may be dealt with separately.

Now there is no reason in the world why this should be termed a money purchase or money value plan. Any plan that is built up and carried out on an actuarial foundation is clearly a money purchase plan. What, then, is the distinguishing feature of the so-called money purchase system? It is this, that the pension is bought in driblets year by year.

In the so-called money purchase plan there is a fresh calculation or assessment every time the pension is added to, whereas in the so-called salary plans there is only one appraisal at the original age, the contribution being settled then. The former resembles in principle the discarded assessment system of life insurance with its constantly increasing premiums following upon the frequent periodical assessment and re-assessment of the risks; whilst the latter is cognate with the well established and well known life insurance system wherein the premium is assessed at the outset.

It appears that if the former be termed the "successive contracts" system and the latter the "one contract" plan, the designations will be more distinctive and helpful, and it is proposed to adopt these terms accordingly.

It must be emphasized that every time an additional pension is purchased in the successive contracts system, a new calculation or assessment at the increased age, is necessitated. Where a £100 pension might cost, say, 57/- p.a. at age 20, it might come to 154/- at age 35, and 620/- at age 50. (These rates are merely quoted for illustration.) Hence increases in pension are effected at rapidly increasing premiums.

A great deal has been made lately of pensions systems upon the successive contracts (or money purchase) system: and they have even been referred to as something new. In point of fact the system is an old one. It is the first system that would occur to an actuary, being easy and elementary. The great defect of the system as usually applied consists in the simple fact that the percentage of contributions to salary increases, or else the percentage of pension to salary decreases, with each successive addition to the annuity, and this must inevitably lead to the

pensions being insufficient or to the contributions becoming a burden. As generally applied the system must fail to fulfil the objects aimed at by the employer in establishing a staff superannuation fund. The increasing contributions may in fact actually constitute an ingenious deterrent upon the effecting of adequate pensions.

In a book by Harold Dougharty entitled "Pension Endowment and Life Assurance Schemes," the virtues of such a scheme in the case of the London and South Western Railway Superannuation Fund are extolled with the comical conclusion by way of anticlimax that the scheme "has actually been abandoned by the Railway Company in question." That scheme was based upon a contribution by the members of $2\frac{1}{2}$ per cent. of their salaries, the Company giving an equal amount: and a deferred annuity was supposed to be purchased each year with the amount. Clearly as the employee became older the amount of additional deferred annuity for a given increase in salary became less and less; and the scheme failed "because it was found not to fulfil the objects of a superannuation fund." The scheme was apparently solvent, and actually received professional laudation, but "the company found it necessary to add to the pensions obtainable from the fund by supplemental grants with a view to facilitating retirements." Mr. Dougharty does not mention these reasons for its failure.

In New Zealand a successive contracts system was framed upon a solvent basis for the Public Service many years ago, and was operated in conjunction with the Insurance Department. It was abandoned for similar reasons to the above, and a final salary scheme on the one contract plan adopted in its place.

Something has been made by more than one writer of the fact that the Carnegie Foundation Trustees Committee in America, quoted by Mr. Whittall, after giving arguments against the existing plan where there were "no contractual relations and no legal promises as to future pensions," eventually decided upon a successive contracts (or money purchase) plan. This, however, does not affect the principles I have put forward. A little discrimination is wanted here. It is easily overlooked that the Carnegie Foundation Trustees are not the employers of the teachers for whose benefit the money was entrusted to them by Mr. Carnegie. Nor was Mr. Carnegie the employer. Not being the employer, the powerful "enlightened selfishness" motive is

absent, and this alters the whole aspect of the matter. I would most decidedly be prepared to consider a case of that character from a different angle than an employers' Staff Superannuation Fund. The Trustees, for example, might reasonably fight shy of salary scales in which they had no voice. Incidentally the system decided upon failed to provide incapacity allowances.

On the other hand the New York City scheme also quoted by Mr. Whittall is really an employers' Staff Superannuation Fund. It was based upon final salary.

And Mr. Whittall himself in remarking (on p. 247 J. I. A., LI), that there was a tendency for Americans in recent years to "resort (one might say revert) to the money purchase principle," added, "though this applies more to the category where employers are poor or fleeting. Where guarantees are available and service is more settled there is evident reluctance to dispense with a scale of pensions bearing relation to salary, and of course with a preference for final salary."

The real reason for the successive contracts (or money purchase) plan is the desire to avoid having to deal with estimates of future salary. In the old days the actuary favored this plan because he was ignorant both of the salary scale and the mechanism for employing it. Now, having become acquainted with the salary scale, he sometimes wishes to run away from it: occasionally for a good reason and occasionally not. It is certainly easier for the actuary, but I do not believe in this mode of action if it is to prejudice the main object of the scheme.

FINAL AND AVERAGE SALARY PLANS AND SUCCESSIVE CONTRACTS (MONEY PURCHASE) PLAN NOT MUTUALLY EXCLUSIVE

It is apt to be assumed that the salary systems and the successive contracts system are mutually exclusive, but this is not so. That a final salary system (or an average salary system) may be effected upon the successive contracts (money purchase) plan is illustrated by the scheme devised by myself for the Local Authorities Section of the National Provident Fund in New Zealand. I dealt with this in a paper some time ago, but a resumé will not be amiss.

The following principles were taken as axiomatic:—

- (1) The pension must be related to the final salary.

- (2) There must be a pension for retirement upon ill-health.
- (3) The contribution of the employee must be an unvarying percentage of his salary.
- (4) The calculations must not involve the salary scale: hence the successive contracts system must operate.

The reason for the ejection of the salary scale from the calculations was because the authority setting up the fund (*viz.*, the Government) was not the employer, and had no voice whatever in settling the salaries: wherefore it was deemed to be unwise (as no doubt it would be in the case of the Carnegie Trust) to speculate on the salary scale.

In that scheme was effected the (so far as I know) unique combination of the final salary and successive contracts (or money purchase) plans. If an employee joins at age 25, salary £180, it is at once known that his pension at retirement (at age 65) will be two-thirds, thence he is entered for a pension of £120; and so on for two-thirds of every salary increase barring the last three years, so that his pension is gradually built up till it inevitably amounts to two-thirds of his final salary. His contribution is (in the case in point) always 4 per cent. of his salary, and the whole liability is provided for by payments commencing forthwith. As is inevitable in the successive contracts system the contributions tend to increase relatively to salary because each successive increment of salary involves a higher age. But this does not affect the employee whose contribution is always a fixed percentage of his salary. Instead it is cast upon the employer. Herein, however, a general principle came to our aid. Although the employer's payments for each and every contributor tend to increase, the ratio of all such payments to salaries tends in that scheme to fall, because of the constant supplanting of the older retiring men by youths.

The scheme is almost automatically solvent.

Thus a number of the criteria of an adequate staff pension fund are complied with. It possesses the merits of the final salary and the successive contracts plans without certain of their defects. And there is the special safeguard that every time an increase in salary is given the employer knows at once from the simple card of contributions what he has to pay; so that at a time of inflation (should such occur) and for that matter, at all other times, he knows where he is at once.

It is thus obvious that the salary plans and the successive contracts system are not mutually exclusive, and that the latter can be applied in harmony with the best criteria of a good staff fund: nevertheless it is a fact that it is usually applied not only in disregard of first principles, but actually so as to defeat the objects of such a fund.

Here may be fittingly quoted the comments of the Journal of the Institute of Actuaries in 1921 upon Mr. Dougharty's books.

"On the subject of the relative merits of salary percentage schemes and deferred annuity schemes (*i. e.*, the method of securing a deferred annuity in respect of present salary and supplementing it from time to time by additions in respect of future increments) one word may be said. The fact that a general increase in the scale of salaries may create a deficiency in a salary-percentage fund does not seem to us necessarily conclusive. The problem after all is to provide for some continuity as regards income between official life and life after retirement, and the salary-percentage method makes an attempt to do this even if it breaks down in the process. If the employer is prepared in any case to shoulder the burden, it is merely a question of making up the deficiency in the pension fund in the one case or of supplementing the inadequate deferred annuity in the other."

MR. WHITTALL'S PAPERS

Mr. Whittall, F. I. A., contributed some years ago a series of articles to the Journal of Institute of Actuaries from which I have already quoted. In these he brings up the question of vested rights: that is to say, the principle that each individual payment made by or on behalf of the employee should be regarded as vesting in him. At present in most funds an employee upon resignation is only entitled to a refund of his own contributions, the employer's portion vesting in him only upon his continuing service.

Mr. Whittall contends (p. 235) that this principle of vested rights seems to be the proper complement and corollary of the contributory method. I cannot think that all actuaries will agree with this.

At the back of this argument seems to be the question whether

the pension is deferred pay, and hence whether the Superannuation Fund is composed of deferred pay.

I am compelled to refer to the matter because it cuts across the whole reasoning in respect of superannuation funds. If we accept the idea that the employer is animated by self-interest, we at once see that the fund is a much more effective weapon in his hands if the pension be looked upon as contingent deferred pay. As Sir Joseph Burn and Mr. Symmons say—"It (the pension provision) has the advantage from the employer's point of view that it is not a present benefit, but one which is to be granted in the future, and will therefore be forfeited by those who leave the service."

I think Lord Courtenay's Commission were sound herein in regarding it as contingent, and not accruing from year to year.

Mr. Whittall thinks that if we had a general recognition of vested pension rights we would come right down to the money purchase (successive contracts) principle.

I am not sure whether Mr. Whittall took notice of the fact that the Carnegie Foundation case dealt with by him so fully was not an employer's staff fund, and did not owe its origin to self-interest. Such being the case, it is largely emancipated from reasoning applying to employers' funds.

I cannot conceive an actuary advising an employer to accept the proposition of vested interests. If this principle were admitted it would result in employers subsidizing those members of their staffs who left them, and hence to some extent subsidizing their own rivals.

By instituting this principle we should be cutting away some of the most powerful reasons animating employers in establishing these funds. No doubt the staff would welcome the innovation, but not so cordially once they realized that it would help to kill the goose that laid the golden eggs.

I have, however, little belief in the correctness of Mr. Whittall's prognostications in this connection.

There is one matter that is indirectly raised by Mr. Whittall's contentions, and that is the question of Social Insurance versus Staff Superannuation. It is a common deduction of politicians that since a superannuation scheme is good for a staff it ought to be extended to the whole population. It has more than once been my duty to emphasize the necessity for discriminatory

thought herein. I have pointed out that a staff superannuation fund is part of the reward of the staff contingent upon their remaining in the service; that it is generally an instrument for securing a better service, and hence is a weapon of competition; and that the idea of extending it to the whole population is founded upon a basic misconception. Staff superannuation and Social Insurance are two different things, the former springing from a business (and therefore individualistic) source and the latter altruistic (and socialistic).

In particular, a Staff Superannuation Fund for a Public Service is not instituted by the State as a State, but as an employer: and the State stands in quite a different relation to the general public. Staff Superannuation can no more be extended to the population in general than can Social Insurance ever solve the problems which a Staff Superannuation Fund is designed to deal with: and it seems logically clear that the successive contracts principle will fail similarly unless it makes a real attempt to deal with the problem.

Possibly the successive contracts (or money purchase) principle has derived some impetus from the monetary disturbance following the war, thus helping to give some color to Mr. Whittall's prognostications. It is quite easy, however, to overlook the fact that the money purchase principle as usually applied, would, under monetary inflation, have proved even more insufficient than in normal times. In Germany we know that even life insurance "blew out" as a result of monetary inflation. In connection with the one-contract system, or indeed with any system attempting to take salaries into account, the best plan for dealing with the contingency of a war or of other sudden inflationary process is to provide for it in the rules. That is not difficult to do. The plan of jumping over to the opposite extreme is never a wise one.

CONCLUSION

In conclusion I would feel called upon to apologize for the apparently elementary character of this paper were I not already repeatedly assured that there was good scope for the reiteration of simple truths. If the paper does no more than stimulate thought, it will not have been written in vain.

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LEGAL NOTES

BY

SAUL B. ACKERMAN
(OF THE NEW YORK BAR)

ACCIDENT

Violation of Law.—[Zurich General Accident & Liability Ins. Co. vs. Flickinger. 33 F. (2d) 853.]

The insured died from drinking bootleg liquor which contained wood alcohol. The policy sued on insured against loss of life 'resulting from bodily injuries, . . . directly and independently of all other causes, through accidental means.' The company defended on the ground of *non-accidental* means and violation of law.

The court allowed a recovery and said:

"1. We think there can be no question that the death of insured resulted from accidental means within the meaning of the policy. Insured intended, it is true, to drink the cocktails which he did drink and which caused his death, but he did not intend to drink poisonous wood alcohol, and did not know that wood alcohol was contained in what he was drinking. The case falls squarely, therefore, within the oft-quoted rule laid down by Mr. Justice Blatchford in the leading case of U. S. Mutual Accident Ass'n. vs. Barry, 131 U. S. 100, 9 S. Ct. 755, 759, 33 L. Ed. 60: 'If in the act which precedes the injury something unforeseen, unexpected, unusual, occurs, which produces the injury, then the injury has resulted through accidental means.' Here the act which preceded the injury was the drinking of the supposed intoxicating beverage. And the thing which was 'unforeseen, unexpected or unusual' therein was the fact that it contained wood alcohol, a deadly poison. In other words, there was the unintentional and unexpected drinking by insured of a poisonous substance.

"2. It is next insisted that the death of the insured resulted from his violation of law, and that consequently there can be no recovery in the policy. The answer to this is, in the first place, that it does not appear that the death of insured was the result of violation of law on his part. Assuming that the wood alcohol which caused his death was not pure wood alcohol, but was contained in a beverage which it was unlawful to sell, transport, or possess because of the provisions of the National Prohibition Act (27 USCA), there is no evidence that insured had any connection with it, except that he drank some of it at the invitation

of his host; and it has been expressly held that to drink at the invitation of the owner does not involve such possession as to constitute a violation of the act.

“In the second place, the policy contains no provision exempting the insurer from liability for injury sustained as a result of violation of law. In the absence of such provision, we think it is clear that the insurer is liable, notwithstanding the insured may have been injured as a result of violating the law, if it does not appear that the policy was obtained in contemplation of such violation and the danger consequent thereon.

“To hold that death or injury from violation of law defeats recovery under a policy, in the absence of provision to that effect in the policy itself, would open up an avenue for evasion of liability which so far as our investigation goes, no court has yet seen fit to open. If insurance companies desire to avoid liability on such ground they should insert a clause in their policies to that effect.”

AUTOMOBILE

Driver Under 16 Years:—[*New Amsterdam Casualty Co. vs. Pickrell*. 19 S. W. (2d) 955.]

An automobile collision policy provided: ‘Condition A. This policy does not cover: (1) any accident caused by any automobile while being used for or in any race or speed test: (2) while any automobile is being driven by any person in violation of law as to age, or under the age of sixteen years in any event.’ At the time of the collision the car was being driven by a boy under 16 years of age, but was without plaintiff’s knowledge or consent. The collision was the fault of the driver of the other car, and the age of the boy driving the car had nothing to do with the accident. The insurance company denied liability.

The court held that the insured could recover and said:

“It is evident that something has been omitted from clause 2 of Condition A. As written it does not make sense. To make sense we must combine clauses 1 and 2. When this is done the policy will read: ‘This policy does not cover: (1) any accident caused by any automobile while being used for or in any race or speed test, or (2) any accident while any automobile is being driven by any person in violation of law as to age or under the age of sixteen (16) years in any event.’ There is nothing in this language that remotely suggests that it applies to damage to the car of the insured. On the contrary, it deals with accidents caused by any automobile while being used in a race or driven in violation of law as to age, and not to accidents to the car of the

insured. This conclusion is fortified by the fact that the remaining clauses provide in effect that the policy does not cover any automobile while being used for towing, or any automobile, while being used for rental or livery purposes, etc., thus placing stress on the use of the automobile, and not on the fact that the accident was caused by the automobile. We are therefore constrained to the view that clauses 1 and 2 of Condition A do not apply to damages to the automobile of the insured. Having this view of the question, it follows that appellee's loss was covered by the policy."

BURGLARY

Property Deposited by Hotel Guests:—(Cohen vs. London Guarantee & Acc. Co. 225 N. W. 549.)

A "hold-up" policy issued to a hotel provided:

"The company shall not be liable for (a) loss of or damage to any property unless it is owned by the assured or held by him in trust or on commission or as collateral for indebtedness to the assured or is held by the assured in any capacity that would render him liable to the owner thereof for such loss or damage as is covered hereby."

Money and jewelry belonging to guests, but deposited in the hotel safe, were stolen. The hotel owner sued for the loss.

The Court held that he was entitled to recover and said:

"Both at common law, and under statutory provision an innkeeper is entitled to a lien on the effects of guests for the amount of the reasonable charges for their entertainment. This extraordinary privilege corresponds to, and is concurrent with, the extraordinary liabilities which the law imposes on the innkeeper. The lien is not created by a contract, but by law; the innkeeper being obliged by law to receive the guest, is given the lien by the law as a protection. Consequently an innkeeper may maintain his lien even against a guest who is not legally capable of making a binding contract.

"The lien of an innkeeper extends generally to all property, and each article thereof, brought by the guest to the inn.

"Now if plaintiff had a lien on the money and jewelry of his guests to secure the payment to him of his lawful charges, and we so hold, and it was in his possession in the office safe, and the proofs so show, it is quite difficult to perceive what system of reasoning we should indulge to reach the conclusion that it was not 'collateral for indebtedness to the assured' and within the terms of the policy. The policy was issued to indemnify plaintiff from loss, and ought not to receive so strained a construction as to defeat its purpose."

COMPENSATION

Refusal of Medical Attention:—(Zant vs. U. S. Fidelity & Guaranty Co. 148 S. E. 765.)

An employee recovered compensation for a broken leg. The leg was not properly set and he refused to undergo an operation for rebreaking and resetting. The employer thereupon discontinued payments on the ground of refusal to accept medical attention. Is the employee entitled to compensation?

The court held that he is and said:

"It is clearly within the contemplation of the act that the refusal of the injured employee to accept medical, hospital, or surgical service, when provided for him by the employer, will not bar the employee from the receipt of further compensation which has been awarded him, where the refusal of the employee to accept such tendered service is 'reasonable' or is, under 'the circumstances, justified.'

"The reduction of the effect of an injury, and the consequent reduction in the amount of compensation payable by the employer therefor, is the only interest which the employer has in requiring an injured employee, who is entitled to compensation, to undergo an operation for the purpose of relieving the injury.

"The evidence is conclusive and without dispute that the surgical treatment tendered by the employer to the injured employee, namely, the rebreaking of the employee's leg, was an operation which would endanger the employee's life, and which from its nature must necessarily be accompanied with great physical and mental pain, that the chances of a benefit to the injured employee did not exceed 50 per cent. and therefore there was no reasonable expectancy that the operation would be a success and would thereby reduce the compensation and none of the physicians who testified would recommend it."

POWER PLANT

Other Insurance:—(Kanawha Ins. Co. vs. Hartford Steam Boiler Inspec. Ins. Co. 149 S. E. 605.)

A policy covered certain machinery for damage caused directly by the breakdown of any of such machinery. It also provided:

"If at the time of an accident covered by this policy there shall be any other similar, valid and collectible insurance against damage to property, the assured shall in no event demand or recover of the company any greater proportion of the loss from

damage to property than the insurance applicable under this policy to such loss bears to the whole amount of such insurance thereon."

An elevator broke down. The breakdown was accompanied by a fire which was confined to the motor of the elevator. Is the insurer liable for the whole loss or only proportionately with the fire insurers of the building?

The Court held that it was liable for one whole loss and said:

"The fire policies were general; the policy in suit was specific. It covered particular items of property and for particular purposes; this denotes marked dissimilarity, rather than similarity. In our opinion, the phrase 'other similar . . . insurance' refers to other policies having the same specific coverage, and does not refer to those having a general coverage."

PUBLIC LIABILITY

Waiver by Company.—(269 Canal St. Corp. vs. Zurich Gen. Acc. & L. Ins. Co. 235 N. Y. S. 63.)

Liability insurer's attorney secured an extension of time to answer in a negligence action against the insured, and then discovered that prompt notice of the accident had not been given as required by policy.

However, it continued to act for the insured in conducting the defense without question or protest for almost three months, during which time it drafted and served an answer, demanded a bill of particulars, attempted to obtain a change of venue, and opposed a motion for a preference. Then it procured the insured to sign a non-waiver agreement wherein the insured stipulated that the insurer's undertaking the defense of the case would not waive any provision or condition of the policy. The company contended it was relieved from liability by this agreement.

The Court held that it was not and said:

"If this nonwaiver agreement was supported by consideration flowing from the defendant, it is a defense to this action. The defendant continued to act for the plaintiff in the conduct of the defense in a negligence case, without question or protest, at least for almost three months after it admittedly had full knowledge of the claimed breach of condition. At the time of the execution of the so-called nonwaiver agreement it was, therefore, absolutely bound to defend the negligence action. When it received notice

of the breach of condition, it was competent for the company 'to stand upon its right and disclaim liability, leaving this plaintiff to defend the action.' It chose not to follow this course, but with the full knowledge to interfere with the defense of the negligence case in vital respects.

"The only consideration moving from the defendant in a non-waiver agreement was its implied undertaking to continue the defense of the action. This it was already bound to do; and it is fundamental that 'neither the promise to do a thing, nor the actual doing of it, will be a good consideration if it is a thing which the party is bound to do by the general law, or by a subsisting contract with the other party.'"

SURETY

Construction.—(Maryland Casualty Co. *vs.* Fowler *et al* 31 F. R. 881.)

A surety bond was conditioned upon the principal's indemnifying the obligée against any loss or damage directly arising from failure of the principal to faithfully perform the contract, and one of its provisions was that no right of action should accrue upon it to any person other than the obligée. By reference, however, it incorporated all of the provisions of the contract which it guaranteed, one of which was that the contractor should furnish and pay for all material, labor, etc., required for the performance of the work. Could the furnishers of materials recover?

The court held that they could and said:

"The rule which permits a surety to stand upon his strict legal rights, when applicable, does not prevent a construction of the bond with a view to determining the fair scope and meaning of the contract in the light of the language used and the circumstances surrounding the parties.

"The very reason for the existence of this kind of corporation, and the strongest argument put forward by them for patronage, is that the embarrassment and hardship growing out of individual suretyship that give application for this rule is by them taken away; that it is their business to take risks and expect losses. If, with their superior means and facilities, they are to be permitted to take the risks, but avoid the losses, by the rule of strictissimi juris, we may expect the courts to be constantly engaged in hearing their technical objections to contracts prepared by themselves. It is right, therefore, to say to them that they must show injury done to them before they can ask to be relieved from contracts which they clamor to execute."

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ARTHUR E. THOMPSON
FREDERICK H. TRENCH
M. ELIZABETH UHL
WALTER G. VOOGT
HARRY V. WAITE
CHARLES S. WARREN
JAMES H. WASHBURN
LELAND L. WATERS

J. J. WATSON
EUGENE R. WELCH
GEORGE P. WELCH
DOROTHY WETHERALD
FRANK G. WHITBREAD
ALEXANDER C. WELLMAN
CHARLES A. WHEELER
A. EDWARD WILKINSON
JOHN F. WILLIAMS
WILLIAM R. WILLIAMSON
HERBERT E. WITTICK
DONALD M. WOOD
MILTON J. WOOD
CHARLES E. WOODMAN
JAMES WOOLERY
FLOYD E. YOUNG

ABSTRACT FROM THE MINUTES OF THE SIXTEENTH ANNUAL MEETING, NOVEMBER 19, 1929

The sixteenth annual (thirty-third regular) meeting of the Casualty Actuarial Society was held at the Hotel Biltmore, New York, on Tuesday, November 19, 1929.

President Moore called the meeting to order at 10:15 A. M. The roll was called, showing the following forty-five Fellows and twenty-two Associates present:

FELLOWS

BLANCHARD	HARDY	MOORE
BREIBY	HAUGH	MULLANEY
BURLING	HOBBS	PERKINS
CAHILL	JACKSON, H. H.	PINNEY
COMSTOCK	KOPF	ROEBER
CORCORAN	KULP	RYAN
CRANE	LAWRENCE	SCHITLIN
DORWEILER	LINDER	SENIOR
FARRER	MADDRILL	SKELDING
FONDILLER	MARSHALL	SKILLINGS
GINSBURGH	MATTHEWS	SMITH, C. G.
GRAHAM, C. M.	MAYCRINK	TARBELL
GRAHAM, T. B.	MCMANUS	VALERIUS
GREENE	MELTZER	VAN TUYL
HAMMOND	MICHELbacher	WHEELER, R. A.

ASSOCIATES

AINLEY	HIPP	PERRYMAN
AULT	JONES, L. D.	RICHARDSON, H. F.
BLACK, N. C.	KORMES	SAWYER
CONROD	MARSH	SILVERMAN
CONSTABLE	MILNE	SOMMER
FITZGERALD	MONTGOMERY, J. C.	THOMPSON, A. E.
FURNIVALL	NEWHALL	UHL
GILDEA		

Mr. Moore read his presidential address.

The minutes of the meeting held May 24, 1929, were approved as printed in the *Proceedings*.

The Secretary-Treasurer read the report of the Council and upon motion it was adopted by the Society. Diplomas were presented

by the President to J. M. Cahill, H. H. Jackson, A. Z. Skelding and E. S. Skillings, who had been admitted as Fellows under the 1929 examinations. J. H. Phillips, H. F. Richardson, C. N. Jacobs and H. R. Gordon were enrolled as Associates without examination.

The Council selected the following and recommended that they be admitted as Fellows without examination under the terms of Article III of the Constitution:

R. LEIGHTON FOSTER, Superintendent of Insurance, Ontario, Canada.

V. EVAN GRAY, Counsel, Canadian Automobile Underwriters Association, Toronto, Canada.

ROBERT S. HULL, Comptroller, Standard Accident Insurance Company, Detroit, Mich.

After ballot these nominees were declared duly elected Fellows.

The Council reported that the following Associates had passed the necessary examinations and had been admitted as Fellows:

J. M. CAHILL

H. H. JACKSON

A. Z. SKELDING

E. S. SKILLINGS

The Council also reported that the following candidates had passed the necessary examinations and had been enrolled as Associates:

T. O. CARLSON

M. L. FURNIVALL

D. SILVERMAN

J. J. TAHENY

H. E. WITTICK

The Council further reported that the following candidates have been successful in completing the examinations for Associate but have not yet been enrolled by reason of the terms of examination rule 4:

B. BATHO

W. CHODORCOFF

I. FELDMAN

W. D. LAIRD

L. J. LEHANE

A. F. MUTH

C. ORLOFF

ROSE PRASOW

S. I. SHELPER

J. J. SMICK

J. A. YATES

The reports of the Secretary-Treasurer (Richard Fondiller) and of the Librarian (William Breiby) were read and accepted. The annual report of finances follows:

ANNUAL REPORT OF FINANCES

Cash receipts and disbursements from November 1, 1928, to
October 31, 1929.

INCOME

On deposit on Nov. 1, 1928, in Fidelity Trust Com- pany.....		\$ 567.27
Members' Dues.....	\$2,439.00	
Sale of Proceedings.....	1,402.77	
Examination Fees.....	295.00	
Luncheons.....	330.00	
Interest on Bonds.....	51.25	
Miscellaneous.....	1.00	4,519.02
Total.....		<u>\$5,086.29</u>

DISBURSEMENTS

Printing and Stationery.....	\$3,468.38
Postage, Telegrams and Express.....	191.90
Secretarial Work.....	360.00
Library Fund.....	43.35
Luncheons.....	350.00
Examination Expense.....	209.23
Miscellaneous.....	83.33
Total.....	<u>\$4,706.19</u>

On deposit on October 31, 1929, in Fidelity Trust Company.....	380.10
Total.....	<u>\$5,086.29</u>

Income.....	\$4,519.02
Disbursements.....	<u>4,706.19</u>
Loss.....	\$ 187.17
1928 Bank Balance.....	<u>567.27</u>
1929 Bank Balance.....	<u>\$ 380.10</u>

ASSETS

Cash in Bank.....	\$ 380.10
Investments.....	<u>1,000.00</u>
	<u>\$1,380.10</u>

The Auditing Committee (Harwood E. Ryan, Chairman) reported that the books of the Secretary-Treasurer had been audited and his accounts verified.

The Educational Committee (E. W. Kopf, Chairman) reported that the Fifth Edition of the Recommendations for Study would

be published before January 1, 1930. This appears in this Number of the Proceedings and has also been printed as a separate pamphlet for the use of candidates preparing to take the examinations.

The Examination Committee (Joseph Linder, Chairman) submitted a report of which the following is a summary:

1929 EXAMINATIONS—SUCCESSFUL CANDIDATES

The following is a list of those who passed the examinations held by the Society on May 1 and 2, 1929:

ASSOCIATESHIP—PART I

CHARLES R. ARTHUR	CONRAD ORLOFF
BRUCE BATHO	ROSE PRASOW
THOMAS O. CARLSON	SAM I. SHPELLER
WILLIAM CHODORCOFF	DAVID SILVERMAN
MARJORIE DAVIS	JACK J. SMICK
ISRAEL FELDMAN	HERBERT E. WITTICK
WILLIAM D. LAIRD	BARBARA H. WOODWARD
LEO J. LEHANE	JOSEPH A. YATES
ALFRED F. MUTH	

ASSOCIATESHIP—PART II

BRUCE BATHO	CONRAD ORLOFF
F. R. CAMERON	ROSE PRASOW
THOMAS O. CARLSON	SAM I. SHPELLER
WILLIAM CHODORCOFF	DAVID SILVERMAN
ISRAEL FELDMAN	R. V. SINNOTT
JOHN A. GUTHRIE	JACK J. SMICK
WILLIAM D. LAIRD	HENRY M. SUTHERLAND
LEO J. LEHANE	EMERSON W. THOMPSON
HAROLD E. MACKEEN	HERBERT E. WITTICK
ALFRED F. MUTH	JOSEPH A. YATES

FELLOWSHIP—PART I

JOHN W. AINLEY	EDWARD S. SKILLINGS
JAMES M. CAHILL	JOHN J. TAHENY
MAURICE L. FURNIVALL	M. E. UHL (MISS)
J. BRYAN GLENN	

FELLOWSHIP—PART II

JAMES M. CAHILL	A. Z. SKELDING
HENRY H. JACKSON	EDWARD S. SKILLINGS

Mr. W. F. Roeber, Chairman of the Committee on Remarriage Table, requested the cooperation of the companies in supplying the data in respect of remarriage, a call for which had been issued by the National Council on Compensation Insurance.

Mr. G. F. Michelbacher, on behalf of himself and associate authors, Messrs. Ralph H. Blanchard, Clarence W. Hobbs and Thomas F. Tarbell, Fellows of this Society, and Messrs. Rexford Crewe, H. W. J. Hargrave, C. F. Hebard, H. W. Heinrich, A. H. Robinson and L. F. Tillinghast, of the book, "Casualty Insurance Principles," which will be shortly published by the McGraw-Hill Book Company, offered certain royalties to the Society. This gift was accepted with many thanks by the President on behalf of the Council and the Society.

The Council's re-election of Robert J. McManus as Editor and William Breiby as Librarian, subject to confirmation by the Society, was announced.

The annual elections were then held and the following officers and members of the Council were declared elected:

- President..... GEORGE D. MOORE
- Vice-President..... SYDNEY D. PINNEY
- Vice-President..... PAUL DORWEILER
- Secretary-Treasurer..... RICHARD FONDILLER
- Editor..... ROBERT J. MCMANUS
- Librarian..... WILLIAM BREIBY

Members of Council (terms expire in 1932):

- E. W. KOPF H. E. RYAN J. W. GLOVER

The following topic for which speakers had been selected was then informally discussed: "Should there be a definite provision for profit in Workmen's Compensation rates?"

Recess was taken until 2:00 P. M.

By invitation of the Program Committee, Mr. H. W. Heinrich, Assistant Superintendent, Engineering and Inspection Division, The Travelers Insurance Company, addressed the Society on "Relation of Accident Statistics to Industrial Accident Prevention."

The papers printed in this Number were read or presented.

Upon motion, the meeting adjourned at 4:20 P. M.

PROCEEDINGS

MAY 9, 1930

A REVIEW OF THE 1929 CASUALTY BUSINESS
PRESIDENTIAL ADDRESS, GEORGE D. MOORE

A review of the casualty business for 1929 proves interesting and for this purpose I have selected a group of thirty-two multiple line stock insurance carriers having a premium volume of over 490 million dollars in 1929. This group contains no large carrier mainly engaged in writing fidelity and surety lines. In making the comparison with the year 1928 the same group was used. The results were as follows:

	1928		1929
Premiums written.....	\$490,397,000		\$491,190,000
Gain or loss during the year from			
(a) Underwriting.....	\$ 7,693,000	1.5%	-5,340,000-1.1%
(b) Underwriting profit and loss items.....	140,000	.1	-1,950,000- .4
(c) Interest earnings.....	27,328,000	5.5	27,138,000 5.5
(d) Investment profit and loss items.....	8,952,000	1.9	-7,393,000-1.5
Total.....	\$44,113,000	9.0	\$12,455,000 2.5
Other items affecting surplus			
(e) Dividends paid.....	-\$13,346,000		-\$18,723,000
(f) Remittances.....	- 236,000		- 3,324,000
(g) Change in special Re- serves.....	-11,302,000		- 93,000
(h) From shareholders...	5,230,000		3,450,000
(i) Miscellaneous.....	1,007,000		601,000
Total.....	-\$18,647,000		-\$18,089,000
Net change in surplus.....	25,466,000		- 5,634,000

And if we review the results by three groups of carriers according to premium size as follows:

- (A) All writing under \$10,000,000,
- (B) Writing \$10,000,000 to \$20,000,000,
- (C) Writing \$20,000,000 and up,

we find the following:

	GROUP (A)	
	1928	1929
Premiums written.....	\$52,333,000	\$57,552,000
Gain or loss during the year from		
(a) Underwriting.....	-1,606,000-3.0%	-4,924,000-8.6%
(b) Underwriting profit or loss items.....	- 414,000- .8	- 746,000-1.3
(c) Interest earnings....	2,992,000 5.7	3,323,000 5.8
(d) Investment profit and loss items.....	- 814,000-1.6	-1,791,000-3.1
Total.....	\$ 158,000 .3	-\$4,138,000-7.2
Other items affecting surplus		
(e) Dividends paid.....	\$ -483,000	-\$618,000
(f) Remittances.....	-488,000	- 598,000
(g) Changes in special reserves.....	-461,000	1,035,000
(h) From shareholders..	350,000	3,450,000
(i) Miscellaneous.....	- 4,000	25,000
Total.....	\$-1,086,000	\$3,294,000
Net change in surplus.....	-928,000	-844,000

	GROUP (B)	
	1928	1929
Premiums written.....	\$170,842,000	\$171,737,000
Gain or loss during the year from		
(a) Underwriting.....	\$ 4,883,000 2.9%	\$1,741,000 1.0%
(b) Underwriting profit or loss items.....	- 24,000 0	- 636,000-.4
(c) Interest earnings....	8,984,000 5.3	9,015,000 5.3
(d) Investment profit or loss item.....	2,167,000 1.2	-3,936,000-2.3
Total.....	\$16,010,000 9.4	\$ 6,184,000 3.6
Other items affecting surplus		
(e) Dividends paid.....	-\$5,583,000	-\$7,715,000
(f) Remittances.....	-1,166,000	- 84,000
(g) Changes in special reserve.....	-3,117,000	- 195,000
(h) From shareholders..	2,380,000	.....
(i) Miscellaneous.....	95,000	- 124,000
Total.....	-\$7,391,000	-\$8,118,000
Net change in surplus.....	8,619,000	- 1,934,000

	GROUP (C)			
	1928		1929	
Premiums written.....	\$267,222,000		\$262,901,000	
Gain or loss during the year from				
(a) Underwriting.....	\$ 4,416,000	1.7%	-2,157,000	-.8%
(b) Underwriting profit or loss item.....	578,000	.2	- 568,000	-.2
(c) Interest earnings....	15,352,000	5.6	14,800,000	5.6
(d) Investment profit or loss items.....	7,599,000	2.8	-1,666,000	-.6
Total.....	\$27,945,000	10.3	\$10,409,000	4.0
Other items affecting surplus				
(e) Dividends paid.....	-7,280,000		-10,390,000	
(f) Remittances.....	1,418,000		- 2,642,000	
(g) Changes in special reserve.....	-7,724,000		- 933,000	
(h) From shareholders..	2,500,000		0	
(i) Miscellaneous.....	916,000		700,000	
Total.....	-\$10,170,000		-\$13,265,000	
Net change in surplus.....	17,775,000		-2,856,000	

The results for the year 1929 both as regards underwriting and investments were disappointing. The underwriting gain of 1.5 per cent. of the premiums written during 1928 changed to an underwriting loss of 1.1 per cent. during 1929, or a change for the worse of 2.6 per cent.

Let us now attempt to analyze the cause of this change by discussing separately what effect, if any, each individual line of business has had upon the net aggregate results for the year. While the results by lines considered herewith are not for the same group of carriers, nevertheless, the information used, being in each case on a larger volume, clearly indicates the trend of the business.

First consider the accident line. According to the Casualty Experience Exhibit compiled by the National Bureau of Casualty & Surety Underwriters, the figures for the year 1928 showed a loss ratio of 44.2 per cent. with a margin of profit of 1.6 per cent. The figures compiled for 1929 show that the loss ratio has increased to 48.2 per cent., which means that if the expense ratio has been about the same as 1928, the small margin of profit that resulted in 1928 will have been turned into an underwriting loss for 1929. That the automobile is responsible to a large extent for this showing there is no question. Besides an unusually large number of fatalities, the automobile has been productive of the type of claims which require high reserves, the injuries are of a serious nature with a long dis-

ability. Fractured skulls, spines, hips and legs appear to be predominant. As an illustration:—About five years ago a claim was presented by an assured to a company that had a limited amount of accident business. The assured was hurt in an automobile accident, paralysis resulted, the company has been paying him the weekly indemnity all along, and judging from the outlook of the case, it looks as if they will have to pay him for the next twenty-five or thirty years. If death should result at the end of that period, the company will be liable also for the face value of the policy, owing to the fact that most of the commercial policies provide for payment of the principal sum in addition to the weekly indemnity if death results during the period of total disability. A few years ago most policies required that death should occur within 200 weeks, but due to competition, the companies have been steadily broadening their policies, this being one of the restrictions removed. Naturally, the question arises as to the adequacy of the present premium rates, these having remained practically the same during the last ten years. At any rate, the increasing automobile hazard precludes the possibility of granting double indemnity for this feature without a substantial and adequate premium. Another hazard which has entered into this business is the aeroplane. Some companies have been granting this coverage gratis and I am not commenting upon the evils of free accumulations, surgical, hospital and nurse coverage which have been steadily increased without additional premium. On top of all this, such evils as speed maniacs, malingerers aided by unscrupulous doctors, antagonistic courts and last but not least, the liquor evil, have all tended in the direction of increased loss ratio. The accident business, as at present conducted, does not permit a loss ratio such as was experienced for the year 1929, and this means that if the situation is to be improved either the premiums must increase or the benefits must be limited. It is worthy of note that on a premium volume of \$195,969,538, the margin of profit over a period of six years, 1923 to 1928 inclusive, was only .6 per cent.

Health insurance continues to be a losing proposition which means that either the carriers are not making use of the statistical information gathered under this coverage, or else they are not exercising sufficient care in the selection of risks.

The automobile liability line shows for stock carriers a loss in underwriting of 2.6 per cent. as compared with a gain of .3 per

cent. for 1928. This is disclosed in the summary of the Casualty Experience Exhibit compiled by the New York Insurance Department. This would be expected when it is recalled that the 10 per cent. merit rating endorsement became effective in 1929, its effect being an approximate reduction of 6 per cent. in total premium volume. Rates were also maintained at a low level in several important jurisdictions. It is too early to anticipate the results under the compulsory feature of the several acts recently passed, but it has been stated that the volume of premium developed under these latter laws has been disappointing, resulting in a considerable increase in the number of cars insured and exposed to risk, without a corresponding increase in premium volume, due, undoubtedly, to the writing of more business by the carriers under the low rated cars. The practice of writing automobile liability at increased limits is, of course, resulting in a gradual increase in the size of claims, and this has and will have its reflection in the loss ratio developed.

The auto property damage underwriting results for 1929 disclosed a gain of but 1.3 per cent. for stock insurance carriers as compared with a gain of 6.2 per cent. the previous year. Here, as in the automobile liability lines, the effect of merit rating has been acutely felt. Truly the margin of safety of 1 per cent. is small, especially in view of the recent increase in property damage limits from \$1,000.00 to \$5,000.00.

Automobile collision insurance has also changed from a gain of 1.9 per cent. in 1928 to a gain of but .2 per cent. in 1929. It is interesting to view the automobile lines as a whole for 1929 as follows for stock carriers:

	Premiums Earned	Losses Incurred	Expenses Incurred	Underwriting Gain
Automobile liability.....	\$150,184,917	\$82,957,820	\$71,165,895	-\$3,938,798
Auto property damage.....	51,775,813	23,821,728	27,270,046	684,039
Automobile collision.....	10,249,959	5,379,302	4,844,215	26,442
Total.....	\$212,210,689	\$112,158,850	\$103,280,156	-\$3,228,317

It will be seen that the stock carriers lost over three million dollars on the automobile business, or 1.5 per cent. of the earned premiums.

In order to study the situation in workmen's compensation insurance during 1929, let us examine the results disclosed by Schedule "P" for the group of carriers reported in the Spectator "Handy Chart" as of December 31, 1928 and December 31, 1929. This shows the following:—

Schedule "P"

	All years of issue brought down to		Difference— Experience Calendar Year 1928
	Dec. 31, 1929	Dec. 31, 1928	
Earned premiums.....	\$1,966,809,000	\$1,762,574,000	\$204,235,000
Comp. loss and loss exp. paid.....	1,222,425,000	1,082,217,000	140,208,000
Individual estimates.....	159,040,000	135,878,000	23,162,000
Incurred losses and loss exp.....	1,381,465,000	1,218,095,000	163,370,000
Loss ratio.....	70.2%	69.1%	80.0%

Assuming that the permissible loss ratio including claim expenses is 68 per cent., it is evident that the 1929 operations as a whole were far from favorable. A somewhat similar result is also disclosed by the stock insurance carriers shown in the Casualty Experience Exhibit prepared by the National Bureau of Casualty & Surety Underwriters:

	1929	1928
Losses incurred to earned premiums.....	68.3%	63.8%
Underwriting loss.....	11.2%	5.8%

The continued expansion of the use of machines in the manufacture and production of goods in all lines of endeavor making for a greater volume of goods produced per man power exposed has been one of the decisive factors in increasing accident frequency. This accounts largely for the increased loss cost during the year under workmen's compensation insurance.

Until rate making can be so modified as to include a factor which shall be sensitive to changing accident frequency conditions and some endeavor is made to forecast the future in this respect, so long will the rates for this form of coverage prove inadequate. The industrial depression commencing last fall will no doubt be reflected in the increase in loss ratio due to malingering usually experienced during these periods. So acute has the situation recently become that one large state fund felt the necessity to pass its dividend, and New Jersey has also warned its policyholders of an impending upward increase.

The miscellaneous liability line continues to show a reasonable profit, as do the mechanical lines.

The burglary loss ratio, as disclosed by a comparison of premiums written and losses paid during the years 1928 and 1929, shows only a slight increase and both years are favorable. During 1930, however, it is anticipated that conditions, particularly in the mercantile open stock coverage, will reflect the results of the industrial depression and a sharp increase in loss ratio is to be looked for.

The plate glass loss ratio, premiums written to losses paid, shows a marked increase in loss cost since 1928, i. e., from 36.4 per cent. to 41.8 per cent. This reflects to some extent the drastic reduction in rates effective during the latter part of 1929 and will continue to affect the 1930 business.

In the fidelity field, the increase in premium volume throughout the country as disclosed by the Handy Chart was slightly under \$500,000. The development of fidelity business is very slow and the increased premiums resulted not so much from new business as to the exchange, by assureds already carrying position and schedule forms, to the new blanket policies that got pretty well under way toward the middle of 1929. Of course, the rate reductions on Bankers and Brokers Blanket Bonds reflect a shrinkage that the new forms in the mercantile field nearly absorbed. The loss ratio developed under experience compiled by the National Bureau as disclosed by the Casualty Experience Exhibit shows an increase from 39.2 per cent. in 1928 to 47.8 per cent. in 1929 based on earned premiums and incurred losses. This is a startling increase and is undoubtedly due to financial conditions. The financial situation was generally kaleidoscopic, due to market conditions during the first nine months, and during the last quarter the financial situation was almost in a state of flux. The losses reported on blanket forms for Bankers and Brokers were more in the nature of mysterious disappearance and forgery than dishonesty on the part of those directly employed in the business.

In the surety field as a whole the increase in volume during 1929 reported in the Handy Chart was slightly above \$1,000,000. over the previous year. The increase in business was undoubtedly due to large projects such as subways, tunnels, bridges and dams, most of which were in the East, the sum total of which special projects exceeded in premiums the amount of the shrinkage that was

apparent through the falling off of ordinary construction. The loss ratio reported by the National Bureau shows also a large increase for 1929, the 1928 loss ratio having been 29.1 per cent. while that for 1929 was 42.7 per cent. No doubt the increased number and amount of surety losses were due to strained financial conditions and a virtual collapse of the real estate market about the middle of the year. In this connection the high rates paid for call money during the first nine months of 1929 attracted funds from industry and manufacture that ordinarily would have gone into building projects and which we hope will return to normal during the current summer.

It is a fact that losses under mortgage guarantees had a considerable effect on this loss ratio.

Even those carriers writing mainly fidelity and surety business showed a decided drop in underwriting profits, as is disclosed by an analysis of the statements of three of the largest carriers in the following exhibits:

	1928		1929	
Premiums written . . .	\$40,752,701		\$41,647,949	
Gain or loss during the year from				
(a) Underwriting . . .	2,666,331	6.5%	585,674	1.4%
(b) Underwriting profit and loss items	- 26,175	0	- 31,960	0
(c) Net interest . . .	4,081,153	10.0%	4,576,868	11.0%
(d) Investment profit and loss items	- 894,061	- 2.2%	- 2,081,919	- 5.0%
Total	\$5,827,248	14.3%	\$3,048,663	7.4%
Other items affecting surplus				
(e) Dividends paid . . .	-\$3,599,994		-\$4,959,636	
(f) Remittances . . .	0		0	
(g) Changes in special reserve . . .	- 195,206		- 1,560,550	
(h) From shareholders	0		3,000,089	
(i) Miscellaneous . . .	- 334,127		- 191,365	
Total	-\$4,129,327		-\$3,711,462	

An interesting study can be made of the results disclosed by groups of carriers according to premium volume. As regards underwriting results those in Group (A) writing under ten million per annum produced an increase in underwriting loss of 5.6 per cent. during 1929 as compared with 1928; Group (B) carriers with

written premiums between ten and twenty million while disclosing a gain, it was reduced by 1.9 per cent. during the year 1929; while the largest carriers in Group (C) went from a gain of 1.7 per cent. to a loss of .8 per cent., or a drop of 2.5 per cent.

Another interesting fact is that for this group of 32 carriers as a whole, the premium volume did not increase appreciably and that carriers in Group (A) increased their writings about 11 per cent., Group (B) increased but slightly, about $\frac{1}{2}$ per cent., while Group (C) lost 1.6 per cent. of their volume. Interest earnings relative to premiums written averaged about the same for all groups of carriers.

It will be noted that interest earnings remained relatively stationary, but that investment values as represented by the item of "Investment Profit & Loss," fluctuated from a gain in 1928 of 1.9 per cent. of the premiums written to a loss of 1.5 per cent. at the end of 1929, or a net adverse change of 3.4 per cent., due, of course, to the severe decrease in market values at the end of last year. The combined effect of an underwriting loss and a decrease in market values of securities was, of course, felt in the decrease in surplus at December 31, 1929, as compared with a large increase the previous year. Stock carriers as a whole taking underwriting profits and interest earnings together, barely earned their dividends during 1929.

While not attempting a forecast for 1930, I might say that it does not seem likely that an underwriting profit will accrue during the coming year. It would seem, however, on the other hand, that it is not unreasonable to assume that security values will show at least some appreciation during 1930.

Taking all of these facts into consideration, it might be stated that there is no room for expansion in expenses paid by the carriers and only careful underwriting will produce a credit on the right side of the ledger.

CREDIBILITY AND AUTOMOBILE RATE MAKING

BY

ROY A. WHEELER

Recent developments in automobile rate making have again raised the question of credibility, or reliability of experience. Specifically, the question is, how large an exposure is necessary to give a dependable pure premium? How reliable is experience in the present rating territories? How shall this reliability be measured? The subject of reliable experience needs no introduction to the members of this Society. Beginning with the first meeting in 1914, various phases of the problem have been covered almost every year since that time. This paper has no claim to originality of subject matter and theory, but merely proposes certain tests in the application of the credibility formula as it has developed.

There are several reasons why the whole question of credibility should be reconsidered at this time. In the first place greater attention is being given to the fairness and adequacy of rates by territories. Rate supervision by various state departments of insurance has developed to the point where it is necessary to make rates on a more limited territorial basis than formerly. The increase of 200 per cent. in the number of cars in ten years has also been a contributing factor.

The problem of credibility applied to territories is particularly important in Massachusetts. So long as rates were based upon experience of large territories, credibility was a minor question but the application of the present credibility formula to territories with small exposure requires a careful analysis of the theoretical basis upon which such fine territorial distinctions can be drawn.

DEVELOPMENT OF PRESENT THEORY

One of the first discussions of the reliability of exposure was a paper by Professor Albert H. Mowbray, in 1914, entitled "How Extensive a Payroll Exposure is Necessary to Give a Dependable Pure Premium?" (*Proceedings*, Vol. I, page 24). The theory discussed in this article, which dealt exclusively with workmen's compensation, has been followed by almost every subsequent writer, both with respect to compensation and to other lines.

A dependable pure premium is defined as,

“— one for which the probability is high that it does not differ from the absolute (true) pure premium by more than an arbitrary limit which may be selected in view of the other factors referred to.”

Following this definition, a method of computing the required volume of exposure is developed from the elementary probabilities. The underlying theory and the method described have been used extensively and a brief statement of both will clarify later discussion.

The empirical probability of an accident in any given territory is the claim frequency obtained by dividing the total number of claims by the number of car years' exposure. This empirical probability is not necessarily the same as the true mathematical probability but with a large exposure the two will be approximately the same. If p equals the probability of an accident and q equals $1 - p$, or the probability of the non-occurrence of an accident, the probability of obtaining exactly np accidents with an exposure of n cars is the maximum term in the expansion of the binomial expression $(p + q)^n$. By allowing a slight variation K above and below the expected claim frequency p , the total probability of the number of accidents between $pn - pk$ and $pn + pk$ may be obtained by adding the terms of the above binomial expression between the indicated limits.

By following the demonstration in Bowley's "Elements of Statistics", page 275 *et seq.*, Professor Mowbray shows that this summation approximates very closely to the integral of the normal curve of error. This approximation holds only when the values of p and q are neither very small and when there is a large number of items.

By taking the integral for a portion of the normal curve on either side of the most probable value p we obtain a probability of less than one that the variation from the most probable value will lie within the range of the integral. For instance, if the most probable occurrence of an accident is 5 per 100 cars we may calculate the probability that the accident frequency will not vary more than 5 or 10 per cent. from this rate for any given number of cars. By reversing this procedure and assuming any given probability integral and a fixed allowable departure from the most probable accident rate, the required exposure necessary to conform to this

standard can be computed. Following out this procedure Professor Mowbray demonstrates the calculation of a required exposure for certain probability integrals and certain percentages of allowable variation. From this demonstration it can be shown that the required exposure may be calculated according to the following formula:

$$N = \left(\frac{x}{K} \right)^2 \times \frac{2q}{p} \text{ in which}$$

N is the required exposure

K is the allowable departure from the expected probability of occurrence

q is the probability of non-occurrence of an accident, or $1 - p$

p is the probability of occurrence as expressed as a decimal

x is the abscissa in the normal curve corresponding to the adopted probability integral obtained from any ordinary table of functions of the normal curve.

The above method has been followed in most discussions since the publication of Professor Mowbray's paper. The first use of this method in connection with automobile rating territories was described in a paper entitled "Automobile Rate Making" (*Proceedings*, Vol. XI, page 276), by Mr. H. P. Stellwagen before this Society, in 1925. In this paper the method adopted followed Professor Mowbray's formula using an expected accident frequency of 5 per cent. The standard used for a credibility of unity was a departure of not more than 5 per cent. from the expected accident frequency in 99 cases out of 100. The minimum exposure necessary to give the required standard was calculated from this formula to be 50,000 car years. It can be shown from the above formula that the reliability of exposure varies inversely as the root of the exposure. Credibility for an exposure of less than 50,000 car years was determined from the ratio of the square root of the smaller number to the square root of 50,000, or $Z = \sqrt{\frac{n}{50,000}}$. This has been the accepted credibility standard since 1924.

The principal limitation in the application of this standard of credibility was that it made no allowance for variation in claim frequency. In Professor Mowbray's original article he states that the exposure necessary to give a dependable pure premium varies with three things: accident frequency, the percentage of allowable departure from expected value, and the probability integral

adopted. He also shows that with the same probability integral and constant accident frequency, the volume of exposure varies inversely as the square of the allowable variation. With a fixed value for the allowable departure the required exposure varies inversely with the accident frequency. With a given accident frequency and a fixed value for the allowable departure the exposure varies directly with the probability integral and in a ratio greater than the square.

EXPERIENCE RATING APPLIED TO TERRITORIES

Credibility in automobile rate making, based upon both exposure and claim frequency, was discussed in a paper read before this Society in 1929, by Mr. Harmon T. Barber, entitled "A Suggested Method for Developing Automobile Rates" (*Proceedings*, Vol. XV, page 191). In this paper it was pointed out that weight should be given to the variation in claim frequency, in measuring the reliability of experience. A method was also proposed of experience rating territories with a credibility of less than one, the credibility to be calculated from the formula $Z = \sqrt{\frac{n}{c}}$ where n is the exposure in a territory to be rated, and c is the exposure necessary to give perfect credibility with the accident frequency of the smaller territory.

This method was also suggested in the determination of territories for Massachusetts last year as shown by the following quotation from a memorandum to the Governing Committee of the Massachusetts Automobile Rating and Accident Prevention Bureau:

"The Committee of Four on Statistics recommends the adoption of the principle of experience rating whereby the pure premium in a given town or group of towns is determined, through the use of proper credibility criteria, by comparison to the town or group of towns pure premium with the average pure premium for the territory in which the town or group of towns is located."

Following out this recommendation an automobile credibility table was prepared in which the credibility expressed in per cent. was shown for various exposures varying with claim frequency. The credibility standard adopted as unity was that the indicated pure premium should not vary more than 5 per cent. in 99 cases

out of 100. It was further proposed by the Committee that rates be based upon broad territories which would have a credibility of unity according to the above standard, but that rates for individual towns should be a weighted average between the territory rate and the town's own experience, the weight given to the town's experience to be its credibility as determined by the table. This proposal was not adopted but it is still a live issue. At several of the legislative hearings during the past winter similar proposals were made by laymen entirely unfamiliar with the principle of experience rating.

THEORETICAL LIMITATIONS OF THE CREDIBILITY FORMULA

In view of the growing use of credibility criteria as previously noted, it seems desirable to analyze the formulae upon which these criteria are based both from a mathematical standpoint and from the standpoint of practical results achieved by their use. In the first place the integral upon which credibility is based is an approximation formula. It applies only where there are large numbers of cases involved and in which the probability of success and the probability of failure are neither very small. If the accident frequency is small then the formula fails to give an accurate measure of the credibility of a given exposure. It is questionable whether the credibility is measured accurately where the accident frequency is less than 5 per cent.

A second limitation on the use of the credibility formula is that in theory it applies only to statistical series similar to the series obtained by expanding the binomial $(p + q)^n$. In other words, the integral is applicable only when the series is a so-called normal series in that it conforms closely to the normal curve of error. This was noted by Mr. Arne Fisher in a paper before this Society entitled "Outline of Method for Determining Basic Pure Premiums" (*Proceedings*, Vol. II, page 394). In this paper he pointed out that most social insurance series are not normal or Bernoulli series. The criticism applies equally to automobile insurance series. The underlying assumption in a normal, or Bernoulli, series is that conditions are absolutely uniform for each trial or, in other words, if we attempt to apply the Bernoulli theory to automobile series we must assume that conditions making for automobile accidents are exactly similar from year to year, from

town to town and from season to season. Obviously, this assumption is incorrect. Accidents are caused by a variety of factors, very few of which are constant from year to year or from town to town. To mention a few of the more variable influences, accidents will vary with the number of cars on the road, street and highway conditions, weather conditions, traffic regulations and mechanical changes in automobile construction. There is also the question of moral hazard which, while often discussed, has never been defined. I refer to the difference in mental viewpoint and moral standards between drivers which will be reflected in part by their accident experience, as well as the difference in "claim consciousness" found in various communities.

All of these factors make for changes in accident frequency and the application of a standard of credibility based upon the assumption of uniform conditions is, at best, an approximation. Such a standard is and has been of immense practical value but it should be recognized that it does not include changes due to factors other than pure chance. Variation in automobile accidents is certainly the product of more than chance, as will be shown later in an analysis of automobile experience in certain Massachusetts cities and towns.

A third and perhaps more serious objection to the strict adherence to the present credibility standard is that it does not necessarily apply to pure premiums. Most writers have assumed that variation in pure premiums and variation in claim frequency are one and the same thing. In the original article of Professor Mowbray, accident frequency is used in the calculation of a credibility standard and the result is applied to pure premiums. The same method was followed in the use of the formula by Mr. Stellwagen in 1925, by Mr. Barber last year, and by the Massachusetts Automobile Rating and Accident Prevention Bureau.

Pure premium as determined by formula $\frac{L}{n}$ where L equals incurred losses and n equals number of cars, is the joint product of the number of claims and of claim cost. From a theoretical standpoint we have probability of variation in claim frequency and probability of variation in claim cost. Therefore, the probability of variation in pure premium is a compound probability and it is to be expected that variation in pure premium will be noticeably greater than the variation in either claim cost or claim frequency.

In establishing a standard of credibility based entirely upon claim frequency, the variable cost per claim has been omitted from consideration. That this factor is an important one can be demonstrated by comparing variations in claim frequency, in pure premium and in claim cost. The experience of 150 Massachusetts cities and towns for the years 1927 and 1928 has been used for this analysis. Original reportings have been used in each case in order to make the figures as nearly comparable as possible.

CREDIBILITY IN MASSACHUSETTS CITIES AND TOWNS

The relative stability of claim frequency, claim cost and pure premium is shown by the statewide averages from the first reporting for each year.

	Claim Frequency	Claim Cost	Pure Premiums
1927.....	7.9	\$240	\$18.99
1928.....	7.9	244	19.35

The variation in pure premium of 36 cents or nearly 2 per cent. is entirely due to the increase in claim cost. The probability of such a departure in claim frequency 99 times in 100 requires an exposure of 190,000 cars, or forty per cent. of the statewide exposure of 420,000 cars. Using the total exposure, the probability is .99 that the variation would not be more than 1.3 per cent. from the indicated average of 7.9.

The relative variation in claim frequency, claim cost and pure premium is shown in the total columns of Tables I, II and III. These tables are simple frequency tables showing the number of cities and towns that have different percentage variations from the two year average, further grouped according to volume of exposure.

Claim frequency is less variable than either claim cost or pure premium. This is shown by the extreme variation of more than 90 per cent. for both as contrasted with a maximum of less than 60 per cent. for claim frequency. More cities also show low variations in claim frequency than in the other factors. The percentage differences in variation are shown in Table IV and graphically on Chart I. An illustration will suffice to demonstrate the relative stability of each variable. Taking a departure from the two year

average of 20 per cent., the percentage of total cities and towns above or below this departure is as follows:

	20% or less	Over 20%
Claim Frequency.....	86	14
Claim Cost.....	68	32
Pure Premium.....	64	36

The chart shows the cumulative percentage of cities and towns with departures equal to or less than the values on the horizontal scale. The curves for claim cost and pure premium follow each other very closely indicating the necessity of giving weight to the cost factor in a credibility formula. The present formula, based entirely upon claim frequency, cannot give the results expected of it in view of the indicated importance of claim cost.

In passing it should be noted that the frequency distributions based upon departures from the two year average are not normal distributions, particularly with respect to individual exposure groups. This was to be expected from the discussion of the theoretical assumptions underlying a normal distribution.

The relationship between variation in claim frequency, claim cost and pure premium can be shown in still another way. Tables VI and VII show the average and median percentage deviations from the two year average for each factor for cities and towns grouped by volume of exposure. These figures show that in general the percentage variation in cities and towns decreased with an increase in exposure. The median figures shown in Table VII are perhaps a better measure than the average deviations in Table VI, in that they are more typical of each group. The relative effect of claim cost, and claim frequency on pure premium is shown by the ratios of the median deviations. For cities and towns with more than 1,000 car years exposure the median deviation of pure premium averages less than the median deviation of claim cost but from 13 per cent. to 83 per cent. more than of claim frequency.

One further measure of this relationship is the relative dispersion in each series, the measure of dispersion being the standard deviation in Tables V and VIII. The significance of this measure is that if the distributions are not too badly skewed, the standard deviation shows the percentage departure from the mean or 0 necessary to include 68 per cent. of the cities and towns. Using the ratios in the two right hand columns of Table VIII, the dispersion in pure premium varies from 40 per cent. to 80 per cent.

more than similar dispersion for claim frequency, while for claim cost it is from 8 per cent. to 24 per cent. higher.

In general the variation on all factors is in inverse ratio to the volume of exposure. However, this does not hold, for individual size groups of cities and towns. For instance, 13 towns with an exposure of from 3,000 to 5,000 car years show relatively less variation than 12 cities and towns with from 5,000 to 10,000 car years exposure. The difference is too marked to be attributable entirely to chance. The present investigation has not revealed causes for such differences but they are sufficient to indicate the importance of factors other than chance which, in turn, has an effect upon the credibility standard used.

A final test may be made on the reliability of the credibility formula by comparing the actual variation with the expected variation computed from the formula giving due weight both to volume of exposure and average claim frequency of the group. This is shown in Table V and graphically in Chart III. The standard deviation, or measure of dispersion, has been computed for variations in pure premium and claim frequency giving due weight to the volume of exposure. A smooth curve has been fitted to the points typical of each class. The results compare with the data of Table VIII which were computed for larger classes. Using the median exposure and claim frequency an expected percentage departure has been computed for each group, using the accepted method of computation with the exception that the probability of .68 was used instead of .99. This probability was used in order to make these data comparable with the standard deviation, or measure of dispersion. From Chart III it will be noted that for the smaller size groups the expected departure and the actual departure are fairly comparable. For the cities and towns which have more than 5,000 car years exposure, the actual variation is noticeably greater than the expected variation. This would indicate that the credibility formula is less reliable where it is most likely to be used, that is for the larger cities and towns.

PROPOSED CHANGES IN THE CREDIBILITY FORMULA

Our analysis has now proceeded to the point where we may draw preliminary conclusions. It has been shown that the theory underlying the present credibility formula is not strictly applicable to automobile series. The use of the probability integral for a

moderately skewed type of frequency distribution similar to actual automobile series would improve results but would require considerably more data than are now available. Until such curve types can be determined accurately the present standard will have to be used, with due allowance for its limitations.

It has also been shown that the present credibility formula cannot be applied strictly to pure premiums when based upon claim frequency. By a separate analysis of variation in claim frequency and claim cost, it has been shown that changes in pure premium are more likely to be caused by changes in claim cost than in claim frequency. Variations in claim frequency are also more likely to follow the normal curve than variations in claim cost and pure premium. These results demonstrate the need for a standard of credibility which will give weight to claim cost and to claim frequency in order to conform more closely to actual conditions.

One method of developing such a standard is to have separate credibility requirements for claim cost and claim frequency. A credibility formula for claim cost can be developed from a frequency distribution of claims by size on a statewide basis. Until such an analysis can be made it is suggested that the credibility for claim cost be based upon a high standard applied to claim frequency, while the credibility for claim frequency will be based upon lower requirements. Differences in the series, previously noted, indicate the necessity for different standards.

The present standard on a claim frequency basis of only 5 per cent. variation in 99 per cent. of the cases appears unusually high and it is possible that it was adopted with a view toward a more practical standard, when applied to pure premium. A slight change in the probability integral and in the allowable variation makes considerable difference in the required exposure as shown by the following figures, based upon a constant claim frequency of 5 per cent.

Probability	Allowable Departure Not More Than	
	5 per cent.	10 per cent.
.99	50,427	12,607
.98	41,133	10,283
.95	29,197	7,299

In view of the greater stability of claim frequency to the extent of nearly twice that of pure premium, it would appear that the

standard of unit credibility now in use for pure premiums could safely be reduced to approximately one-fourth the present requirement. In other words, a 99% probability of a 10% departure. On the other hand, since the claim cost shows about the same degree of stability as pure premiums the present standard of 5% variation in 99% of the cases could, therefore, be retained.

Under this plan the exposure requirement for stability of claim cost would be the basis of determining broad territories, while the requirements for claim frequency would determine the credibility of the individual city or town. The pure premium in any city with a *unit credibility* for claim frequency would be determined from the

formula $P = \frac{Cf}{100}$ where

P = pure premium.

C = average claim cost for the territory.

f = claim frequency in the city to be rated.

For towns in which the credibility of claim frequency is *less than one*, the pure premium will be calculated from the weighted average claim frequency between the town and the territory, the credibility factor being the weight given to the town.

ELIMINATION OF CLAIM COST

Rate making would be materially improved if territories could be determined more nearly upon the probability of variation in their claim frequency. A study of the distribution of liability claims by size groups suggests another method by which this may be accomplished. The variation in size of claim is one of the most important factors affecting the average claim cost and as a consequence the elimination of a small percentage of the excess claims would materially reduce variations in claim cost.

An analysis of the experience of the Liberty Mutual Insurance Company in Massachusetts for the years 1927 and 1928 shows a wide difference in pure premium for certain classes of cars. Investigation shows that this difference is due almost entirely to the change in number of claims costing \$1,000 or more. For instance, the pure premium on Y cars increased from \$22.65 in 1927 to \$34.08 in 1928. There was a marked increase in claims costing more than \$1,000 in this group. At the same time the pure premium on Commercial cars dropped from \$27.75 in 1927 to \$21.09 in 1928, with a decrease in claims costing more than \$1,000. The average

annual exposure was 3,000 car years for the commercial group and 2,400 car years for the Y group. An elimination of the excess claims gives the following pure premiums, illustrated graphically on Chart II:

	Y Cars	Commercial Cars
1927.....	\$12.26	\$14.47
1928.....	14.72	13.74

The variation from year to year is still noticeable and yet the marked increase in stability indicates the desirability of using some such method in establishing rates for territories with relatively small exposure. For the determination of the pure premium arising out of cases costing less than \$1,000, a credibility standard for claim frequency would be followed as at the present time with the suggested increase in allowable variation to 10 per cent. The claims costing more than \$1,000 would be distributed on a wide territorial basis either uniformly or to each town in proportion to losses on claims under \$1,000. The final pure premium of the individual town under this plan would be based upon its own experience on claims of less than \$1,000, provided the credibility was unity under the standard adopted for claim frequency and an additional pure premium would be added to cover the average excess loss on whatever basis might be adopted. This plan is comparable to the rating of compensation insurance where pure premiums are determined separately for serious and non-serious losses and is, possibly, the more feasible of the two plans.

The adoption of either one of the above methods would make it possible to derive a better gauge of the hazard from the experience of the individual city or town and therefore, reflect more accurately any measures which might be taken or fail to be taken by such city or town to provide adequate traffic regulation, safety education and other safety measures.*

*Acknowledgment is rendered to Mr. Hubert W. Yount of the Actuarial Department of the Liberty Mutual Insurance Company, for his conduct of the investigation, the results of which are contained in this paper.

TABLE I
RELATION BETWEEN EXPOSURE AND STABILITY OF
CLAIM FREQUENCY

150 Massachusetts Cities and Towns, 1927-1928

Percentage Deviation from 2 Year Average Claim Frequency	Number of Car Years Exposure									Total
	500- 1000	1001- 1500	1501- 2000	2001- 3000	3001- 5000	5001- 10000	10001- 15000	15001- 25000	25001- 50000	
50.1-60.0	1	..	..	..	..	..	..	..	..	1
40.1-50.0	3	..	..	..	..	..	..	..	..	3
30.1-40.0	5	1	..	..	..	..	..	..	..	6
25.1-30.0	4	1	..	..	..	..	..	..	..	5
20.1-25.0	2	2	1	1	..	..	..	..	..	6
17.6-20.0	7	2	..	1	..	..	..	..	..	10
15.1-17.5	3	..	1	..	..	..	..	..	..	4
12.6-15.0	5	1	3	..	..	..	..	..	..	9
10.1-12.5	6	3	..	2	..	2	..	..	..	13
7.6-10.0	2	3	2	2	2	..	1	..	..	12
5.1-7.5	7	2	3	2	1	3	1	1	..	20
2.6-5.0	7	4	6	3	6	3	1	..	..	30
0-2.5	5	8	3	4	4	4	1	1	1	31
Total	57	27	19	15	13	12	4	2	1	150

TABLE 2
RELATION BETWEEN EXPOSURE AND STABILITY OF
CLAIM COST

150 Massachusetts Cities and Towns, 1927-1928

Percentage Deviation from 2 Year Average Claim Cost	Number of Car Years Exposure									Total
	500- 1000	1001- 1500	1501- 2000	2001- 3000	3001- 5000	5001- 10000	10001- 15000	15001- 25000	25001- 50000	
80.1-90.0	1	..	..	..	..	..	..	..	..	1
70.1-80.0	0	..	..	..	..	..	..	..	..	0
60.1-70.0	4	..	..	..	..	..	..	..	..	4
50.1-60.0	4	..	..	..	..	..	..	..	..	4
40.1-50.0	7	1	..	..	..	..	..	..	..	8
30.1-40.0	8	3	1	1	..	..	..	..	..	13
25.1-30.0	2	1	1	3	..	..	..	..	..	7
20.1-25.0	7	1	3	0	..	..	..	..	..	11
17.6-20.0	1	3	0	0	1	..	..	..	..	5
15.1-17.5	3	3	1	2	1	..	..	..	..	10
12.6-15.0	2	2	0	2	3	..	..	..	..	9
10.1-12.5	1	1	3	0	1	1	..	..	..	7
7.6-10.0	4	6	3	0	3	3	1	..	..	20
5.1-7.5	5	1	3	3	0	3	2	1	..	18
2.6-5.0	5	2	2	3	2	4	1	1	..	20
0-2.5	3	3	2	1	2	1	0	0	1	13
Total	57	27	19	15	13	12	4	2	1	150

TABLE 3
RELATION BETWEEN EXPOSURE AND STABILITY OF
PURE PREMIUM

150 Massachusetts Cities and Towns, 1927-1928

Percentage Deviation from 2 Year Average Pure Premium	Number of Car Years Exposure									Total
	500-1000	1001-1500	1501-2000	2001-3000	3001-5000	5001-10000	10001-15000	15001-25000	25001-50000	
90.1-100.0	1	..	..	..	..	..	..	..	..	1
80.1- 90.0	1	..	..	..	..	..	..	..	..	1
70.1- 80.0	2	..	..	..	..	..	..	..	..	2
60.1- 70.0	1	..	..	..	..	..	..	..	..	1
50.1- 60.0	5	..	..	..	..	..	..	..	..	5
40.1- 50.0	5	3	..	..	..	..	..	..	..	8
30.1- 40.0	7	3	3	1	..	..	..	..	..	14
25.1- 30.0	5	2	1	2	..	..	..	..	..	10
20.1- 25.0	6	4	0	0	1	1	..	..	..	12
17.6- 20.0	2	0	1	3	0	..	..	..	..	6
15.1- 17.5	4	1	2	0	2	..	..	..	..	9
12.6- 15.0	3	2	1	1	1	..	1	..	..	9
10.1- 12.5	4	1	2	1	2	..	..	..	..	10
7.6- 10.0	3	3	4	0	0	2	..	..	..	12
5.1- 7.5	1	2	2	0	0	4	..	1	..	10
2.6- 5.0	3	5	2	3	4	4	2	1	1	25
0- 2.5	4	1	1	4	3	1	1	..	0	15
Total	57	27	19	15	13	12	4	2	1	150

TABLE 4
COMPARISON OF VARIATION IN CLAIM FREQUENCY, CLAIM
COST AND PURE PREMIUM

Percentage of Total Cities and Towns Having a Departure Equal to or Below Values Shown

% Deviation from 2 Year Average	Claim Frequency		Claim Cost		Pure Premium	
	% of Total	% Cumulative	% of Total	% Cumulative	% of Total	% Cumulative
0- 5	40.7	40.7	22.0	22.0	26.6	26.6
6- 10	21.3	62.0	25.3	47.3	14.7	41.3
11- 15	14.7	76.7	10.7	58.0	12.7	54.0
16- 20	9.3	86.0	10.0	68.0	10.0	64.0
21- 25	4.0	90.0	7.3	75.3	7.9	71.9
26- 30	3.3	93.3	4.7	80.0	6.7	78.6
31- 35	2.0	95.3	4.7	84.7	4.6	83.2
36- 40	2.0	97.3	4.0	88.7	4.7	87.9
41- 45	1.3	98.6	2.7	91.4	2.7	90.6
46- 50	.7	99.3	2.7	94.1	2.7	93.3
51- 55	.7	100.0	1.3	95.4	2.0	95.3
56- 60	....	....	1.3	96.7	1.2	96.5
61- 65	....	....	1.3	98.0	.7	97.2
66- 70	....	....	1.3	99.3	0	97.2
71- 75	....	....	0	99.3	.7	97.9
76- 80	....	....	0	99.3	.7	98.6
81- 85	....	....	0	99.3	.7	99.3
86- 90	....	....	.7	100.0	0	99.3
96-100	....	....	....	....	.7	100.0

TABLE 5
COMPARATIVE DISPERSION OF VARIATION IN CLAIM FREQUENCY, CLAIM COST & PURE PREMIUM*
150 Massachusetts Cities and Towns

Exposure Groups No. of Car Years	Group Exposure in 1927 Car Years	No. of Cities and Towns in Group	Group Median Ex- posure	Group Median Claim Frequency	Dispersion as Percentage Departure from 2-Year Average					**Computed Dispersion Theoret- ical
					Claim Cost Un- weighted	Claim Frequency		Pure Premium		
						Weighted	Un- weighted	Weighted	Un- weighted	
500- 1,000	38,634	57	700	4.0	34.4	20.5	22.0	34.7	36.4	18.6
1,000- 2,000	59,536	46	1,400	5.0	17.7	12.2	11.3	22.1	21.2	11.7
2,000- 3,000	42,095	15	2,300	6.0	17.4	9.3	9.4	15.8	16.7	8.3
3,000- 5,000	53,005	13	3,600	6.5	11.0	4.9	4.5	10.3	10.9	6.3
5,000-10,000	87,006	12	7,000	8.0	6.6	5.6	5.7	7.6	8.5	4.1
10,000-20,000 (1)	82,261	6	11,000	7.0	6.1	5.3	4.6	6.4	6.7	3.5

* Dispersion is measured by standard deviation from zero as the mean.

**Theoretical Dispersion is computed by formula from the median exposure and claim frequency in each group and indicates the approximate theoretical variation in claim frequency necessary to include 68% of the cities and towns in each group.

(1) Boston omitted.

TABLE 6
 AVERAGE PERCENTAGE DEVIATION FOR PURE PREMIUM,
 CLAIM COST AND CLAIM FREQUENCY*
 Massachusetts Automobile Experience, 1927 and 1928

Number of Car Years	Number of Cities and Towns	a. Pure Premium %	b. Claim Cost %	c. Claim Frequency %	Ratios	
					a/b	a/c
Over 500	150	18.9	15.9	10.7	1.18	1.77
Over 1000	93	12.8	11.6	6.9	1.10	1.86
Over 3000	32	7.1	7.3	4.3	.98	1.65
Over 5000	19	6.2	5.7	4.5	1.09	1.38
Over 10000	7	5.2	5.2	4.1	1.00	1.27

*Percentages are unweighted for variation in exposure.
 See Tables 1, 2 and 3.

TABLE 7
 MEDIAN PERCENTAGE DEVIATION FOR PURE PREMIUM,
 CLAIM COST AND CLAIM FREQUENCY*
 Massachusetts Automobile Experience, 1927 and 1928

Number of Car Years	Number of Cities and Towns	a. Pure Premium %	b. Claim Cost %	c. Claim Frequency %	Ratios	
					a/b	a/c
Over 500	150	13.4	11.1	6.9	1.21	1.94
Over 1000	93	8.8	8.9	4.8	.99	1.83
Over 3000	32	4.9	6.9	3.9	.71	1.25
Over 5000	19	5.0	5.4	4.4	.92	1.13
Over 10000	7	4.4	5.8	3.8	.76	1.16

*The median as used here is the middle sized deviation without regard to exposure.

TABLE 8
DISPERSION OF PERCENTAGE VARIATION IN PURE PREMIUM,
CLAIM COST AND CLAIM FREQUENCY
Massachusetts Automobile Experience, 1927 and 1928

Number of Car Years	Number of Cities and Towns	Dispersion *D			Ratios	
		a. Pure Premium %	b. Claim Cost %	c. Claim Frequency %	a/b	a/c
Over 500	150	26.4	24.3	14.7	1.09	1.79
Over 1000	93	17.2	15.0	9.6	1.15	1.80
Over 3000	32	9.2	8.5	5.2	1.08	1.77
Over 5000	19	7.8	6.3	5.6	1.24	1.39

*Dispersion as used here measures the percentage variation from the two year average necessary to include 68 per cent. of the cities and towns if the distribution of variation from the average follows the normal curve of error. Each city or town has been considered as a unit without regard to exposure. See Tables 1, 2 and 3.

$$D = \sqrt{\frac{\sum f d^2}{N}} \text{ where } d \text{ is the percentage deviation.}$$

f is the number of cities and towns within each group.

N is the total number of cities and towns.

CHART I

COMPARISON OF VARIATION IN CLAIM FREQUENCY, CLAIM COST AND PURE PREMIUM
Cumulative Frequency Curves showing % of Total Cities and Towns having a Departure Equal
to or Below Values Shown

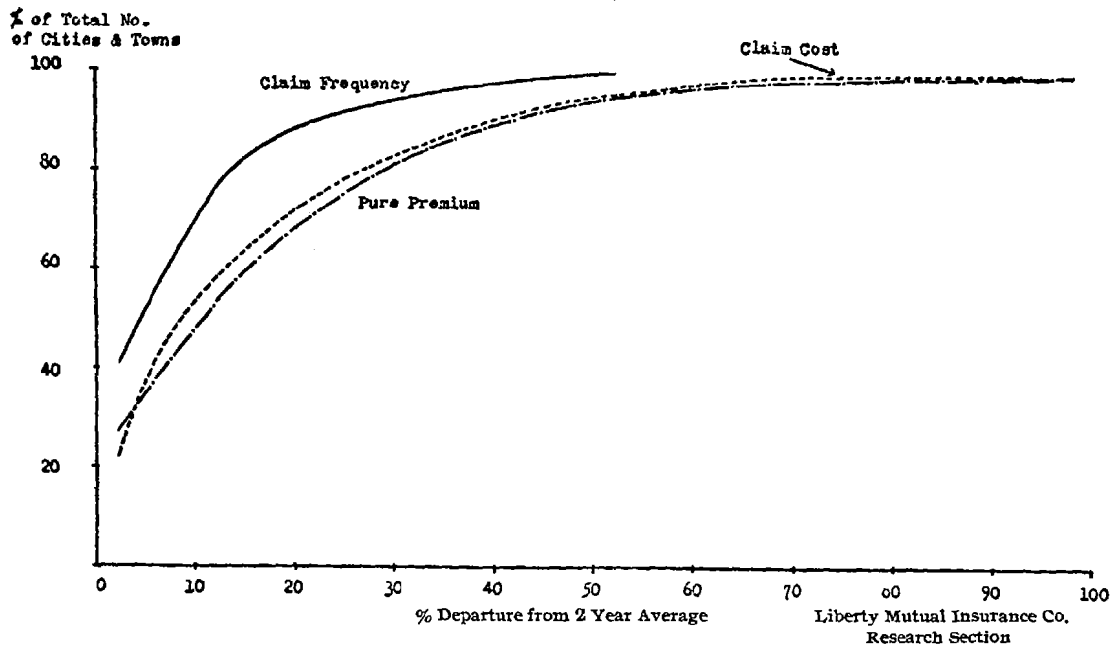
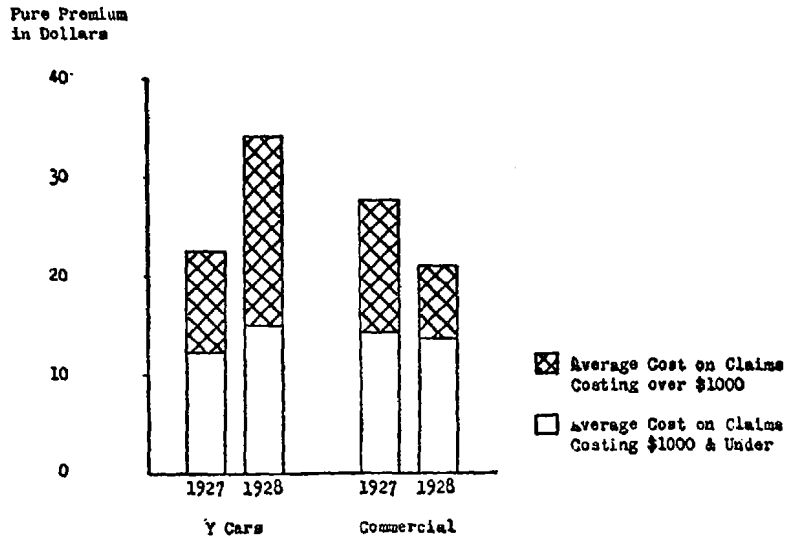


CHART II

RELATIVE STABILITY OF AUTOMOBILE PURE PREMIUMS
 Liberty Mutual Experience in Massachusetts 1927-1928



Liberty Mutual Insurance Co.
 Research Section

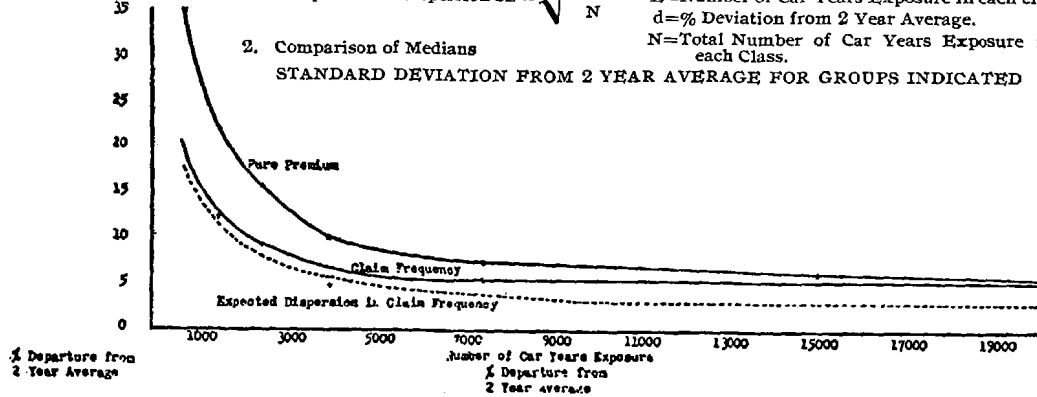
CHART III

RELATION BETWEEN VARIATION IN CLAIM FREQUENCY AND PURE PREMIUM

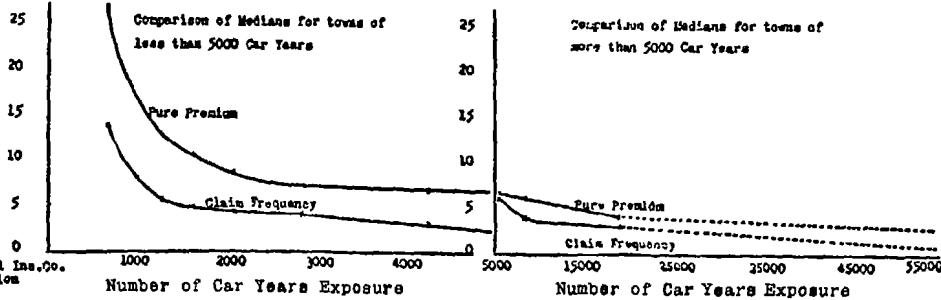
% Deviation from
2 Year Average

1. Comparison of Dispersion $SD = \sqrt{\frac{\sum E d^2}{N}}$ SD=Standard Deviation.
E=Number of Car Years Exposure in each city
d=% Deviation from 2 Year Average.
2. Comparison of Medians
N=Total Number of Car Years Exposure in each Class.

STANDARD DEVIATION FROM 2 YEAR AVERAGE FOR GROUPS INDICATED



% Departure from
2 Year Average



Liberty Mutual Ins. Co.
Research Section

STATISTICAL METHODS FOR CASUALTY COMPANIES
BY USE OF THE EIGHTY COLUMN
HOLLERITH SYSTEM

BY

NORTON E. MASTERSON

INTRODUCTION

The basic procedure in a casualty statistical department consists primarily of the recording, tabulation, and analysis of actuarial and company statistics in accordance with ratemaking bureau and company statistical coding plans.

It is the purpose of this paper to describe some of the standard as well as unusual methods of recording and tabulating casualty insurance ratemaking and allied statistics with special reference to the actuarial bureau and insurance department experience calls or requests for primary ratemaking data and with special reference to the use of the eighty column Hollerith card.

Consistent with this expressed purpose the scope has been necessarily confined to an outline of the requirements set forth in bureau calls and their compilation by the use of the eighty column Hollerith system. It is presumed that those to whom this paper may be of interest are familiar with the forty-five column Hollerith system.

EIGHTY COLUMN HOLLERITH SYSTEM

The important change in the eighty column Hollerith system as compared with the forty-five column system is found in the increased capacity of the new system. The economical utilization of this added capacity is emphasized in this paper.

The size of the punch card is the same— $3\frac{1}{4}''$ x $7\frac{3}{8}''$ —the added capacity having been accomplished by providing for a rectangular contact hole instead of a circular hole. The minimum space between two consecutive horizontal holes is the same as on the forty-five column card.

For casualty statistical work the new card system possesses several advantages. The increased capacity, besides eliminating

double punching, can be utilized to great advantage in the primary Hollerith recording of multi-coverage policies by punching two or three coverages on one card. In addition, the eighty column card is very practical for recording combined annual statement accounting and actuarial experience data. A sizeable saving is realized in punching, verifying, and tabulating time and in filing space and equipment. The eighty column card also permits the designing of loss cards which are very complete as to reference data, reserve test data, and combination annual statement and statistical data.

Contrary to a natural first assumption the compactness of the punched holes on the eighty column card results in an increased rather than a decreased degree of accuracy and efficiency in the mechanical functioning of the machine units. The verifying unit readily detects misalignment in the punching operation. A more accurate alignment of the punched holes and the fact that the insulation between the contact holes is the same give the eighty column card a higher degree of mechanical accuracy.

There are two methods of making a complete change-over from the forty-five column system to the eighty column system. Departments with large installations can retain both types of equipment during the transition period. Where this is impracticable, especially in the case of small installations, the change-over can be economically accomplished by tabulating all forty-five column cards necessary for future data before releasing the forty-five column machines, and punching such tabulated data on eighty column master cards.

The fact that the statistical work of casualty companies is increasing both as to bureau requirements and as to the requirements of company executives makes the eighty column card system a convenient adoption to permit of future expansion in statistical programs.

COMPLEMENT SYSTEM

The complement method of recording cancelled premiums and credits to losses involves the punching of the amount fields in complement figures. This method eliminates a large amount of clerical work when net tabulations are desired. The cards illustrated in this paper have all been designed to take care of complement punching.

Certain progress has been made in the development of a tabulating machine which will perform direct subtraction. The perfection of the direct subtraction principle in the tabulating machine will provide a more simple method of securing net tabulated figures as compared with the complement method.

SOURCES OF STATISTICAL DATA

The company records from which the coding and Hollerith punching is done for the recording of premiums (and exposures), losses, allocated loss expenses, and outstanding losses are of various forms.

Premium transactions other than audits are usually reported to the Statistical Department by means of some form of intermediate record rather than the underwriting file copy of the policy. The use of multiple copies of such an intermediate record enables several home office departments to handle a given group of entries simultaneously. Audit transactions are usually recorded from a copy of the audit, or similar record showing earned payrolls and premiums by classifications. Cancellations and corrections are often reported for statistical entry on the same intermediate record used to record the original policy. An alternate plan is to employ separate multiple records for the handling of cancellations and corrections by the several departments.

The recording of paid and unpaid losses on an individual case basis is usually done by one of three methods. Perhaps the most common method is the use of an individual hand written card on which the estimated reserve, subsequent changes, and loss payments are entered and the net reserve calculated after each entry.

A second method is to keep a running reserve on punch cards. Cards are cut for all original estimates, debit or credit changes, and loss payments. Cards of similar design but with an opposite corner clipped are punched as closure notices and sorted in with the other cards periodically. By "needling" out all claim numbers in sequence with a closure card, the punch cards representing closed claims can be withdrawn. The remaining cards which represent the net entries on all open claims can be readily tabulated to give the net case reserve. The disadvantage of a punch card record of individual claims is that it is not a satis-

factory unit record nor is it a convenient reference record, particularly where a single claim is represented by several cards.

The third method is a combination of the other two plans and involves the use of a bookkeeping machine for posting estimates and loss payments. The posted "account sheets," each representing an open claim, serve as convenient media for the daily Hollerith recording of paid losses and allocated loss expenses and a quarterly Hollerith recording of unpaid losses. By means of a control, a daily total of unpaid losses can be maintained. Except at the end of the year or other date as of which experience is filed, it is not necessary to punch the cards representing unpaid losses complete as to all statistical information.

Uniformity, accuracy, and prompt dispatching should be requisites of the sources of the data recorded on punch cards. The punching of cards can be speeded up by providing uniform coding spaces on all sources of data with each item arranged in the order of the corresponding fields on the punch cards.

BUREAU STATISTICAL CODING PLANS

The translation of written data to coded form suitable for Hollerith card recording is accomplished by reference to statistical plans published by the various actuarial bureaus. Such codes are usually confined to purely actuarial or experience statistics. Codes for the other classes of data are usually established in the company Statistical Departments.

Statistical code manuals are based upon the respective underwriting manuals. Since a sufficient spread to be indicative of the inherent hazard is necessary to secure reliable actuarial statistics, the value and importance of uniform statistical plans is apparent for combining the experience of a large number of companies on a common basis.

All casualty companies licensed in the state of New York are required to file their underwriting experience with such statistical agencies as may be designated by the Insurance Department. This Insurance Department ruling gives an official status to the statistical plans of the designated agencies.

The close coordination between the underwriting and statistical classifications gives to the compiled experience a double value—direct cost analysis of past experience, and the basis for future rate promulgation.

CODING

Coding, or the translating of data for Hollerith recording, is one of the most important and often the least supervised activity of a statistical division. When full advantage is taken of the possibilities of the Hollerith system of compiling statistics, the coding remains the only important operation where the human element is a factor up to the point of the editing and analysis.

In the operative statistical routine, all data retains that degree of accuracy which it possessed after the coding operation. Either the independently punched dual card system or the verifying machine method gives an almost exact check on the accuracy of the transcription of codes on the punch cards. From the punched card to the finished tabulation, and to the finished record or report if the master card plan is followed, the Hollerith machines eliminate all clerical routine.

The importance of coding in connection with the efficient operation of a Hollerith system makes it advisable to centralize this operation in the Statistical Department or in any event to place the control thereof under the same head that is responsible for the accuracy of and the filing of bureau experience. In certain lines, particularly workmen's compensation, the underwriting manual reference codes and the statistical codes are identical in which case it is convenient to have the classification coding done in connection with the underwriting.

The use of Rand book units saves a great amount of coding time as contrasted to direct reference to several manuals, code lists of agents, and miscellaneous codes.

BASIC CARDS

Under the Hollerith system the statistical entry unit is the punch card. The card designs in the Exhibits are the basic records for the procedures described in this paper.

In the case of both the premium and the loss cards, many of the fields are common to all cards. A brief explanation of the fields on these cards will serve both to describe their content and to list the more common items of casualty statistical data.

Separate designs are illustrated for each line of insurance so that the experience fields can be seen more clearly. In actual

practice, the cards for similar lines would be combined and two or three composite card designs used.

Combination statistical and accounting cards are illustrated which can be made the basis of casualty actuarial and annual statement data as well as agency statistics and other home office reports.

The fields on these card designs are symmetrical which presents a practical advantage for companies whose statistical operations are centralized.

Date:

The first field contains the calendar month and year of entry on the accounting records. In commercial accounting terminology, it is the business month and year.

Transaction:

The coding in this field describes the entry as to:

1. Written and additional premiums
2. Audits
3. Flat cancellations
4. Partial cancellations and audit refunds
5. Reductions
6. Original premiums cancelled

Since these cards are combination accounting and statistical cards, the above segregation is necessary to give annual statement detail of written and in force premiums.

Source:

Separate reports on new and renewal business can be tabulated by sorting the codes in this field:

1. Renewal business
2. New business

Policy Year:

This field is used to record the last digit of the year in which the policy becomes effective. To record losses on policies over ten years old, this field is left blank and the policy year written in. For example, 1930 policies would be punched 0 and 1920 policies would be indicated by a written code. Three year one payment

policies are recorded on three cards with consecutive policy year coding as though three successive annual policies were issued.

The policy year is the calendar year in which the policy is effective. The policy year statistical method involves the observation of the experience on policies of each calendar year until the accident history is complete.

Policy Number:

This is an identification field and serves the purpose of enabling the punch card entry to be traced to the policy files. This identification field for most agency companies contains a home office number rather than the policy number. Some companies find it advantageous to record register page numbers to facilitate reference to original sources.

Term:

For unearned premium reserve purposes, policies running one year or less, two years, and three years, must be separately tabulated and computed.

Expiry Date:

The expiration month and year serve as the basic sorting field for tabulating premiums in force figures. January expirations would be coded 01 and October, November and December, 10, 11 and 12 respectively. The X and Y positions are not used for expiration months as the Hollerith tabulators do not control on these positions. All cards on one payment three year policies take the expiration year coding of the third year regardless of the policy year punching.

Branch:

Tabulations based upon the coding in this field provide agency or sales departments with very necessary statistics of premiums by branch offices.

Agency:

If all premium transactions are coded for agency, production statistics of individual agents by lines can be compiled. Non-agency companies are likewise interested in new business production by salesman.

State:

This field furnishes state statistics for tax return and experience purposes. The state coding is determined by the location which determined the premium rate.

Territory:

For the majority of lines, casualty experience is filed with rate-making bureaus by territorial divisions within each state. A "statistical city" usually includes the population concentration area rather than the confines of the political boundary. As in the case of state coding, this field contains the coding of the location which determined the premium rate.

Line:

The line of business is designated in this field. A decimal system of line coding similar to the following simplifies the coordination between the three-coverage premium card, the single coverage loss card, and the single coverage master cards.

Class:

For experience purposes, this is the most important field on the card. The experience classifications for each line of business usually correspond directly with the underwriting manual classifications.

Limits:

For the automobile and general liability lines these fields are provided to record the code representing the policy liability limits for the public liability and property damage coverages.

Exposure:

The exposure for any line is the unit of measurement of the extent of the hazard and is the basis for determining the premium. Exposure times the rate equals the premium. The nature of the exposure unit varies with the different lines and with classifications within certain lines. The exposure for workmen's compensation, auto dealers and manufacturers' and contractors' liability lines is \$100 of payroll; for automobile, the number of car years; for owners', landlords' and tenants', the number of square feet of area and linear feet of frontage, or the number of residences, and

Line	PREMIUM CODING			Master Card and Loss Coding
		First Exposure and Premium Field	Second Exposure and Premium Field	
Automobile.....	10 10 10	P. L.	P. D.	Coll. 11 12 13
Automobile Audited Forms.....	20 20 20	P. L.	P. D.	Coll. 21 22 23
Workmen's Compensation.....	30			30
Plate Glass.....	40			40
Owners', Landlords' and Tenants'.....	50 50	P. L.	P. D.	51 52
Products.....	55	P. L.	P. D.	56 57
Manufacturers and Contractors.....	60 60	P. L.	P. D.	61 62
Employers' Liability..	35			35
Elevator.....	70 70 70	P. L.	P. D.	Coll. 71 72 73
Teams.....	75 75	P. L.	P. D.	76 77
Accident and Health..	90 90	Accident	Health	91 92
Bonding:				
Fidelity.....	81			81
Surety.....	82			82
Check Forgery.....	83			83
Burglary.....	85			85
Motor Vehicle Fire Company Coverage	00 00 00	Fire	Theft	Tornado 01 02 03

other bases of premium charge. Great care must be exercised in coding and punching this field as there is no uniform unit of measurement for all lines. For some lines tenths of exposure units must be recorded. For ratemaking statistical purposes the exposure is highly important.

Premium:

This field is self-explanatory.

Dividend:

The necessity for this field would depend upon the type of insurance carrier. Participating carriers which pay dividends at policy expiration require tabulations of dividends paid or applied on account by line and state. Since credit application on renewal policies is the more common form of dividend payment, it is economical to record such applied dividends on the premium cards.

The above fields for policy year, policy number, branch, agency, state, territory, line, and class apply also to the loss and loss expense Hollerith cards. The coding for each of the above fields on the loss cards should always be identical with the premium coding of the policy upon which the loss has been paid.

Following is a description of the fields which are exclusive with loss and loss expense Hollerith cards:

Transaction:

For annual statement purposes the following transaction code is carried in this field:

1. Gross loss or loss expense paid
2. Subrogation credits
3. Miscellaneous credits or refunds
4. Reinsurance recoveries

Reinsurance recovery credits are used in annual statement tabulations only. All experience filings exclude reinsurance accepted or ceded.

Kind of Payment:

Payments under workmen's compensation policies must be segregated as to compensation payments, medical payments, and loss expense. For other lines the payments are segregated as to pure loss and loss expense.

Claim Date:

The claim month and year are used to furnish incurred loss tabulations.

Claim Number:

This reference number is self-explanatory.

Report Date:

The report month and year are used to run tabulations to test the adequacy of loss reserves. Successive quarterly or semi-annual valuations of claims reported in a certain fiscal period are the bases for most reserve adequacy tests.

Number of Claims:

This is a counter field to tabulate the number of claims. For statistical purposes a "claim" is a case upon which a pure loss payment has been made. The recording in this field is made by punching a "1" for the first pure loss payment and an "0" for all other payments and loss expense.

The other fields which are applicable to specific lines are explained under the individual treatment of those lines.

UNEARNED PREMIUM RESERVE

As combination annual statement and statistical punch cards are illustrated in this paper mention should be made concerning the method of securing premiums in force tabulations.

The coding in the transaction column of each premium card describes each premium entry as to gross written or additional, audit additional, flat cancellations, partial cancellations and audit refunds, reductions, or original premiums cancelled.

The following premium transactions affect net premiums written: gross written or additional, audit additional, flat cancellations, partial cancellations, reductions, and audit refunds. Cards representing the following transactions only affect premiums in force: gross written or additional, flat cancellations, reductions, and original premiums cancelled.

In recording pro-rata or short rate partial cancellations one card is punched for the amount of the return premium and a second or original premium cancelled card for the original premium or amount in force prior to the cancellation.

The record of premiums in force is the basis of one of the most important reserves of a casualty company—the unearned premium reserve. On account of the importance of this reserve and the fact that the premiums in force figures are not in themselves subject to bookkeeping control makes it advisable that a reconciliation record between written premiums and in force premiums be maintained.

While line and year of expiration only are necessary for companies setting up the unearned premium reserve on the 50% method, it is advisable to keep the record of premiums in force by month of expiration also. If this is done the more accurate calculation of earned premiums on a pro rata basis for internal statements can be made.

MASTER CARDS

The master or recapitulation card system of compiling and recording statistics is a very flexible and economical method of furnishing extensive periodic data promptly and accurately. Briefly, the master card system consists of the posting of tabulated data to summary punch cards.

The master card method is very satisfactory for compiling casualty experience on a policy year basis where two or more reportings are made as of successive calendar year developments. The premium cards for each line and policy year are tabulated to show the net exposure and net premium by classification for each territorial division in each state. These tabulated codes and corresponding exposure and premium figures are then posted by punching them on classification master cards (Exhibit V). This tabulating and master carding of premiums can be done at the end of each calendar year for each policy year or more frequently for lines comprising a large volume of cards.

The tabulating and master carding of paid losses (including allocated loss expenses for certain lines) is also done by line, policy year, and class for each territory and state. For these code sub-divisions, the amount paid and the number of claims are shown.

Outstanding losses and the number of claims outstanding are recorded on punch cards as of the date of the experience call and summarized on separate master cards similar to the paid loss

procedure. By summarizing outstanding losses on separate experience master cards, they can be replaced at each future reporting of the experience. Also, a direct tabulation of incurred losses can be obtained by cross-adding on the printer-tabulator.

Two types of master cards are illustrated in Exhibit V. The monthly master card is used primarily to record premiums, losses, loss expense, dividends, and outstanding losses by policy year and state for annual statement purposes and for statistical department controls. A brief explanation of the fields on the monthly master card will suffice to describe the data recorded thereon:

Code:

This card design can be used to record several master card accounts such as, business by state, business by policy year, business by state by policy year, premiums in force by expiration month and year, etc. The code in this column is erected to designate the particular master card account.

Date:

This date designates the calendar month and year of the data which is summarized on the particular master card.

Line: Statistical

The statistical line code is recorded in this field. This code is the one shown under the heading, "Loss Coding," in the description of the basic cards.

Line: Accounting

This field is punched on all annual statement master card accounts. A code is provided for each line shown in the income exhibit on page 2 of the annual statement blank. Certain annual statement lines, for example, liability other than auto, are made up of several statistical lines.

Policy Year:

The last two digits of the policy year are recorded in this field for those master card accounts segregated by year of issue.

State:

All state master card accounts contain the standard state coding in this field.

Expiry Date:

The month (the two digit code) and year of expiration are recorded in this field on the premiums in force master card account.

The other fields are amount fields and are self explanatory. The only purpose within the scope of this paper which the monthly master card serves is to record the policy year, line, and state controls to which the experience master cards can be balanced.

The second type of master card illustrated is the experience card. The additional fields not explained above are posting fields for the classes of data indicated by the headings and explained in the description of the basic cards. Certain experience fields which are not common to several lines are not provided for but can be recorded in the blank space on the card.

It is not practical to record too many subdivisions of detail on one master card account as the number of master cards becomes too large to obtain the advantages of summarizing.

Interesting internal exhibits of experience can be economically made up from the master cards after the bureau tabulations have been run. The master cards readily give experience by class regardless of territories, by territories regardless of class, and other exhibits of more analytical value than the bureau report itself. For most territories and classifications the data in the latter are too scattered in the reporting of an individual company.

The situation often arises where different card designs are used in the various calendar years over which a given policy year extends. The additional clerical work involved in combining three or four tabulations is eliminated by recording each year on a common experience master card design.

The master card data should not be recorded on cards exclusively. In fact it is advisable to tabulate each master card account with a printer on ruled forms. Practically all of the permanent monthly accounting data and policy year and calendar year experience can be permanently recorded by the master card method with a consequent elimination of hand-written records.

RATEMAKING EXPERIENCE STATISTICS

The card designs illustrated in the Exhibits and which have been explained in the foregoing sections contain three classes of

“fields” or items of data; namely, reference fields, accounting fields, and statistical fields. The latter fields are the sections of the Hollerith cards from which the experience for bureau calls is compiled. The common statistical or experience fields include the line, policy year, state, territory or city, classification, exposure, premium, losses paid, allocated loss expense paid, losses outstanding, number of claims paid, and number of claims outstanding.

The line is, of course, the subject of the call; while the policy year is the period covered. The state and territory are the bases for location statistics. The classification describes the hazard and usually corresponds to the hazard segregations in each respective underwriting manual, thereby furnishing the necessary statistics for a hazard analysis of past experience and the basis for rate revisions. The statistical fields just described are primarily analytical while the other fields, comprising exposure, premium, losses, and number of claims are quantitative. The premium, loss, loss expense, outstanding loss, and number of claims fields need no further explanation. The different bases of exposure measurement will be explained in a separate discussion of each line of insurance.

The compiling of bureau calls involves three steps or operations. The first step is the tabulation of the primary premium and loss cards. The second step is the master carding of the quantitative data in the detail of the analytical fields. The third is the tabulation of the master cards for the compilation of the bureau call.

All three steps should be carefully audited and any inconsistencies with the statistical plan corrected. On account of the complexities of most casualty statistical plans, supervised coding, verified Hollerith recording, controlled tabulating, and a final careful audit of the reportable experience is imperative. It is readily apparent that the detection and correction of errors at the “end of the line” is a more costly procedure than a supervised system to assure the accuracy of each step from the primary coding operation to the completed experience call.

While the above gives a general outline of the compilation of ratemaking experience statistics, there are sufficient and important exclusive items and exceptions in almost every line to necessitate a brief review of the specific statistical compilation require-

ments for each line of casualty insurance. Such an individualized treatment of each line follows:

AUTOMOBILE CASUALTY EXPERIENCE

The statistical or experience fields on the automobile casualty premium and loss cards illustrated in Exhibits I(A) and III(A), respectively, have been designed to include fields for all data required in the official New York Call with the exception of certain historical supplements on individual claims. Separate experience on each automobile casualty coverage must be filed as the automobile casualty call actually comprises three calls; a public liability call, a property damage call, and a collision call.

On the automobile casualty card the important analytical fields are the policy year, state and territory, and the classification. Exposure, premium, losses, and the number of claims comprise the important quantitative fields.

The geographical coding schedule subdivides all states to reflect the differences in traffic congestion, the important directly contributing factor in accident frequency. These territorial divisions within each state are usually defined by population concentration rather than political boundaries. Separate codes are provided for all cities of 100,000 population and over and for groups of cities with populations under 100,000. Small cities and country districts are classified for underwriting and statistical purposes as a separate territory in each state.

The classification schedule classifies all motor vehicles according to their physical structure and purpose. For private passenger cars there are three main classes designated as W, X, and Y, which are determined by such factors as horsepower, wheelbase, weight, cylinder displacement, and list price. Commercial cars are classified according to purpose and tonnage. Miscellaneous types are for the most part classified as to purpose. Two factors enter into the classification of motor vehicles for collision insurance: replacement cost and age. On the premium card the first class field is used for the public liability and property damage codes and the class field in the collision section of the card for that coverage.

Separate fields are provided for the public liability and property

limits codes. The latter codes are frequently combined with the three digit class codes where separate cards are punched for public liability and property damage.

The common unit of exposure for the automobile casualty coverages is the "car-year." An exposure of one car-year is one car insured for twelve months. The exposure for automobile dealers coverage is the payroll, in dollars, while for the miscellaneous types of cars, the exposure similarly follows the basis of premium charge.

The master card method explained in a foregoing section simplifies the compilation of the bureau report. The calculation of average rates can be made on the master card tabulations and the bureau blanks typed directly therefrom.

Stock casualty companies file their experience with the National Bureau of Casualty and Surety Underwriters and the mutual casualty companies with the National Association of Automotive Mutual Insurance Companies.

The filing of experience on compulsory public liability insurance in Massachusetts is made by reporting each premium and loss transaction on forty-five column punch cards. Premium transactions can be recorded for bureau purposes by routing the source of record to forty-five column key punch operators after the company's eighty column card record has been made. An alternate plan is to list the significant compulsory plan fields from the company's cards, monthly; audit the listing for obvious inconsistencies; and then punch bureau forty-five column cards from this listing. In punching the eighty column cards the compulsory plan codes are used throughout. The coverage (statutory or extra-territorial) can be punched in the first class column and the limits in the field so designated. In the listing the coverage can be printed separately and the limits combined with the class.

Losses are filed on closed claims only, and reported periodically on open claims. The bureau loss cards provide for loss analysis data in addition to the usual policy data. The punching, therefore, must be done from the claim folder, or preferably, from an equivalent intermediate record.

For internal records the compulsory public liability cards should be master carded on the same basis as the regular automobile public liability.

AUTOMOBILE FIRE AND THEFT EXPERIENCE

While the writing of automobile fire, theft, and tornado insurance by casualty companies is not permitted in several states and excluded countrywide to such carriers licensed in New York, it is common practice to issue a dual policy by placing the above coverages in a fire company running mate.

The motor vehicle fire and theft plan requires a fiscal year reporting instead of a policy year reporting as in the casualty plan. This fiscal period runs from September 1 of one year to August 31 of the next year, and its purpose is to provide statistical data for rate revisions earlier in the next calendar year. The cards illustrated in Exhibits I(B) and III(B) contain the necessary fields to comply with the experience requirements of the National Automobile Underwriters Conference, the official filing agent for these lines.

Private passenger car experience is recorded and reported by state, city, and classification. The classification codes are erected to describe each car as to make, type of policy (amount, actual value, or deductible), and age groups. Commercial car experience is recorded and reported by state and classification. The latter classification coding describes a commercial car as to type of policy (full coverage or deductible), age group, and list price. Fire and theft insurance on fleet, public automobile, and dealers policies are reported by states only. The same is true of tornado insurance.

The data called for includes the gross liability or amount of insurance, the net premium, the gross premium in total, and the net losses paid. Fire losses must be analyzed as to self-ignition losses and all others. Theft losses must be separated as to total car and pilferage losses.

It is preferable to compile this call direct from the primary cards rather than by the master card method. The calendar year basis eliminates the policy year cumulative feature of master cards while the degree of refinement of the data is too great to realize the economy of punch card recapitulations.

Although not required on experience reports a field has been provided on both the premium and loss cards for recording policy year. Even though the loss development is rapid, a policy year analysis of the underwriting results on these lines is superior to calendar year exhibits for internal reports.

WORKMEN'S COMPENSATION EXPERIENCE

Two plans are followed in reporting compensation experience: Schedule Z and the Unit Plan. Schedule Z is a policy year reporting by individual states of the experience on each underwriting manual classification. The first and basic part is made up of an individual exhibit of the payroll, premium, and analysis of losses for each classification for each state and policy year. The remainder of the Schedule Z reporting comprises special reports on serious cases. These special reports are historical and therefore are made up from the claim files rather than from punch cards.

The compensation premium card illustrated in Exhibit I(C) and the loss card illustrated in Exhibit III(C) contain experience fields in line with Schedule Z requirements. The territory field is not required for experience purposes. The statistical classifications for compensation insurance represent corresponding underwriting classifications erected to reflect the different industrial hazards. The exposure represents the payroll in dollars.

There are two standard methods of handling daily compensation premium transactions in the Hollerith recording. The first is that of cutting one card for each classification showing the estimated payroll and estimated premium when the policy is written and similarly to record any additions or other changes at the time of the entry of the payroll audit.

The other procedure provides for a classification and payroll analysis at the time of the audit entry only. One card is cut for the deposit premium under some designating punch in the classification field. At the time of the audit entry the deposit premium is cancelled out under the same designating deposit class code and the entire earned premium and earned payroll is punched with class segregation. The net total of these earned premium cards and the cancelled deposit premium card is the net audit additional or refund entered on the accounting records.

The master card plan can be used for compiling the data for the payroll and premium section. Such data consists of state tabulations showing net payroll and net premiums by classification.

The Hollerith loss card illustrated in Exhibit III(C) entails a procedure which differs from that of other casualty lines. In recording payments the "closed claim" fields are skipped, the reason for this being that the Schedule Z loss exhibit analysis

cannot be determined until the claim is closed or placed upon a specific award basis. At the time of closure the same design of card is punched on compensable claims for the loss exhibit of Schedule Z. The Schedule Z field classifies cases as to death, permanent total, major permanent, minor permanent or temporary disability. In the medical field is recorded the compensable medical in dollars, which figures are used to segregate the compensable and non-compensable medical incurred.

The tabulation of the medical by classification is made from the daily paid loss cards. Compensable losses are tabulated from the closed claim punch cards by classification for each class of injury. A tabulation of compensable paid loss cards by claim number makes a good control to which these closure cards can be checked to verify the presence of a closure punch card or outstanding card on each compensable claim. By erecting an additional field on the experience master card to record class of injury the compilation of the loss exhibit is facilitated. The field on the closure punch cards for claim number permits those claims in the death and serious classes of injury groups to be called for and summarized for the supplementary parts of Schedule Z.

The second method of reporting compensation experience is by the Unit Plan. Schedule Z calls for individual reports by classification. The Unit Plan makes the individual risk the reporting unit.

With the exception of the Pennsylvania unit plan, these plans are still in the experimental stage. The more or less developed history card systems in the Risk Experience departments of companies at the time of the inauguration of the Unit Plan will probably result in the history card method becoming the nucleus for the filing of workmen's compensation experience should the Unit Plan displace Schedule Z as the basic workmen's compensation experience reporting.

While the compilation of aggregate classification data on compensation insurance would be a costly and cumbersome task without the aid of the Hollerith system, the latter system does not at present give much clerical relief in compiling data under the Unit Plan. As the possible solution to the clerical problem incidental to administering the unit reporting plan should it be generally adopted, consideration of the use of the eighty column card and the tabulating machine unit known as the interpreter is

recommended. The new card provides sufficient space for assured, policy, and claim numbers, while the interpreter facilitates the reference to the cards by printing the punched information thereon.

Workmen's compensation experience is filed with the National Council on Compensation Insurance or with state rating bureaus.

ACCIDENT AND HEALTH EXPERIENCE

The cards illustrated in Exhibits I(D) and III(D) are not recommended as to content and arrangement for exclusive accident and health companies or accident and health departments of life insurance companies. They are intended primarily to coordinate these lines with the other casualty lines for centralized statistical departments desiring the features of combined accounting and statistical eighty column Hollerith cards.

The experience filing with the Bureau of Accident and Health Underwriters is a punch card filing while the Health and Accident Underwriters Conference merely calls for a monthly report of accident and health premiums, accidental death and dismemberment losses, other accident losses, and health losses.

The card designs contain the statistical fields of the Bureau of Accident and Health Underwriters' punch cards. Some of the fields have not been explained in previous sections of this paper. On the premium card the following fields are self-explanatory: Age, term in months, sex, accident weekly indemnity and sickness weekly indemnity. The policy form coding refers to the coverage (period and amount of indemnity) which is provided under the policy. The term class refers to the accident hazard of the insured's occupation (select, preferred, etc.). A corresponding code is not provided for in the health statistical plan. The occupation code refers to a special and extensive coding schedule from which a classification is assigned to each hazard. The principal sum refers to accident insurance only and is the amount in dollars of the death benefit.

The compilation of accident and health loss statistics involves considerable coding detail. The illustrated card design contains all fields provided for on the reporting loss card. However, unless a company desires such detail for its own internal experience it is advisable to punch the bureau loss card directly from

the claim file or intermediate record and use a more condensed card for internal statistics.

BONDING EXPERIENCE

The bonding lines, comprising surety, fidelity, and check forgery bonds present an unusual actuarial problem. Theoretically, there should be no such problem as suretyship does not presume the payment of losses. But practically, there is a payment of funds of the nature of losses in a ratio to premiums in the same degree of regularity as that possessed by the loss ratio of a regular casualty line.

The card designs illustrated in Exhibits II(A) and IV(A) contain the fields necessary for the accounting and statistical treatment of these lines. The "reinsurance company" and "form" fields require further explanation. In the reinsurance company field is recorded the code number of the carrier from which business is accepted or to which business has been ceded. The form field describes the transaction as to direct business, reinsurance accepted, or reinsurance ceded. Positive entries of reinsurance ceded are recorded in complement figures as regards amounts, premiums, and losses. In this way a single tabulation of all three forms will give the net writings or net losses.

In the classification field is recorded the class code of the Towner Rating Bureau statistical plan. A separate code is provided for each of the general types of bonds, types of corporations named as principals, and types of contracts guaranteed.

The official call for experience is a calendar year call instead of a policy year reporting. The indefiniteness and the extended period of the occurrence of claims on bonding contracts, particularly in the case of fidelity forms, present a difficult problem of policy year allocation of loss payments, not to mention the effect of salvage transactions in deferring the ultimate loss ratio of a given policy (or bond) year.

This official calendar year call requires the filing for New York State and countrywide of the direct premiums and losses by classifications. This data can be readily obtained from the Hollerith cards of the designs illustrated.

For internal experience reports it is advisable to attempt the compilation of policy year reports with slight modifications from

standard casualty policy year procedure. While such procedure presents difficulties in assigning losses to policy years, the resultant reports are not distorted by premium volume changes to the extent that calendar year reports are.

GENERAL LIABILITY EXPERIENCE

The statistical experience on the general liability lines can be compiled from Hollerith cards as illustrated in Exhibits II(B) and IV(B). The statistical processes for these lines correspond very closely to those for the compilation of automobile experience. The essential differences are in the nature of and in the recording of classifications and exposures. The official call requires a policy year reporting on public liability, property damage and collision (if applicable) similar in content and form to the automobile casualty call. The same filing agencies receive this experience.

Separate classification coding schedules are provided in the statistical plan for the different general liability lines. Such coding schedules for each line provide for a segregation of experience by underwriting classifications. The owners, landlords and tenants schedule contains a two digit code determined by type of building or occupancy, combined with a prefix code to designate area or frontage for risks written on that basis. A miscellaneous schedule classifies risks not written on an area and frontage basis. Elevator classification codes segregate the experience by type of elevator, kind of building, and interlocking device. Manufacturers and contractors classification codes are the same as the corresponding compensation codes. The codes for the miscellaneous forms are likewise based upon corresponding underwriting classifications.

Territorial coding is not required for manufacturers and contractors, while the other lines require separate experience for cities over 200,000 and according to zones for apartment and residential risks in New York and Boston, respectively.

The accurate recording and reporting of exposures on the general liability lines require the greatest possible care because of the variance not only as to lines but as to classifications within given lines. In the owners', landlords' and tenants' portion of the statistical plan the exposure for area classes is the number of

square feet, for frontage classes, the number of linear feet, for miscellaneous lines, the number of residences, persons, acres, and other designatures of the basis of premium charge. Other exposure bases are payroll for manufacturers and contractors, number of elevator-years for elevator coverage, team-years for teams coverage, and corresponding units of hazard measurement for other miscellaneous coverages.

PLATE GLASS EXPERIENCE

The Hollerith cards illustrated in Exhibits II(C) and IV(C) contain the necessary fields for compiling plate glass experience. This experience is usually called for by policy year, state and city, and by zones or territorial divisions of cities.

The classification codes are determined by the setting, size, location in building, use and kind of building, depending on the kind of glass. The classification coding for automobile plate glass segregates the experience on open and closed cars for private passenger, commercial, livery and miscellaneous cars. The geographical coding schedule contains the necessary territorial divisions of each state to reflect both the breakage hazard and the cost of replacement. Most of the large cities are subdivided by zones consistent with the varying hazard within the particular city.

The data recorded consists of the table premium or exposure, written premium, losses paid, losses outstanding, total losses incurred, number of claims paid and number outstanding. The table premium is the basic premium shown in the underwriting manual to which differentials are applied to determine the premium charge. The table premium makes a satisfactory exposure in that it is a combined index of relative quantity and replacement cost. For all glass insured on valuation basis where the premium is a definite percentage of the insured value of the glass, the amount of insurance is recorded as the exposure. Automobile plate glass is recorded on the same exposure basis as automobile casualty lines—number of car years insured.

Plate glass experience is compiled by two bureaus. The W. F. Moore bureau is a non-partisan ratemaking office to which the members file calendar year experience annually and on special call. The Plate Glass Department of the National Bureau of

Casualty and Surety Underwriters is membered by stock companies. Similar experience reports with the exception that the period covered is the policy year instead of the calendar year are filed with this bureau.

BURGLARY EXPERIENCE

The burglary experience statistics are filed on forty-five column punch cards in accordance with the statistical plan of the National Bureau of Casualty and Surety Underwriters. Similar procedure to that outlined for filing compulsory automobile liability experience can be followed to comply with this punch card reporting. Company and bureau cards can both be cut from the punching source; or the company cards can be listed monthly, audited, and then punched on bureau cards.

The alarm field on the premium card is provided for recording a special burglary code to designate types of alarm systems used to protect the premises, and the nature and extent of protection by watchmen and guards. A form code to describe the type of policy and kind of coverage is recorded in the form field on the cards. Examples of such forms are bank burglary, bank robbery, messenger robbery, and ten types of residence burglary coverage. On the loss card the cause of loss field has recorded therein a one digit code which describes the nature of the claim (burglary, theft, servant, robbery inside premises, robbery outside premises, etc.). The property field on the loss card designates the property loss (money, silverware, clothings, furs, jewelry, etc.).

The classification coding varies with the policy forms. Residence burglary class codes describe the type of dwelling and size of the policy (amount of insurance). Bank burglary class codes are a combination of safe, vault, and population designations. Robbery and mercantile safe classification codes segregate the experience by the kind of business of the insured. Mercantile open stock classifications describe the merchandise dealt in and the size of the policy.

The territorial code schedule contains separate codes for the most populated cities and counties, and for the balance of the locations in each state. The exposure for all forms is the amount of insurance in dollars.

CONCLUSIONS

In spite of the uniformity in the statistical plans used by all the leading casualty companies and the general application of punch card systems for complying with such plans, there is a lack of uniformity in the statistical methods of various companies. Nor is uniformity to be expected of those statistical processes devised to compile uniform statistics.

The internal organization structure of single line and multiple line companies, of companies decentralized by lines and functions and those decentralized by functions only, of companies operating under the agency plan and those on a direct writing basis, are widely different.

With a recognition of these inherent differences in casualty home office organizations, general principles of statistical methods and Hollerith craftsmanship have been emphasized rather than the presentation of a model statistical procedure capable of solving all casualty statistical experience problems.

EXHIBIT I
EIGHTY COLUMN HOLLERITH PREMIUM CARDS
PREMIUM — AUTOMOBILE CASUALTY

DATE	TRANS SOURCE	POL. YR.	POLICY NUMBER	TERM	EXPIRY DATE	BRANCH	AGENCY	STATE	TERR- ITORY	LINE	CLASS	LIABILITY		PROP DAMAGE		COLLISION		DIVIDEND	
												EXP 000000	PREM 000000	EXP 000000	PREM 000000	CLASS	EXP 000000		PREM 000000
0000	0000	0000	00000000	00	000000	0000	000000	0000	000000	0000	000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000

PREMIUM — AUTOMOBILE FI

DATE	TRANS SOURCE	POL. YR.	POLICY NUMBER	TERM	EXPIRY DATE	BRANCH	AGENCY	STATE	TERR- ITORY	LINE	CLASS	AUTO FIRE		AUTO THEFT		AUTO TORNADO		DIVIDEND	
												RISK 000000	PREM 000000	RISK 000000	PREM 000000	RISK 000000	PREM 000000		
0000	0000	0000	00000000	00	000000	0000	000000	0000	000000	0000	000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000

PREMIUM — COMPENSATION

DATE	TRANS SOURCE	POL. YR.	POLICY NUMBER	TERM	EXPIRY DATE	BRANCH	AGENCY	STATE	TERR- ITORY	LINE	CLASS	COMPENSATION		DIVIDEND
												EXP 000000	PREM 000000	
0000	0000	0000	00000000	00	000000	0000	000000	0000	000000	0000	000000	00000000	00000000	00000000

PREMIUM — ACCIDENT & HEALTH

DATE	TRANS SOURCE	POL. YR.	POLICY NUMBER	TERM	EXPIRY DATE	BRANCH	AGENCY	STATE	CITY	POLICY FORM	LINE	CLASS	OCCU- PATION	AGE	ACCIDENT		ACC WKLY IND	HEALTH PREMIUM	SICK WKLY IND	DIVIDEND
															PRINCIPAL SUM	PREMIUM				
0000	0000	0000	00000000	00	000000	0000	000000	0000	000000	0000	000000	000000	000000	0000	00000000	00000000	00000000	00000000	00000000	00000000

A

B

C

D

EXHIBIT III

EIGHTY COLUMN HOLLERITH LOSS CARDS

LOSS — AUTOMOBILE CASUALTY

DATE		TRANS KIND	CLAIM DATE	CLAIM NUMBER	REPORT DATE	POL. YR.	POLICY NUMBER	BRANCH	AGENCY	STATE	TERR- ITORY	LINE	CLASS	CLAIMS	AMOUNT
MO.	DAY														
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

A

LOSS — AUTOMOBILE FIRE

DATE		TRANS KIND	CLAIM DATE	CLAIM NUMBER	REPORT DATE	POL. YR.	POLICY NUMBER	BRANCH	AGENCY	STATE	TERR- ITORY	LINE	CLASS	CAUSE T. BLZE	CLAIMS	AMOUNT
MO.	DAY															
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

B

LOSS — COMPENSATION

DATE		TRANS KIND	CLAIM DATE	CLAIM NUMBER	REPORT DATE	POL. YR.	POLICY NUMBER	BRANCH	AGENCY	STATE	TERR- ITORY	LINE	CLASS	COMPENSABLE CLOSED CLAIMS			CLAIMS	AMOUNT
MO.	DAY													WAGE	MEDICAL	OTHER		
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

C

LOSS — ACCIDENT & HEALTH

DATE		TRANS KIND	CLAIM DATE	CLAIM NUMBER	REPORT DATE	POL. YR.	POLICY NUMBER	BRANCH	AGENCY	STATE	CITY	POLICY FORM	LINE	CLASS.	OCCU- PATION	AGE	SEX	KIND PAYMENT	INDY DAYS	CLAIMS	AMOUNT	CAUSE ACCTO DISEASE	NAT. ORIGIN	PRIN SUM	ORIG IND	ACCIDENT HEALTH
MO.	DAY																									
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

D

EXHIBIT IV
EIGHTY COLUMN HOLLERITH LOSS CARDS

LOSS --- BONDING

DATE		TRANS KIND	CLAIM DATE	CLAIM NUMBER	REPORT DATE	POL YR	BOND NUMBER	BRANCH	AGENCY	STATE	CITY	REINS CO	LINE	FORM	CLASS	CLAIMS	AMOUNT
MO	DAY																
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

A

LOSS --- GENERAL LIABILITY

DATE		TRANS KIND	CLAIM DATE	CLAIM NUMBER	REPORT DATE	POL YR	POLICY NUMBER	BRANCH	AGENCY	STATE	TERR- ITORY	LINE	CLASS	CLAIMS	AMOUNT
MO	DAY														
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

B

LOSS --- PLATE GLASS

DATE		TRANS KIND	CLAIM DATE	CLAIM NUMBER	REPORT DATE	POL YR	POLICY NUMBER	BRANCH	AGENCY	STATE	TERR- ITORY	ZONE	LINE	CLASS	CLAIMS	AMOUNT
MO	DAY															
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

C

LOSS --- BURGLARY

DATE		TRANS KIND	CLAIM DATE	CLAIM NUMBER	REPORT DATE	POL YR	POLICY NUMBER	BRANCH	AGENCY	STATE	TERR- ITORY	FORM	LINE	CLASS	ALARM	CAUSE PROP	CLAIMS	AMOUNT
MO	DAY																	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

D

NOTES ON EXPOSURE AND PREMIUM BASES

BY

PAUL DORWEILER

When *critical conditions* and *injurible objects* exist in such relationship that accidents may result there is said to be *exposure*. The term *critical conditions* is intended to cover, rather broadly, the presence of or the absence of anything, objective or subjective, generally external to the injurable object, which contributes to the accident frequency and/or the accident severity. It is intended to cover also any part or quality of the injurable object which likewise contributes to accident frequency and/or accident severity. *Injurible objects* will be used to denote any objects, human beings included, which may be damaged or injured, including complete destruction. If the whole insurance field is to be covered, it is necessary to extend the meaning of this term to include non-material things.

As a concrete example it might be conceived that critical conditions consisting of uniform fixed physical obstructions exist in a large but restricted area with inanimate injurable objects all identical in nature, for a period of time. Let it be assumed that the objects move about freely and that when they strike against one of the obstructions they are destroyed, and immediately replaced with others of their kind. Under these simple conditions it may be shown that the hazard varies directly with the product of the three variables: *critical conditions*, *injurible objects*, and *period of time*. If one of these variables remains constant the hazard varies as the product of the other two and if any two of the variables remain constant the hazard varies directly as the third.

In reality, however, the situation is quite different from this simple case, for the relationship becomes extremely involved. The critical conditions may comprise the presence or absence of material objects, habits, laws, regulations, or yet many other things. They may be external to or form a part of the injurable objects. They generally differ in their contribution to both the accident frequency and the accident severity. The injurable objects also are generally dissimilar. They vary widely in their susceptibility both to the occurrence of accidents and to injury when involved in accidents. Generally the contributions to the hazard occurring

from an increase in either the critical conditions or the number of injurable objects, under conditions in which the other variable and the period of time remain constant, cannot be expressed as a linear function of the number of units of the variable. The period of time is the only one of the three variable elements into which the exposure has been divided somewhat arbitrarily, with which the hazard varies directly, the other two variables remaining constant.

Even if the contribution of each of the variables were definitely known and if the hazard underlying the exposure could be expressed as a function of them, such an expression would be too involved for practical purposes. In actual practice the time element is eliminated by considering the aggregate injuries in blocks for selected unit periods of time—usually a year. This procedure brings together injuries of all degrees of severity and it becomes necessary to express the injury aggregate in terms of a common basis. The unit of measure used for this purpose is the economic unit, the dollar. The aggregate of injuries when expressed in the monetary standard of dollars is known as the *losses*.

A new variable, or set of variables, inherent in the *evaluation standard* used is introduced in the process of expressing the aggregate injuries in terms of dollars. This standard for evaluating injuries is the scale of remuneration adopted through a formal law as in compensation, or through custom and precedent as in the courts, or through community opinion as reflected in jury verdicts and private settlements. The effect of this new variable, the evaluation standard, is indicated by the difference in the losses obtained when the same or similar injuries to either human beings or inanimate objects are expressed in monetary units by the use of different evaluation standards.

PREMIUM BASES.

Insurance is the institution devised to transfer the losses arising out of the hazard from the few upon whom they chance to fall to the many exposed by paying the losses from funds called *premiums* which have been specially collected for this purpose. These premium funds are accumulated from charges called the *rate* collected per unit exposure. The exposure medium selected as the basis for the charge of the premium is known as the *premium basis*.

Obviously, the premiums collected are to be proportional to the hazard which is measured by the losses. The medium selected for measuring the exposure is the most important factor in making the premium collections in accordance with the probable loss incidence. The medium most desirable as a premium basis is the one possessing a combination of these two qualifications in the largest degree:

1. *Magnitude of Medium should vary with hazard.*

It is desirable to have for premium basis an exposure medium whose magnitude varies approximately directly with the hazard when this is measured by the losses. By using a medium which varies directly with the hazard, the total premium may be obtained by multiplying the exposure expressed in units of the premium basis by the rate.

2. *The Medium should be practical and preferably already in use.*

For measuring the exposure it is desirable to have a medium whose magnitude is readily ascertained and which is already used by the assured for other than insurance purposes. The use of a medium possessing these qualities promotes efficiency, as no additional records are necessary for measuring exposure, and enhances accuracy, as the various existing records may be used as a check.

When one considers the many diverse factors which enter into a hazard and the additional factors which enter into the evaluation of a hazard in terms of losses, one might expect that generally it would be impossible to find a medium whose magnitude varies directly with the losses. The factors underlying the losses, *critical conditions*, *injurables objects*, and *evaluation standard*, are studied as a preliminary to sorting hazards into somewhat homogeneous groups. Divisions made according to the kind of evaluation standard used, the type of injurable object covered, or the origin of critical conditions are known as *lines of insurance*. Divisions within these lines of insurance with regard to the frequency and severity of injuries or for convenience in practical procedure are known as *classifications*. These designations hold only in a very general way and have many exceptions. It is often difficult to distinguish between lines of insurance and classifications as used by different carriers or even by a single carrier.

In this discussion of premium bases it is proposed to review different media that might be used for measuring the exposure. For convenience in outlining the procedure the *injurible objects* will be divided into *human beings* and all other objects. At this time it is intended to consider only premium bases for insurance covering injuries to human beings. The coverages will be treated under four divisions which embrace the more important types. It is not intended to make this an exhaustive analysis including the special cases that may arise.

- I. Coverage for injuries to designated persons.
- II. Coverage to employers for industrial injuries to their employees.
- III. Coverage for liability for injuries to the general public.
- IV. Coverage for liability for professional acts.

I. COVERAGE FOR INJURIES TO DESIGNATED PERSONS.

1. Life Insurance.
2. Accident and Health Insurance.

In life, accident, and health insurance, coverage is given to individuals for specified injuries evaluated at specified amounts. These lines differ from the others of the four general divisions in that injuries are appraised at specified values which are prescribed in the contract. Within certain limits these specified values may be selected by the assured when making the contract.

1. LIFE INSURANCE.

In life insurance the critical conditions are those conditions external to the assured and also those bodily conditions within the assured which tend to place his life in jeopardy. The injurable object is the assured himself and the injury is the loss of his life. The measure of the injury in dollars by the evaluation standard is the amount named in the policy to be paid in case of death. The underlying assumption is that classifications, when refined with respect to age, occupation, sub-standard conditions, etc., are composed of individuals of equal essential hazard. The losses differ only because different amounts are written in the policies to be paid for the same injury, i.e. loss of life. The amount of insurance specified in the policy is obviously the exposure medium which varies directly with

the losses for the very reason that the losses are made a definite function of the amount insured by the specific provision in the policy. A medium consisting of the amount of insurance is quite practical and forms such an ideal premium basis that little thought is given to any other. In group life insurance the situation is not changed although through the use of weighted averages it becomes less obvious.

2. ACCIDENT AND HEALTH INSURANCE.

As in life insurance, the critical conditions of accident and health insurance are those conditions external to the assured and those internal which may produce injuries through accidents or ill health. The evaluation standard is more involved than in life insurance. The accident insurance contract generally specifies a maximum loss known as the principal sum, certain lesser losses which have a definite relativity to this maximum, and fixed weekly benefits. In health insurance the losses are evaluated through the weekly benefits written into the contract. The classifications, through sufficient subdivisions according to age, occupation, and other conditions that may affect the hazard, are assumed to be composed of individuals of equal essential hazard. Equivalent injuries sustained differ when evaluated as losses only through the variation in the principal sum and the weekly benefits because, by the terms of the policy, they are definitely related to these items. The principal sum and weekly benefits form ideal premium bases as they are quite practical and vary directly with the losses.

II. COVERAGE TO EMPLOYERS FOR INDUSTRIAL INJURIES TO THEIR EMPLOYEES.

1. Workmen's Compensation Insurance.
2. Employers' Liability Insurance.
3. Workmen's Collective Insurance.

Of the variables underlying the hazard of this group of coverages the *critical conditions* and the *injurible human beings* are substantially the same. The inherent injuries are the same under each of

these lines. The difference in the losses, which is due to a change in the *evaluation standard* used, arises out of these sources:

1. In Compensation a wider range of injuries is covered than in Employers' Liability. It does not necessarily follow, however, that the losses are larger under Compensation. In Workmen's Collective the extent of the liability assumed is stated in the contract.
2. The severity of an injury is expressed in monetary units by using different evaluation standards. In Compensation the standard is prescribed in the law. In Employers' Liability it consists in direct settlement mutually acceptable or in a jury verdict under court procedure. In Workmen's Collective the standard is specified in the contract.

Several premium bases have been considered and discussed in different degrees for these lines of insurance. As possible media for use in measuring exposure, these may be considered:

1. Payroll.
2. Restricted Payroll.
3. Man-Year.
4. Value of Product.

1. Payroll. Within the Compensation classifications the total injuries presumably vary directly with the time exposure. The indemnity cost of each injury of given severity varies with the rate of weekly compensation, which depends on the weekly wages. The indemnity losses vary as the product of the time and the weekly wages which product is represented by the payroll. Payroll as a medium does not respond fully to variation in losses to the extent that the losses are legally restricted by the maximum weekly payments and by the maximum amount paid on any case. If there were no limitation on weekly payments or on the maximum cost of a case then payroll would vary directly with the indemnity losses and from this viewpoint form an ideal medium for measuring exposures. Under the earlier Compensation laws these maximum limits were rather low and had an appreciable effect on the losses. Since then the limits have been raised

materially by amendments to the law and their effect on the losses has been very much reduced.

Medical losses vary jointly with the accident frequency and severity, and therefore with the time exposure, and with the scale of medical fees. The wages and the medical fee scale supposedly respond to the same general price level and vary with each other. Medical losses thus vary jointly with the time exposure and the wages or as a product of the time and the wages which product is the payroll. The payroll does not reflect either the time or amount limitations on the medical benefits.

The trend in Compensation has been toward raising the limits on the time period and the maximum amount of medical benefits. The present Acts come near to providing unlimited medical benefits thus tending to make the medical losses vary with the payroll.

The exposure in Compensation measured in payroll may be said to vary reasonably with the losses. From the practical viewpoint the payrolls form a desirable medium for measuring exposures. The need of payroll records for internal business administration and for reports for external agencies emphasizes their importance thus serving as an incentive to accuracy.

There is a correlation between payroll and losses in Employers' Liability although this is not so definite as in Compensation. The loss of wages resulting from an accident is a major factor in evaluating injuries whether by direct settlement or through court procedure. Workmen's Collective, in responsiveness of payroll to losses, stands somewhere between Compensation and Employers' Liability, the exact position depending on the limitations on payments written into the Workmen's Collective contract. For both Employers' Liability and Workmen's Collective, payrolls form practical media for measuring exposures.

2. Restricted Payroll. This term is used to denote ordinary payrolls after they have been modified by limiting the maximum weekly wage for any employee to an amount which when multiplied by the weekly percentage compensation rate will equal the maximum weekly payment provided in the law. Under the early, simple Compensation acts the restricted

payroll exposure would have varied directly with the indemnity losses aside from the limit as to total amount of the case. At no time would it have accounted for a time limitation on the total amount, for either time or amount limitations on medical, or for the additional hazard involved in overtime work. A further obstacle arose when Compensation laws introduced different weekly limits dependent on the nature of injury or the dependency status. Such restricted payrolls would impose additional records on the assured, would involve more detail in auditing, and as they are not used for other purposes would not provide an external check.

In Employers' Liability Insurance restricted payroll is meaningless as there is no fixed wage that has a definite relation to the award. In Workmen's Collective Insurance the relationship would depend upon the agreement in the contract; probably it would be very much as in Compensation.

3. Man-Year. To measure Compensation exposure in man-year units—the exposure of one man for one year—would not reflect any variation in wages and for that reason would not be expected to vary as constantly with the losses as payroll exposure. In some occupations, e.g. aviation, where wages are so high that in almost every case the maximum weekly payments are made, a man-year exposure medium is more responsive to the indemnity losses than payroll. To account for differences in hazard due to a variation in the number of working days per week or the number of working hours per day, it is necessary to define the man-year unit in terms of man-days or man-hours. This would introduce no special difficulty aside from making the records somewhat more involved. In Employers' Liability there is presumably less correlation between wages and amount of award than in Compensation. For this reason the man-year medium as a basis of premium would be less objectionable here. It could not be expected to vary as constantly with the losses as payroll however. Man-year exposure would probably serve reasonably well in Workmen's Collective insurance, for the weekly payments usually do not vary much and the fixed amounts paid for permanent injuries do not depend on the wages received by the injured.

This exposure medium is the one best adapted for measuring accident frequency or weighted accident severity. Exposure on a man-year basis would be more difficult and costly to obtain as special records would have to be maintained for this purpose. These would not have the general importance of payroll, would probably be less accurate, and would not be subject to check from external sources.

4. Value of Product. The value of product or sales receipts is another medium that has been considered for measuring exposures. It would be difficult to ascertain to what extent the exposure on this basis would vary with the losses. A new system of classification would be required if this medium were used as it would be necessary to recognize the relative degree in which machines enter not on account of the hazard difference between machine and non-machine operations but on account of the additional exposure as measured through this medium, due to the greater production of machines. In these new classifications it would also be necessary to note the degree in which the raw and partially treated materials enter into the process. In insurance for contractors it would be necessary to distinguish between contracts covering all material and cost-plus contracts. The new classifications would have to be on an industrial basis so as to include those employees not engaged in producing a salable product. Some of the present classifications, e.g. public employees, would require some other procedure. In Employers' Liability and Workmen's Collective the same difficulties arise that appear in Compensation. This exposure medium wherever it could be used at all would generally be readily available and subject to check. Measuring exposure on this basis would not require undue effort.

There are certain factors whose existence is now more or less recognized as affecting the losses which are not reflected in any of the media for measuring exposure. The increase in the accident frequency during industrial prosperity and an increase toward malingering during depressions are factors of this nature.

III. COVERAGE TO ASSURED FOR HIS LIABILITY FOR INJURIES TO THE GENERAL PUBLIC.

1. Manufacturers' and Contractors'.
2. Owners', Landlords' and Tenants'.
3. Elevator.
4. Teams.
5. Automobile.
6. Airplane.
7. Product.
8. Protective.

The injuries covered under Public Liability Insurance are those sustained by the public while on and/or off the premises from accidents arising out of conditions for which the assured is responsible. The hazards are peculiar to each of the several lines of insurance falling under this division. With respect to one element underlying the hazard, however, these lines of insurance are similar. That element is the evaluation standard used in reducing the severity of the injury to losses. In all Public lines the monetary measure of the injuries is determined by voluntary agreement or by court procedure. The attitude of the community and of the legal profession is an important factor in deciding whether there will be many requests for settlement of trivial, non-liability or even fraudulent cases, whether there will be voluntary settlements, or whether there will be lawsuits. If the last alternative is chosen, the jury selected from the community will determine the money value of the injury and any liberal or conservative viewpoint of the judges construing the law will be reflected in the losses. The attitude of the Community, the Bar, and the Court presumably will be reflected equally in all classifications, if not in all lines. No attempt is made to account for variations from these sources in selecting the exposure medium. These variations in losses are assumed to occur by districts and are provided for by establishing territorial differentials wherever there is a measurable deviation based on adequate data.

There is another factor underlying the evaluation standard which requires different treatment as it is not subject to territorial differentials. This factor arises out of the maximum limits imposed on the amount per injured and the amount per accident. These excess limits will be designated by *a* and *b* respectively. The

lines of insurance and also the classifications within lines are divided into a few groups according to the excess hazards. It is assumed that within each group the aggregate losses for any classification when evaluated with a/b limits will have a fixed relativity to the aggregate losses when evaluated under standard (5/10) limits. No effort is made to reflect variations due to different limits in selecting the exposure medium. The rates are quoted for unit exposure on a standard limit evaluation basis. If other limits are desired, the basic rate is modified by applying to the standard limit rate the excess factor corresponding to the desired limits which is taken from a table constructed for each group of excess hazard. The evaluation standard including excess limits has been eliminated in discussing premium bases for these lines of insurance.

1. MANUFACTURERS' AND CONTRACTORS' PUBLIC LIABILITY INSURANCE.

The hazard in this line arises from the contact of the public with the critical conditions of the assured's premises and operations. The problem here is to select an exposure medium which varies with the critical conditions and the number of the public who, by entering and passing, are subjected to the assured's critical conditions. Some of the exposure media that might be given passing consideration are:

1. Number of Public Admissions.
2. Payroll.
3. Man-Year.
4. Area and Frontage.
5. Value of Product.

1. Number of Public Admissions. It would be expected that the number of injuries and their cost would vary with the number of the public who enter or pass the premises or the place of operations and that therefore this number would make a good medium for measuring the exposure. An overpowering objection is that there is generally no record available and that it is quite impractical, if not impossible, to get one.

2. Payroll. Presumably the number of the public desiring admission to the manufacturer's and contractor's premises and place of operations, within a given classification, varies with

the size of the plants or operations as roughly measured by the number of employees or the payroll. Payroll exposure responds to the decrease or increase of the aggregate losses brought on by periods of depression and prosperity in industry. It has the practical advantage of being based upon long established records necessary for other purposes, so that it may be readily obtained and checked. The use of payroll records adds to efficiency for, as many risks are insured for Compensation and Public Liability by the same carrier, the same audit may be used for each of these lines.

3. Man-Year. A man-year exposure has the same merits that have just been ascribed to payroll as regards responsiveness to the variation in losses. It is not as practical as payrolls for it is necessary to establish a special record for measuring this exposure. Under present conditions at least this special record could not be used for determining Compensation exposure.

4. Area and Frontage. An area and frontage medium—area of assured's premises and length of premises adjoining public ways—might be used for measuring exposure in Manufacturers' Public Liability Insurance. It would be expected that the number of employees, the payroll, and the size (area and frontage) of the plant would vary in about the same ratio. The area and frontage medium would not respond to variations due to depressions and prosperity. This medium is practical in application as the exposure of manufacturing plants on this basis could be accurately determined with reasonable effort. It would not serve the dual purpose of measuring Compensation exposure at the same time.

The area and frontage basis is poorly adapted to measuring exposure for Contractors' Public Liability Insurance. Area and frontage exposure does not vary and it is fitted to measure only exposures which are continuous and constant. The exposure for a location under Contractors' Public Liability is variable. It begins below average, increases to above average, and then decreases, often tapering off to almost zero.

5. Value of Product. As the value of the product of a given manufacturing establishment reflects the activity it

seems not unreasonable to expect that this product value might serve as a medium for measuring Public Liability hazard. This exposure medium, as already stated under Compensation, would require some rearrangement of classifications, it would vary with the total losses under industrial depressions and prosperity, and it could be obtained readily from available records and checked.

For Contractors' Public Liability the equivalent of the value-of-product exposure medium would be the amount of the contract. Within each classification this may be expected to vary roughly with the payroll or with the man-year exposure. A rearrangement of classifications, taking into consideration the extent to which the cost of material is included in the contract, would be required. Exposure measured through this medium could be readily obtained from available records and checked.

2. OWNERS', LANDLORDS' AND TENANTS' PUBLIC LIABILITY INSURANCE.

Owners', Landlords' and Tenants' Public Liability Insurance is the term used for public liability insurance on assured's premises, other than Manufacturers' and Contractors', and Elevator Public Liability Insurance. As in Manufacturers' and Contractors' Insurance the hazard arises out of the contact of the public with the critical conditions of the premises. Presumably the classifications have been refined so that critical conditions are similar and uniform within the classification. The variations in conditions from classification to classification are so large, however, that no one exposure medium is adapted to all. The exposure media that will be considered are:

1. Area and Frontage.
2. Number of Admissions.
3. Receipts, Admission Charges.
4. Seat-Year.
5. Sales.
6. Rentals.
7. Payroll.
8. Unit-Year.

1. Area and Frontage. This is a dual basis of premium to account separately for the hazard which may be associated with the area of the premises and that which is related to the frontage along public ways. If the nature of the premises is such that there is no frontage, then the hazard there is zero and the dual exposure becomes a single exposure based on area alone. Presumably the accidents vary with the critical conditions and the number of the public coming in contact with them. Within the same classification the accidents probably vary somewhat directly with the inner area and the linear frontage on public ways. On this assumption, area and frontage exposure may be considered to vary directly with the hazard. This exposure medium is better adapted for hazards that are continuous and uniform, or, if varying by seasons, that average about the same from year to year. It is applied to classifications covering buildings of all kinds, signboards, country estates, cemeteries, etc., where there is little variation in critical conditions or in the number of people exposed year after year. The impossibility of concealing exposure on this basis and the facility with which it may be accurately determined give it an important practical advantage.

2. Number of Public Admissions. The hazard due to the number of the public subjected to the conditions of the assured's premises varies directly with the number admitted to the premises. Considered from this viewpoint this medium is a better measure of the exposure than area. It does not account directly for any outside frontage hazard and is adaptable only where the frontage hazard is negligible or bears a fixed ratio to the area hazard within the classification. It is responsive to changes in hazard due to depressions and periods of prosperity.

The number of admissions can be secured in a practical way in only a few classifications. At present this basis is used only for baseball parks. It might be used in amusement parks, theatres, concert halls, bathing pavilions, restaurants, skating rinks, dance halls, and public museums with turnstiles or admission charges.

3. Receipts, Admission Charges. The receipts vary with the number of admissions and thus with the hazard. Like the

number of admissions, this exposure medium reflects depression and prosperity. In classifications where there is no great range in prices this exposure medium might do very well. Where losses do not vary with the admission charge or where they may vary inversely to the charge, the medium is not so well adapted as the number of admissions. This basis is practical for certain classifications where the amount of receipts is more readily ascertained than the number of admissions and where the receipts are subject to check. It is used, at present, in concert halls, stadiums, bathing pavilions, skating rinks, and dance halls. It might be used also in baseball parks.

4. Seat-Year. In certain classifications that have a continuous exposure throughout the year, or, if variable, a consistent average hazard from year to year, the number of seats forms a reasonably good measure of exposure. This exposure medium does not respond to a temporary decrease or increase in hazard like the number of admissions or admission receipts. The basis is used for theatres and moving picture houses having regular shows where the number of people exposed during the year bears a reasonably constant ratio to the number of seats. Conceivably it might be used for commercial baseball parks and concert halls but it would not give much responsiveness to losses, for there is a large variation in the number of persons exposed within these classifications, at least as these are constituted at the present time. The exposure on this basis may be readily determined and cannot be concealed for fraudulent purposes.

5. Sales. The total receipts from sales might possibly be used as a measure of exposure with some of the O. L. & T. classifications. This medium would require a readjustment of some of the present classifications to make it applicable, and to some it could not be applied at all. In classifications like retail stores of all kinds (when properly subdivided), restaurants, hotels, etc., this premium basis might be used. The public liability hazard would be expected to vary with the number of patrons or purchases and these in turn with the amounts purchased. This exposure is readily ascertained for classifications involving sales.

6. Rentals. As the area is a fair measure of the hazard in connection with buildings, it would seem that the rentals of a building might be used as an exposure medium for buildings where all space is leased. The use of this medium would require some readjustments in those classifications where it is applicable, as the better buildings, which may be expected to have the higher rentals, would have the lesser critical conditions and consequently a smaller hazard. This exposure basis would be practical for only a limited number of building classifications.

7. Payroll. The risks of some of the O. L. & T. classifications have payrolls large enough to be reasonably stable. The payrolls of such risks would vary with the size of the risk when this is measured by other than payroll standards, and might be expected to be responsive to the losses. In classifications like stores, hotels, restaurants, etc., with possibly a few subdivisions, the payrolls would vary reasonably with the number of the public coming in contact with the critical conditions and might be used as an exposure medium.

8. Unit-Year. There are premises that are so nearly identical or that have so small a hazard per unit that for practical purposes all are considered alike. The exposure basis used is the unit-year, which means a flat charge per unit per year. This medium of exposure is simple and practical. It generally applies to things where the total hazard is small. This basis is used at the present time for automatic vending machines, bowling alleys, canoes, tennis courts, dogs, where these are additional hazards to insured premises.

Miscellaneous. There are certain classifications in which the hazard varies so widely within the class that it is impossible to select any practical medium as a reasonable measure of the hazard involved. Items coming under this designation are usually considered individually and a flat charge is given after the factors underlying the hazard have been considered in each individual case. Such flat charges apply to parades, pageants, races, celebrations, etc.

The preceding exposure media for O. L. & T. Liability Insurance may be divided into two divisions according to

whether they measure the exposure prospectively or retrospectively. Area and frontage, seats, and unit-years measure the exposure prospectively, while the number of admissions, admission charges, receipts, and rentals measure it retrospectively.

3. ELEVATOR PUBLIC LIABILITY INSURANCE.

The hazard covered in Elevator Public Liability Insurance arises out of the contact of the public with the critical conditions of the elevator. Presumably this hazard varies somewhat jointly with the critical conditions and the number of public passengers. The hazard also varies with the amount of use of the elevator and the efficiency of the operator. The latter, though probably one of the major factors affecting accidents, is not directly considered in selecting the premium basis. Operators are either considered unfit and rejected or considered qualified and accepted without further gradation. The elevators within classifications are graded to some extent through merit rating for special safety devices. Through proper equipment of elevators and selection of operators it is assumed that the critical conditions are approximately the same for individual elevators of a given classification. The possible exposure media are very limited.

1. Number of Passengers. Use of the number of elevator passengers as an exposure medium would give a variation reflecting continuity of use, and to a limited extent congestion, for the hazard in congestion increases in a larger degree than the increase in passengers. Whatever merit the medium may have in responsiveness to hazard is quite offset by the impracticability of getting an accurate measure of the number of passengers in elevators generally.

2. Elevator-Year. The elevator-year exposure medium does not reflect the number of passengers carried, continuity of use, capacity of elevator, average load, congestion, or the efficiency of the operator. It assumes that within a given classification, elevators are equipped approximately equally and average about the same year after year in the passengers carried. This basis is practical and it is in universal use at the present time for measuring the elevator exposure.

It is conceivable that in the modern large building the total elevator hazard might be measured by the factors and conditions used by building engineers to determine the number, the capacity, and the location of the elevators. From these conditions an exposure for the building independent of the number of elevators might be obtained.

4. TEAMS' PUBLIC LIABILITY INSURANCE.

Some of the critical conditions contributing to the hazard covered in Teams' Public Liability Insurance are:

1. Traffic congestion.
2. Nature of the operations.
3. Day or night operations.
4. Accessibility to public.
5. Efficiency of driver.
6. Demeanor of teams.

These are not all independent. The first four are inter-related and some would consider the fifth and sixth as inter-related. Variations in hazard for the first may be accounted for by territorial differentials and for the second and third by classifications. The fourth, fifth and sixth are assumed to be equal for different assureds of the same class. There is only one exposure medium that has been considered practical for application to Teams' generally.

Team-Year. This medium does not respond to any variation of hazard due to continuity of use during the year or the amount of daily use. It assumes that within classifications and territories these average about the same. It does not respond to differences in individual drivers aside from the group differences reflected in classification experience. The exposure medium is simple and its magnitude is readily ascertained.

No other practical medium has been evolved. Mileage, team-day, or team-hour media while responsive to certain variations in hazard are obviously impractical. Driver pay-rolls might possibly be used in a few classifications where risks have a large number of teams and drivers. Receipts might serve as a basis for risks of a trucking nature. All these media however are impractical for general application to Teams'.

5. AUTOMOBILE PUBLIC LIABILITY INSURANCE.

Some of the critical conditions that contribute to the hazard covered by Automobile Public Liability Insurance or that cause deviations in this hazard are:

1. The car—age, condition, etc.
2. Highways—road beds, curves, visibility, etc.
3. Traffic density.
4. Laws, regulations, and their enforcement.
5. Efficiency of driver—age, experience, habits, impairments, etc.
6. Mileage.
7. Speed.
8. Weather conditions.
9. Seasonal use of car.
10. Day and/or night use of car.

These are not to be considered a complete list, nor are they to be considered as independent of one another. Too little is known as yet about them to appraise the importance of each. From a casual survey, however, it would appear that (2), (3), and (4) are subject to treatment, if necessary, by territorial differentials. Any appreciable differences in (1) can be corrected through classification of cars. The degree to which (5) affects the hazard is not definitely known. It is probably one of the most important factors enumerated. It is generally recognized that the extremes in age, lack of self-control, and definite impairments disqualify a driver. The effect of the variation in hazard of accepted drivers due to the range of these qualities within accepted limits is not sufficiently known to be considered in determining exposure. The introduction of experience rating is an approach to recognizing these differences. It is generally accepted that hazards would vary approximately with the mileage, other conditions being the same. The extent to which the (7), (8), (9), and (10) contribute to the hazard is unknown.

Among the conceivable exposure media these might be considered:

- | | |
|--------------|----------------------|
| 1. Car-Year. | 4. Fuel-Consumption. |
| 2. Mileage. | 5. Payroll. |
| 3. Car-Hour. | |

1. Car-Year. This premium basis does not reflect the continuity of use or the total use of the car. Obviously, other conditions being equal, the hazard will vary with the total mileage of the car. The assumption underlying this basis is that, with proper classification of cars, the differences in the hazard are not large enough to warrant introducing a more involved exposure medium. The merit of this medium is its simplicity and definiteness in measurement which make it difficult to impose fraudulent exposures.

A variation of the car-year unit might be a car-life in which a car would be insured for life at a definitely fixed amount which would be incurred at the beginning, though not necessarily paid in one payment. Conceivably this would serve to promote care and safety as the long use of cars would mean insurance at low cost. It is also possible that such a plan would be adverse to public welfare by keeping old and unsafe insured-for-life cars on the highways. This premium basis probably would not appeal to an installment buying age. It would also fall heavily on car owners who lost their cars early.

2. Mileage. The mileage exposure medium is superior to the car-year medium in yielding an exposure that varies with the hazard, as it responds more to the actual usage of the car. The devices and records necessary for the introduction of this medium make it impractical under present conditions.

3. Car-Hour. A method that would measure exposure by the number of hours the car was operated, i. e., with the motor running, would yield a variation for use of the car, though probably not so responsive as mileage. This medium, however, is even less practical than mileage.

4. Fuel-Consumption. The quantity of fuel consumed as an exposure medium would reflect a variation in the use of the car under similar road conditions. It would, however, penalize the car on country roads as compared with the car on pavements whereas the hazards are just the reverse. Like the two preceding exposure media this would require such an accounting system and other devices that it becomes impractical under present conditions.

5. Payroll. Use of driver payroll as an exposure basis for assureds where several drivers use a variable number of cars

responds roughly to the usage of the cars, as wages are paid only for the drivers necessary to keep the cars in use. This basis is somewhat akin to a driver-year basis. There are a few classifications where assureds have several drivers for which this is practical.

This discussion of automobile exposure media has been directed to private passenger and commercial cars. If the passenger hazard of public automobiles is considered, the capacity of the car becomes an important factor. As possible exposure media for the passenger hazard of public automobiles *number of passengers, passenger-mile, and receipts from fares* should be considered.

The introduction of a mileage, car-hour, or fuel-consumption exposure into rate making would require the prior development of experience on these media. The car-year is the only one of the enumerated media which measures the exposure prospectively, the others require a final adjustment which would be determined retrospectively.

6. AIRPLANE PUBLIC LIABILITY INSURANCE.

In this line of public liability insurance, as in Automobile Public Liability, there exists a natural division of the hazard into passengers and the general public. The hazard of the passengers assumes a greater relative importance than in automobile insurance. Among the more important critical conditions contributing to the hazard are:

1. Plane—type, condition, etc.
2. Use of plane.
3. Capacity of plane.
4. Weather conditions.
5. Topography of country.
6. Efficiency of pilot.

It is hardly to be expected that in this early stage of aviation the available records would be adequate to permit a proper appraisal of these factors. Of these conditions, (1), (2), and possibly (3) may be considered subject to treatment through refined classifications. Conditions (4) and (5) might be recognized to some extent by territorial differentials. The variations in hazard due to them might possibly be somewhat

equalized through regulations. The distances covered by planes obviously decreases the effectiveness of territorial differentials. Condition (6), which is probably the most important of all, is not considered after pilots have been approved.

The possible exposure media that will be considered are:

1. Plane-Year. In using this medium for exposure it is assumed that within the classifications the hazard of the planes will average about the same over the period of a year. This medium does not respond to variations in the use of the machine. Accidents presumably vary somewhat with the extent of use of the machine. This medium is simple in application and quite practical.

2. (a) Flying-Hour, (b) Mileage. These media are in some respects similar. Both reflect the use of the machine and probably are more responsive to the losses than the plane-year. They are not as simple in application as the plane-year though they are not as impractical as the corresponding bases for automobile exposure.

3. Number of Flights. Should experience reveal that the hazard connected with the take-off and climb of a flight and the descent and landing is considerably greater than that during the intervening period, then the number of flights might be more responsive to the losses and a better medium for measuring exposure than either of the preceding media. In simplicity this ranks below the plane-year but above either flying-hour or mileage media.

4. (a) Passenger-Hour, (b) Passenger-Mile, (c) Fare Receipts. These media, which are somewhat related, are responsive to the public passenger hazard. They do not respond directly to the hazard of the general public. Although not as simple in application as the plane-year, they are not impracticable, in view of the records available.

5. Number of Passengers. Should the conditions referred to under medium (3) prevail, then the number of passengers carried would be more responsive to the public passenger losses and a better medium for measuring exposure than passenger-hour, passenger-mile, or fare receipts. This medium

is not responsive to the hazard of the general public. In simplicity of application it ranks with fare receipts.

7. PRODUCT PUBLIC LIABILITY INSURANCE.

Product Public Liability Insurance covers the liability of manufacturers for accidents to the public, arising out of their products. The critical conditions consist in defects in the products, including packing. If the products have been divided into homogenous classifications it may be expected that the critical conditions are somewhat uniformly distributed. These exposure media will be considered:

1. Quantity of product.
2. Units of product.
3. Sales.

1. Quantity of Product. The hazards within a homogeneous class may be considered to vary with the volume on the assumption of a uniform distribution of critical conditions. This quantity exposure medium is probably the best basis in its responsiveness to the hazard. It is not as readily ascertained however as the cost or sales receipts of the products.

2. Units of Product. In responsiveness to hazard this exposure medium stands between quantity of product and sales receipts. It does not reflect variation in hazard due to different sizes of the units within the same classification. The measure of the exposure on this basis for most classifications is not as readily ascertained as that based on the quantity or the value of the product.

3. Sales. An exposure expressed in the medium of receipts from sales would vary approximately with the hazard, for there is a direct relation between sales receipts and volume. If the classifications contained wide variations, the high-priced as compared with low-priced goods would be penalized, for it would be expected that the more costly articles would be the better prepared and the less hazardous. The basis, however, is quite practical, as accurate sales records are essential to sound administration and are found in every line of business.

8. PROTECTIVE PUBLIC LIABILITY.

This coverage is given to owners, landlords, tenants, and contractors for their liability for injuries to the public on premises or operations which have been leased or contracted to others. The critical conditions and injurable objects are generally the same here as under the direct public liability of the lessees or sub-contractors. It is assumed that this secondary liability bears a constant ratio to direct liability and it follows that the exposure media should be the same as under direct liability. This is the procedure followed at present for Landlords' Protective Liability and Tenants' Protective Liability.

In Owners' or Contractors' Protective Public Liability a different exposure medium is used. As the coverage extends to injuries in connection with all material as well as the actual building operations it is believed that the use of the total cost of labor, material, and equipment as exposure medium gives greater responsiveness to losses. It is also recognized that this is in part a defense policy against attack on the owner or contractor in case the financial position of the party assuming direct liability precludes his paying a large verdict. This defense element of the hazard decreases as the financial position of the party assuming direct liability increases, or generally as the size of the contract increases. The ratio of the total hazard under protective liability to the total hazard under primary liability decreases with an increase in the size of the contract. As there is no practical expression which represents such a function, an approximation is made through graded charges, i. e. by charging one rate for a cost up to a fixed amount, then a smaller rate up to another fixed amount, and thereafter a still smaller rate. This is equivalent to decreasing the magnitude of the exposure by a fixed ratio in the second and third intervals. Such graded charges also might be applied to other media, e. g. payroll.

IV. COVERAGE FOR LIABILITY FOR PROFESSIONAL ACTS.

1. Physicians and Surgeons, Dentists, Optometrists, and Druggists.
2. Hospitals.

Under this form of insurance the injuries of clients arising out

of the professional acts of the assured are covered. The critical conditions consist in defects in the material, errors in treatment, negligence, or lack of ability of the assured. It is obviously most difficult, if not impossible, to get an exposure medium responsive to all these factors. As the hazard is rather small it is not practical to have a complex exposure medium. The following are considered for measuring exposure:

1. PHYSICIANS AND SURGEONS, DENTISTS, OPTOMETRISTS, AND DRUGGISTS.

Man-Year. This medium for measuring exposure like unit-year in other lines based on unit-years is chosen primarily because of its practicability. The underlying assumption is that professional men within the admitted class do not vary enough from the average to make it advisable to adopt either refined classifications within a profession or to select a more responsive but less practical exposure medium. This basis which is quite practical is used for physicians and surgeons, dentists, optometrists, and druggists. In drug stores there are, in addition to the first charge on the store, supplementary charges for additional employees, making the exposure vary somewhat with the volume of business.

Other media for measuring exposures that might be considered are: *number of treatments*, *number of patients*, and *professional income*. Each of these media lacks in complete responsiveness to the hazard and requires additional records. In view of the small hazards these media are considered impractical.

2. HOSPITALS.

Bed-Year. It is apparent that variations in the total hazard between small and large hospitals are too large to be left unrecognized. The bed-year medium for hospitals provides a premium basis which reflects directly the difference in the size of the hospital and indirectly the number of treatments or the number of patients. The magnitude of this exposure is readily obtained, making its use quite practical. There are other conceivable media like *number of patients*, *income* for non-charitable hospitals, *number on staff*, or *payroll* of the hospital. Considering both responsiveness to hazard and practicality, these media just mentioned are deemed inferior to hospital *bed-years*.

MOTOR VEHICLE SAFETY-RESPONSIBILITY
LEGISLATION

BY

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I can think of nothing more impressive by way of introduction to a discussion of Automobile Liability Security law developments than the recent action of the Province of Ontario, Canada.

A year or so ago the powers-that-be in Ontario concluded that the time was ripe for some form of legislative remedy for those victims of motor vehicle accidents who fail to receive damages by way of compensation because of the financial irresponsibility of the offending motorist. Acting with the promptness and practical commonsense characteristic of our English brethren, the Ontario Legislative Assembly, on February 8, 1929, created a Royal High Commission, charged with the duty of investigating all aspects of the civic problem presented by the motor vehicle, and particularly the situation created by the negligent, irresponsible motorist. Still characteristically after the English fashion, the Commission was composed, not of a half-dozen or a dozen busy men of diverse interests and with important affairs of their own requiring constant attention, but of one highly distinguished jurist,—the Honorable Mr. Justice Frank E. Hodgkins. Nor did the Legislature fail to provide adequate funds for the conduct of a swift and effective study of the many issues involved.

Naturally, the most productive hunting ground for any such Commission this side of the Atlantic would be the United States, where the subject of compulsory insurance and financial responsibility for motor vehicle owners and operators has been agitated for a number of years and where there are now in operation various forms of remedial legislation.

Accordingly, the Royal High Commission (Mr. Justice Hodgkins, accompanied by counsel, clerks, expert stenographers, secretaries and all the paraphernalia of an active, functioning organization) removed itself bodily to the United States.

While here the Commission visited the principal cities of the states in which any outstanding form of automobile liability se-

*This paper presented by invitation of the Program Committee.

curity legislation is in effect. It examined numerous witnesses, inquired into operating experiences under the laws and, in fact, covered in the most thorough manner every aspect of the subject. In view of the results obtained, we may perhaps venture to hazard a surmise, here and there, as to the Commission's ultimate and *underlying* conclusions. A few paragraphs will tell the story:

The Commission wasted little time in disposing of the visionary but somewhat appealing and widely advertised plan for compulsory compensation for motor vehicle injuries, along lines similar to compensation for industrial injuries, probably because it felt the stated analogy between the two to be completely lacking, and probably because of its belief that the scheme itself will prove to be discriminative, unwieldy, easily subjected to grave abuses, and costly beyond all measure in relation to the financial loss it is designed to recoup or prevent.

It gave scant consideration to monopolistic state insurance, possibly because it couples the general evils of paternalism and bureaucracy with an entirely unjustifiable invasion of private business and a regrettable subversion of the right to reasonable freedom of contract; and probably, too, because of its unconstitutional aspects,—which, by the way, are fully discussed in the recent Advance Opinions of the Justices of the Supreme Judicial Court of Massachusetts, holding unconstitutional a proposed measure for the creation of a monopolistic state insurance fund to administer insurance under the present Massachusetts Compulsory Law.

The weaknesses and disadvantages of the Massachusetts Compulsory Law were believed to outweigh any possible advantages it might possess over other forms providing for financial security.

The preferable solution is not, primarily, that of *compelling all motorists*, without exception, to establish financial responsibility (which in effect is the *compulsory imposition* upon probably 90% or more of motorists of the *obligation* to insure), but, rather, the requiring of proof of responsibility only of (a) those who are in some sort a menace on the highways and (b) those who, having given rise to a valid claim against them, demonstrate their actual financial irresponsibility by failure to pay resulting judgments; that no divine scheme for an advance segregation and assembling of all members of this class has yet been devised, nor probably ever will be; that, however, plans have been devised and are in actual operation under which, by process of selection, more or less automatic, over a period of years, motorists of this identical class tend to classify themselves and thus can be subjected to and brought

within the scope of remedial laws; that the plans in question are chiefly exemplified by the laws of New Hampshire, Connecticut and New York; that the New York law, modeled directly on the well-known *American Automobile Association Safety-Responsibility Bill*, is in effect a combination, for all practical purposes, of the fundamental principles of the New Hampshire and Connecticut laws, and therefore presents the advantages of both.

Having reached these (or undoubtedly similar) conclusions, the Commission returned to Ontario, prepared its report in March, 1930, and in April, just fourteen months after its creation, saw its labors and its recommendation stamped with legislative approval: and a law upon the statute books of the Province which is the latest word in motor vehicle safety-responsibility legislation.

It may be truthfully said that the genetical history of the Insurance Sections of the Ontario Highway Traffic Amendment Act of 1930 is:

- (a) The Massachusetts Compulsory Automobile Insurance Law, which, in one form or another, had been pending before the Massachusetts Legislature for several years prior to its enactment in 1926, and which, because of the wide advertisement its received nationally and particularly in the New England States, undoubtedly inspired the good people of Connecticut to develop something decidedly different and better.
- (b) The Connecticut Act of 1925, which adopted as a solution a selective principle (in contradiction to the universal principle proposed by the then pending Massachusetts bill, and actually carried into the Massachusetts Act of 1926) for application *in the discretion of the Commissioner of Motor Vehicles*, to motorists convicted of certain violations of the law or causing injury to persons or damage to property, and relating only to future accidents,—to wit, those accidents of the individual motorist occurring *subsequent* to the imposition upon him of the effect of the law. (Connecticut, in 1929, amended its law so as to adopt the second form of selective principle, more fully referred to in our discussion of the A.A.A. Bill);
- (c) The New Hampshire Act, which sought the remedy in still another selective principle in direct apposition to that adopted by Connecticut, for application, *in the discretion of the plaintiff*, to motorists who become involved as *defendant* in personal injury or property-damage law suits, and relating only to the accident which is the subject matter of

the particular litigation, and without any necessary reference to future accidents;

- (d) The A.A.A. Safety-Responsibility Bill, first published in 1928 (fathered, as its name indicates, by the American Automobile Association), which recognized the *complementary* nature of the two variant selective principles embodied in the Connecticut and New Hampshire laws, and wisely combines them so as to provide, as respects the individual motorist, that once the law becomes applicable it shall relate not only to future accidents but to the current accident as well (by its provision for the payment of judgments); and that its application shall be in no sense discretionary with any individual or official, but automatic and absolute;
- (e) The New York Safety-Responsibility Act of 1929, which is the direct and flatteringly imitative offspring of the A.A.A. Safety-Responsibility Bill aforesaid.

Sufficient has been said, we believe, to indicate that the A.A.A. Safety-Responsibility Bill is the first notable effort toward the combination of outstanding selective principles (as distinguished from the principle of universal compulsion) with other fundamental principles of business and social economics and of accident prevention in one scientifically constructed proposal. It is, as stated, the model for the present New York and Ontario Safety Responsibility laws; and it is the most widely known and the most favorably received of all motor-vehicle-injury remedial measures. Furthermore, it is being ably sponsored by the greatest organization of automobilists in the world, the Three A's, and by most of the related organizations which have in one way or another made motor vehicle history.

This model measure, therefore, this A.A.A. Safety-Responsibility Bill, is of vital interest to the public in general, and in particular to those who are in any way connected with the business of casualty insurance; and as such I propose to analyze it briefly and to discuss it with reference to its points of strength and weakness. We have already indicated, in rather summary fashion but adequately for today's purposes, the essential distinctions between it and the compensation scheme, the universal compulsory insurance plan and the original Connecticut and the New Hampshire laws: and as we go on, its points of identity with and its slight differences from the Ontario law will more clearly appear.

For a moment, however, let us look at the objective which the

American Automobile Association in sponsoring such a measure has in view. I believe that the *result* of any effort whatsoever may be better understood if the reasons underlying the final decisions, if the various lines of approach, are open to examination. In other words, if its philosophical, ethical and social implications are fully considered and understood. The purpose of the American Automobile Association, unquestionably, is to procure the adoption of the most advanced and reasonable form of automobile financial security legislation; and to do so by bringing such implications to the conscious attention of our people, with brevity, with clarity, and in all their veridic force. Upon such implications, the A.A.A. Safety-Responsibility Bill is bottomed; and to their recognition, in whole or in part, is due the favor with which the bill has been received. They are summed up in the conclusions arrived at by the A.A.A. Compulsory Automobile Insurance Committee, under the able chairmanship of Mr. Owen B. Augspurger, of Buffalo, which, somewhat sketchily paraphrased, may be stated as follows:

1. "That the streets and highways are public assets; that the automobile is a vital factor in the country's business and social and economic life; and that the large mass of law-abiding, careful drivers should be permitted the use of the streets without subjecting them to unreasonable burdens, financial or otherwise."
2. "That any such remedial law" (to wit, a law designed to create a form of financial responsibility where otherwise it does not adequately exist or, at the best, is questionable) "should approach the subject from the standpoint of national safety," and should "confine its penalties, burdens and disabilities to those proven guilty of offense against the public welfare," and thus by the very threat of the imposition of such penalties, burdens and disabilities, serve as a prime and efficient factor in the Association's campaign for motor vehicle accident prevention.
3. "That compulsion of any sort is not popular with the average American, and he resents being *compelled* to purchase insurance (in advance of any showing that he personally *needs* such insurance if the public is to have financial protection where he is concerned). This is particularly true of the large body of car owners who live in sparsely settled territories, and whose use of the car and exposure to accidents is relatively small."
4. "That the compulsory, universal application of the insurance requirement is the principal source of the difficulties encountered in Massachusetts."

5. That any such law should be limited in its application to those motorists, owners and operators who have as a condition precedent automatically classified themselves by their own acts as being (a) reckless and (b) financially irresponsible, who have thus "demonstrated that they are an actual or potential menace to their fellow motorists and to the public in general." And with this in view the law should be so drafted as to "place a direct responsibility where it should be placed, without forcing upon a large proportion of the population of this country a financial burden which in itself would not achieve the results that all good citizens desire."
6. That once the law becomes applicable, it should then apply absolutely and without question, and as nearly automatically as can be provided for, to the class affected, but should affect only the class which, by their own prior fault, bring themselves within its terms.
7. That such a law should consider fairly and deal reasonably with the three great interests involved,—to wit, *the public, the motor vehicle owner and operator, and the business of insurance.*

These leading principles, the rock-bottom fundamentals, these desirable implications, are well exemplified in the A.A.A. Safety-Responsibility Bill.

In substance, the bill provides that upon conviction of a violation of the major provisions of the state motor vehicle safety laws, the offending motorist is required to establish proof of future financial responsibility, under penalty of suspension of license and registration plates for all motor vehicles. The requirement is not discretionary, but follows directly upon the conviction. The bill further provides that upon failure to pay a final judgment (up to the prescribed limits,—to wit, \$5,000.00 for injury to or death of any one person, and \$10,000.00 for any one accident; and \$1,000.00 for property damage in any one accident), the defendant's license and registration plates for all motor vehicles are suspended and shall not be reinstated until (a) the judgment is paid up to the limits aforesaid and (b) proof of future financial responsibility is established. These requirements likewise are not discretionary, but automatic and absolute. Furthermore, when, in either case, the requirement of establishing financial responsibility is imposed, the motorist continues subject to it as well for *subsequently* acquired, as for *presently* owned, motor vehicles. The bill is applicable to non-residents, and may also be invoked for a conviction

sustained or a judgment imposed outside the state. Under its provisions, non-residents who do not, upon requirement, comply with its terms, may be barred from the highways of the state.

Financial responsibility may be established in one of three ways:

- (a) By means of a personal or corporate surety bond, guaranteeing payment of judgments within the limits prescribed.
- (b) By means of a deposit of cash or securities with the State Treasurer, in the amount of \$11,000. This deposit is sufficient, regardless of the number of motor vehicles operated by the depositor; but it must be maintained at all times at that amount.
- (c) By means of a policy of insurance, with limits of \$5/10,000. for personal injury and \$1,000. for property damage.

The American Automobile Association, in the preparation of the insurance feature of the bill, followed closely the New Hampshire law. Briefly, the A.A.A. bill provides that all automobile liability insurance must be in substantially the statutory form. When a motorist buys a policy of insurance under the proposed law, he knows that the policy will protect him under the law so long as he does not violate the policy terms. The statutory policy terms are broad, simple and clear. They can be violated only by the willful intent of the motorist to violate them. The statutory policy is, in fact, broader than the average automobile liability insurance policy sold today. The public is protected, even if the motorist violate the policy terms, since, in the latter event, the Insurer must pay the judgment and then look to the motorist for reimbursement. The public is absolutely protected for every accident caused by the insured automobile, unless the automobile is used *without the consent of the insured*. This form of policy protects the honest owner without question, protects the public in all practicable cases and enables the insurance company to sell the insurance at reasonable cost. It does not penalize the honest owner by compelling him to buy a universal-coverage policy, at excessive cost, in order that dishonest owners may have protection when they violate the reasonable policy terms. It is by far the soundest form of insurance compatible with reasonable cost to the policyholder. It has already proved itself under the New Hampshire law.

The statutory limits, as stated, are \$5,000. for one injury, \$10,000. for all injuries in one accident and \$1,000. for property

damage in one accident. Coverage may be granted in excess of the statutory limits; but the excess coverage is not subject to the law. The policy may contain the usual conditions and exceptions. They are not binding on claimants (except for the excess insurance over the statutory limits), but are binding as between the company and the insured. If the loss be due to a violation of the policy terms, the company, having paid the judgment creditor, is entitled to reimbursement from the insured. All automobile liability policies issued in any state where the A.A.A. bill is effective will come automatically within its terms.

To guard, so far as may be consistent with the selective principle, against the operation of uninsured automobiles by operator or owner who has theretofore been required to give proof of ability to pay, the bill provides (a) that policies issued to non-owners shall cover the insured for the operation of any motor vehicle whatsoever, (b) that no policy of insurance or bond shall be accepted by the commissioner of motor vehicles unless it cover all motor vehicles then registered in the name of the insured (this coverage may be by one policy or by several), and (c) that after a policy is filed with the commissioner he shall not thereafter register any motor vehicle for that insured unless a policy be furnished for such additional motor vehicle also.

Well begun is half done,—and with respect to the A.A.A. Safety-Responsibility Bill, a great deal more than half. But, as was to be expected in so comprehensive and so ambitious an undertaking, minor weaknesses, trivial but irritating defects (and perhaps by my very choice of terms I am guilty of exaggeration) developed.

You would be in nowise concerned with or benefitted by a technical discussion of them. But it is believed that mention of a few will not be without interest, as illustrating two outstanding truths: That the way of the amateur solon is beset with unimagined difficulties; and that the closer one is to a matter or thing, the harder it is to scan it in detail, as where one honestly and literally cannot see the trees for the woods.

THE EFFECTIVE DATE

To begin with, it has been argued that the bill is ambiguous as respects its effective date: and by this I do not mean the date upon which the law goes into effect, but the date as of which, after it becomes effective, it may begin to operate on the individual

motorist. Assuming it becomes effective (as the New York Act did) September 1, 1929, and on October 1, 1929 a judgment is recovered on an accident which occurred in 1927: Is the motorist required to pay said judgment and thereafter to furnish proof of financial responsibility as a condition precedent to his right to continue registration, etc.? Or a motorist is convicted on October 1, 1928 for an offense which he committed in July, 1928: May he be compelled to establish financial responsibility? The first of these questions has been answered in the affirmative, the second in the negative, by the Attorneys General of the States of New York and New Jersey respectively. Our own opinion is that the Act operates prospectively only, and that the motorist is subject to penalty under it only for convictions sustained or for failure to pay judgments recovered, as a result of violations and accidents occurring after the effective date of the law.

Ontario has definitely cured this ambiguity, and its provision may serve as a model for future laws to be enacted in the States. In any event, it is an ambiguity which automatically tends to cure itself with the passage of time.

UNINTENTIONAL DISCRIMINATIONS

While the law permits the issuance of separate complete policies for separate motor vehicles of the same owner, it does not permit the issuance of separate policies for liability and property damage cover, respectively. While the commissioner might be thought to have an implied authority to accept two such separate policies, the fact remains that one attorney general has ruled that he cannot do so. Thus, fire companies which are not authorized to write liability insurance, but are authorized to write property damage insurance, are in the position (a) of not being able to issue property damage at all, or (b) at least in the position of not being able to issue a policy which will be acceptable by the commissioner as establishing proof of responsibility. I have every reason to know that this was purely unintentional, and will be cured by an appropriate amendment so far as the model bill is concerned.

WHEN IS A STATUTORY POLICY?

Analogously, and despite the utmost care on the part of the draftsmen, it has been diversely held, where the bill has become law, (a) that not only is the statutory policy the only policy which

can be accepted as proof of responsibility, but is the only form of policy which after the passage of the law can be issued in the state; and (b) that any form of policy (theretofore legal) can be issued, but only the statutory form can be filed as proof. Our construction is that only the statutory form can be issued. Such was unquestionably the intent, and it is difficult (to my mind impossible) to otherwise construe the bill. It is this construction, however, which, where it obtains, operates to prevent the fire companies from issuing automobile property damage insurance. The Ontario Act does not correct this condition.

AUTHORIZED COMPANIES

The bill provides that policies may be issued only by, and may be accepted by the commissioner as proof only when issued by, companies authorized to transact business in the state. This would seem to be quite reasonable, simple and straightforward; but non-residents who enter the state are subject, while in the state, to the law. The non-resident may carry the policy of a company authorized to transact business in his state, but not in the state in which his trouble occurs. Strictly construed, his policy would not be acceptable as proof. The bill will be amended, I believe, to provide that policies will be acceptable if issued by companies authorized to transact business in the residence state of the motorist. The same restriction to authorized companies appears in the Ontario Act.

HIRED CHAUFFEURS

It was early realized,—in fact, before the adoption of the Safety-Responsibility bill by any state, that it imposed an unusual hardship upon hired chauffeurs who do not themselves own motor vehicles. In its original form, the bill unquestionably requires the hired chauffeur, upon conviction, to post security; and, quite naturally, the average chauffeur can post security only in the form of an insurance policy. He would therefore be required to purchase insurance, at a cost higher than the average (because it covers him for the operation of *all* motor vehicles), while at the same time his employer may have a policy of insurance which would cover the chauffeur for all accidents occurring in the operation of the owner's motor vehicles. Thus, not only is the chauffeur required to pay a heavy premium, but the motor vehicle he operates is doubly

protected. This is a condition satisfactory neither to the business of insurance, nor to owners, or chauffeurs. Accordingly, the bill as offered in the New York legislature was amended to provide that under such circumstances the owner might establish proof of responsibility for his chauffeur, by the filing of his own policy. This amendment was carried into the New Jersey Act and into the Ontario Act as well.

THE FAMILY CAR

Similar to the situation of the hired chauffeur is that of the member of a family not individually owning a motor vehicle, but operating the family car. At the time of the introduction of the bill in New York, our vision had not extended so far as the members of the family. Experience in New York, however, indicated that the owner of a family car might quite unnecessarily be required to pay an extra premium for the purpose of establishing financial responsibility of the individual members of the family, which was already established by the owner's policy. The Ontario Act extends to the owner the same privilege with respect to members of his family as the New York Act with respect to chauffeurs. The bill will undoubtedly be revised in this particular.

EXTRA STATUTORY OFFICIAL ACTION

In an effort to reduce to the minimum the natural irritation growing out of a law of this character, it was intended that it would relate to and affect only those motorists who come explicitly within its provisions,—to wit, those who were convicted of violation and those who failed to pay a judgment. It has now developed, however, in states where broad powers of suspension and revocation of licenses are vested in the official authorities, that they can take advantage of the existence of the statute by compelling (under threat of suspension or revocation) the establishing of proof under circumstances not contemplated by the bill itself. This may actually be a happy development, since it increases the scope and efficiency of the law; but it was certainly not in contemplation by its sponsors. On the contrary.

As contradistinguished from these uncertainties, ambiguities and repercussions, there have also developed for consideration certain substantive proposals for the affirmative improvement and extension of the bill,—as, for instance,

APPORTIONMENT OF INSURANCE MONEYS

As the bill now stands, it provides a maximum of \$10,000. for any number of persons injured in one accident, and of \$1,000. for any amount of property damage in any one accident. No attempt is made to apportion the proceeds between the several claimants,—three or more for personal injury, two or more for property damage. It is at present a case of first come first served, on the theory that the proceeds of insurance represent no more than so much cash in the hands of the insured. An apportionment of the moneys would probably require a change in our present rules of litigation. It would perhaps be desirable, from the standpoint of the public; but at the same time would present many generally undesirable features. The addition of a provision for apportionment to the Ontario Act was, I believe, considered at some length; but the idea was abandoned as being impracticable at this time.*

PREMIUM PENALTIES

The Connecticut law provides for classification of motorists who become subject to the law, into classes a, b and c. Each class is subject to a penalty, and the lowest running from ten per cent. for class "a" up to fifty per cent. additional premium for class "c". The bill makes no provision for such penalties. Ontario, however, adopted them, and has drafted a most scientific provision under which classifications are made by the official authorities, and the

*Recently it was decided by the Supreme Court of New York County (Judge Townley) in the case of Frank, et al, vs. Hartford Accident & Indemnity Company (239 N. Y. S., 397; 3-18-30) that under certain conditions Section 282 B of the Highway Law (the public motor vehicle act), which is made a part of every policy issued under that Act, requires that where more than two are injured or killed in one accident the proceeds of the policy be apportioned ratably among *judgment creditors*, according to the amount of their respective judgments. In this case the Insurer, because of the insolvency of the Assured, was not permitted to offset against the maximum limits of its policy the amounts theretofore paid in settlement of claims. An appeal has been taken to the Appellate Division of the First Department, and is now pending. It is an open question whether this decision, if affirmed, will affect claim settlements in multiple injury cases under the New York Financial Responsibility Law,—which is an adaptation of the A.A.A. Safety-Responsibility Bill. It is believed, however, that in a forthcoming edition of the A.A.A. Safety-Responsibility Bill, designed to serve as a model for future legislation of the kind, the present ambiguity, if any, will be satisfactorily eliminated.

insurer is bound to observe them under heavy penalty. Theoretically, the effect of this would be that while average premiums may remain at their present level, ultimately the motorists who are causing the losses will pay at a rate more nearly proportionate to their responsibility. It is one of the most interesting rate developments in recent years, and will receive much thought and consideration in the immediate future.

VOLUNTARY FILING

The Ontario law provides that a motorist may at any time voluntarily file his policy with the commissioner (or otherwise establish proof of responsibility). He may thereafter save himself from annoyance following conviction, by the mere display of his certificate of compliance. It is to be hoped that similar provision will be made in a redraft of the bill.

INSTALLMENT PAYMENT OF JUDGMENTS

The rigid requirement for the payment of judgments as a condition precedent to the restoration of license may well work a hardship on many individual motorists. This could be avoided by following Ontario's lead in the adoption of a provision for payment, subject to the approval of the court, of judgments by weekly, monthly or quarterly installments.

ACCIDENTS NOT INVOLVING CONVICTION

We have above referred to the extra statutory action of officials who choose to apply the requirement for financial responsibility in a manner which, while perfectly lawful, was not contemplated by the bill. There is a good deal of reason back of the assertion that the bill should be extended to specifically vest the official authority with discretionary power to make the requirement of proof in event of any accident involving injury to person or property, whether conviction results or not. The effect of this would be to extend the beneficially operative effect of the law and, at the same time, to reasonably limit the extra statutory application of the law.

MINORS

Finally, it is for consideration whether the Connecticut provision *requiring* the commissioner to demand proof of responsibility for any registrant between the ages of 16 and 21 years (registration under 16 being prohibited), or the Ontario provision *authorizing* the commissioner to make such requirement, and also to make such requirement of any person over the age of 65 years, should be adopted. While these provisions savor somewhat of compulsory automobile insurance, as such, they are nevertheless still selective and the classifications are perhaps reasonable. Personally, my view is that the bill in its present form sufficiently protects the public against financial loss caused by persons within these classifications, and that in the last analysis it is a matter to be decided by the individual states.

CONCLUSION

Because it is believed that legislation exemplifying the principles of, and largely modeled upon, the A.A.A. Safety-Responsibility bill is here to stay and to multiply; the best minds in the country are engaged in an extensive study of these problems. The Committee of Nine, which is the flying wedge of the insurance world in the battle for sane and practical regulation of Automobile Liability Security Insurance, and the Committee of the Three A's are both at this very moment working toward its simplification (as requisite) and its elaboration (as requisite) along the lines which experience, retrospect and foresight may suggest.

Considering actual, tangible accomplishment to date, it may, in conclusion, be well said of this constructive measure, in itself, and as enacted into law by New York, Ontario and (partially) by many other states, that:

It is essentially a safety measure, playing its substantial part in the great national campaign of accident prevention, since it imposes a penalty for reckless driving, over and above the penalties in the motor vehicle and criminal statutes.

It is essentially a financial-responsibility measure, because automatically, in its operation, it procures the establishment of financial responsibility where none exists and increases financial responsibility where it is already present.

It is essentially selective and non-compulsory, since it need not

necessarily affect the financially responsible at all, and since it will not affect even the financially irresponsible unless they are convicted of a violation of safety regulations or permit a judgment recovered against them for injury to person or property to remain unpaid.

It is essentially fair and reasonable in its financial responsibility requirements, since the latter can readily be met by insurance; since the great body of cautious, sensible men do already, by means of insurance for their own financial protection, voluntarily establish the same character of responsibility; and since the requirement is imposed only if and when it is demonstrated by the motorist's own conduct to be necessary.

It is, to all intents and purposes, self-operative, necessitating the absolute minimum of interference by the state with its citizens, minimum interference with freedom of contract and with existing laws and customs; it will require no staff of officeholders to direct and administer it; and in its present form it is unlikely to become the subject of bureaucratic manipulation or political control.

For all the reasons mentioned, and for other reasons which time does not permit us to advert to, it is believed that while, as we have not hesitated to say, the bill is necessarily far from perfect and must necessarily be modified and improved in some particulars, it does nevertheless constitute the simplest, the most constructive and thus the most effective type of remedy for the evils complained of which has yet been brought to the attention of the American public.

ABSTRACT OF THE DISCUSSION OF PAPERS READ AT
THE PREVIOUS MEETINGTHE ORIGIN AND DEVELOPMENT OF REINSURANCE—EDWIN W. KOPF
VOL. XVI., PAGE 22

WRITTEN DISCUSSION

MR. JAMES S. ELSTON

The Society is deeply indebted to Mr. Kopf for this comprehensive paper which treats the subject after the same thorough study which Mr. Kopf has applied to previous subjects on which he has written for the Society. The scope of the subject is so broad that Mr. Kopf necessarily treated the development of life reinsurance less completely than he did that of fire and casualty reinsurance. Further, it must be remembered that Mr. Kopf is writing primarily for the actuaries of casualty insurance companies. Nevertheless, inasmuch as life reinsurance has been included, it seems as if mention might be made in the discussion of the paper of several important features to supplement Mr. Kopf's paper.

In the first place, several references might be given which are not included in his "Select Bibliography", presumably because these papers were not used as references or authorities for his comments. The first important paper that might be mentioned is that of Mr. Henry Moir on "Reassurance of Surplus Risks" in Volume VII of the Transactions of the Actuarial Society of America. One of the most comprehensive papers on life reinsurance in the United States was that of Mr. W. N. Bagley and Mr. J. M. Laird on "Life Reinsurance" in Volume XXIII of the Transactions. The chapter on Reinsurance in Charles K. Knight's "Advanced Life Insurance" may be mentioned though it adds little additional to the subject.

In the 35 years immediately preceding the 20th century very few, if any, of the companies in the northeastern part of the United States had reinsurance agreements, but it was their practise to issue policies for amounts greater than they felt they could themselves keep and to protect such excess by reinsurance obtained from neighboring companies. The reinsurance policies usually were on the corresponding policy forms of the reinsurer and the premium rates, commissions and general policy conditions were those of the reinsurer.

About 1903, as stated in Mr. Kopf's paper, the risk premium method came into use and at the same time automatic reinsurance agreements, the latter, strangely enough, derived from similar treaties applying to accident and health insurance. The risk premium method did not gain much popularity among the northeastern companies at that time, although it was used until 1914 with reinsurances given to certain foreign reinsurance companies. Most of this was with the Munich whose operations Mr. Kopf describes on page 31.

The breaking down because of the World War of all of the foreign life reinsurance facilities naturally caused the companies to turn to the others in the United States for the necessary outlets and as a result the risk premium method has been used for the past dozen years, almost exclusively by some of the large companies in the northeast.

Mr. Kopf mentions the Reinsurance Life Company of America formed in 1917. In 1919 the American Life Reinsurance Company was started in Dallas, Texas, for the purpose of writing only reinsurance, but a few years later it wrote direct business also. It has recently been reinsured, its direct business by one company and its reinsurance business by another company.

It may be mentioned that a few companies in the middle-west have been very active in writing reinsurance for the past 25 or 30 years, chiefly upon the amount at risk plan. In fact their reinsurance departments have been so active that a very large part of their total business is reinsurance. One of these companies now has nearly \$400,000,000 of reinsurance in force.

As Mr. Kopf states, the risk premium method has not been generally adopted in Canada; however, it is now being used by one of the large Canadian companies, probably in connection with reinsurance business to be derived from the United States.

At the present time there are a number of so-called "pools" to be found among the United States companies, particularly the smaller companies. These pools, which are reinsurance arrangements for the exchange of reinsurances, both automatic and facultative, among the companies involved seem to have come about in the following manner: The companies, the number ranging from three to seven, whose home offices are comparatively near each other, have perceived great advantages to be derived from the cooperation incident to exchange of reinsurance among them-

selves, as compared with a method of securing reinsurance from companies much greater in size and perhaps located at the other side of the continent. They write about the same kind of business in the same territory; their home office and field conditions are substantially the same and, in general, their ways and ideas of conduct in life insurance business are substantially in accord; also, they believe that the cost of reinsuring their own excess risks will be offset by the profit coming to them on business they receive in exchange. Of course, this balance exists only if there is a uniform mortality on the reinsurance and such uniform mortality is not found as a rule. In the main, however, the pool arrangement seems to be satisfactory to those who have adopted it and are using it conscientiously. Certain of these pools not only exchange business among themselves, but also reinsure excess lines of companies outside the group and, in instances of very large risks, go to other companies for the amounts in excess of their own handling facilities.

In brief, the disruption of life reinsurance arrangements with foreign companies during the war was met principally in three ways—by the development of reinsurance departments in several large insurance companies, by the formation of pure reinsurance companies, and by the development of the “pools” described above. Of course the practice of obtaining reinsurance for large individual risks on a facultative basis without definite treaty relationships has also continued.

I am indebted to Mr. W. M. Bagley for many of the suggestions and concrete facts in this discussion.

REVIEWS OF PUBLICATIONS

RALPH H. BLANCHARD, BOOK REVIEW EDITOR

Casualty Insurance Principles. G. F. Michelbacher. McGraw-Hill Book Co., New York, 1930. Pp. xv, 709.

Mr. Michelbacher, who achieves remarkably well the difficult feat of retaining as a company executive the balance and impartiality of the student, has done a real service for the science and business of casualty insurance. In this sizeable tome, to be sure, he has had the cooperation of nine other experts; but at least half the chapters and one suspects most of the inspiration, come from the leader. In its appointed field *Casualty Insurance Principles* has not a competitor. Practically every detail of the business except the analysis of policy contracts has received minutest attention. There are detailed chapters on subjects not written about elsewhere, as those on Advertising, Cooperative Organizations and Office Procedure. There are chapters, just as detailed, on Audits, Statistics and Engineering, that contain material available only in scattered places and only to specialists. And there are still other chapters, as that on Distribution of Shock Losses, that bring up to date, expand and round out for the whole business subjects discussed by the principal author in his previous book on workmen's compensation.

One need not, one could not agree with all the opinions of so many authors, however eminent. Nor could so many thousands of facts have been transcribed without error. Illustrative of the first class of cases are statements in Chapter V on stock company *versus* mutual cooperation and the "98% of all industrial accidents are preventable" statement in Chapter XVII. Also one discerns a shrewd bit of special pleading in the suggested role of the State in enforcing the rules on production cost in Chapter XV. Illustrative of the second is the broad implication in Chapter XIV, and twice repeated, that intoxication is always a bar to recovery for workmen's compensation (see Penna. law); another in the same chapter that all states require a compensable injury to both occur in the course of and arise out of employment.

One of the really difficult jobs in the world is to get a task done by committee. The writing of a book is no exception. Rather, because of the just pride of everyone in his own printed creation,

group authorship presents even more hurdles than group administration. A book sired by a committee is very likely to be a flabby, pitiful child, too much tissue here and great weakness and deficiencies there. The danger was thoroughly realized in the present case, and to an extent far greater than in any symposium the present reviewer recalls, avoided. Nevertheless one of the few complaints to be made of *Casualty Insurance Principles* turns on this matter of unevenness, duplications and eliminations.

Take unevenness. Style varies from the chatty intimacy of the collaborator who writes on what might be called The Etiquette of the Auditor (he is told to commit neither himself nor the company) to the solid legalities of the lawyer Hobbs. Many of the styles are plain pedestrian; Michelbacher is pungent, forthright, salty, even when he talks of annual statements. Take the duplications. One meets the annual statement (in considerable detail in both places) in two chapters; Office Procedure, which has a separate chapter, runs right across the chapters on Claims, Audits and Statistics, especially Statistics; accounting is defined in at least two chapters by two different authors. These illustrations are not by way of quibbling; the reviewer has already given his opinion of the work as a whole. But repetitions beyond a certain point are not only useless, they become annoying. Material on Manual Rate Making and Statistics is repeated, even to the repetition of the definition of a classification, to the listing of the various types of passenger automobiles. A great proportion of the duplications by their nature cannot be allocated to page and chapter; the reviewer remembers the chapter on Audits as especially replete with information already several times discussed.

Finally the omissions. One is surprised to find so cavalier a treatment of the making of rates, for in a very real sense, rate making is the most important part of casualty insurance. Surely the so-called Permanent Plan—when if ever the large and small risk controversy is ironed out—is not fixed forever; but by the same token perhaps there ought be no discussion of merit rating for automobiles. As for sparing the sensibilities and endurance of the layman, whose viewpoint is specifically mentioned, the reviewer raises two questions: First, who is the layman? If the man of the street, is he expected also to plough through the hefty chapters on Statistics and Reserves? If the student in or out

of the company organization, if the producer or the official, should he not know the way rates are made?

Here is a short list of other omissions which struck the reviewer as strange. There is very little material on the law of the agent (except statutory), while there is an entire chapter on the insurance contract, discussing in considerable detail the legal phases of applications, binders, warranties. Michelbacher goes very lightly on the defects of merit rating, especially as practised. There is no diatribe on the abuses of automobile fleet rating. Very little is said on the large and small risk sore spot between the stock companies and the mutuals; quite lukewarm is the discussion of state licensing laws for agents.

Perhaps there is another factor that is partly to account for repetitions and omissions: the functional plan of treatment, the analysis of casualty insurance, not by insurances but by fundamental aspects which apply more or less generally to all lines. This book is essentially a series of discussions by different men on their specialties. The discussions are coordinated, still each man has turned inside out for inspection just his own cubicle. Inevitably there result repetitions and omissions, because there are innumerable scraps of information that fall in no expert's cubicle in particular and there is no practicable way of making up a separate chapter of these scraps, however vital. Also functional treatment has another effect; when it does not over-particularize, it over-simplifies. A good illustration will be found in the chapter on Manual Rates. One may not assume that all manual rates are different, because that is not the fact. Neither may one assume they are all alike. An attempt to straddle the issue must be disastrous. The reader, especially the layman, shuttles back and forth between illustrations (not explanations) from workmen's compensation and automobile liability rate making, and wonders what it is all about. The discussion cannot apply to casualty lines that are purely property covers, and they are both numerous and important; but there is nothing to warn the layman. And mystery deepens when he turns over a few pages to the section in the same chapter which deals with judgment *vs.* statistical rate making. There is no better written, no more judicial discussion in the entire book, but there is not a single word here to indicate that the discussion is not to apply to *all* casualty covers. The author writes as though there is always perfect freedom of choice

for the rate maker between the two methods. Can these dicta be applied equally to plate glass, burglary and steam boiler insurance as well as to automobile and liability lines? That there are fundamental differences in the risks covered by the two classes of insurance is axiomatic. The discussion here does not reveal nor admit them.

Two other criticisms plague the reviewer for expression. Half way through the book for some reason he asked himself a question. What would be his reaction if he were in a mutual? Turning to the list of contributors he found not one writer from the mutuals. Now granting that there are such things as principles of casualty insurance, is the identity of these principles so tight, so universal, that one type of carrier may speak for all? Granted that the mutual is in a marked minority, is seven lines a fair allotment for a description of all his cooperative organizations? Throughout the book the mutual is now and then referred to but usually in a casual way. His case is presented but by an attorney whose regular job is for the opposition. In the chapter on Advertising, for example, the mutual's difficulties are dismissed too lightly. He has, to be sure, the argument of low cost (whether true or not) but what of the persistent, the continuous, the pervasive advertising pressure and prestige of a local agent in every village? Compared with occasional broadsides in the *Saturday Evening Post* or in the local newspaper telling of the mutual's cheap rates, this is truly a formidable advertising weapon. Again on the same page, the author pities the stock companies because it is necessary for them always to combat false impressions. The mutuals also have false impressions to combat. One remembers vividly a particularly unfair piece of competition that was and perhaps still is used against the mutuals. It consists simply of a list, an interminable list, of all the mutuals that have failed, for years and years back. No comparison is made with the total number of mutuals in business for that time, nor with the failures of competing carriers. The reviewer here is making no brief for the mutuals; it simply strikes him that two or three collaborators in this symposium from the opposite side of the street would have made for greater comity. Perhaps this is impossible.

One final criticism, perhaps an unfair one. Does this book have the correct title? One should not presume to quarrel with the sires in their right to name the child, *but*, is this a book of

principles? To a great extent, perhaps to the greater extent, these are principles, *but* what of much of the voluminous material on Office Procedure, on Audits and on Statistics? Are these all principles, or will they inevitably change from month to month, from day to day, to be superseded by other evanescent minutiae? The reviewer would not have them deleted, but are they not practices? Not so short a title, though perhaps a more descriptive one would have been: CASUALTY INSURANCE PRINCIPLES AND PRACTICES. There are excellent precedents for this method.

A good book and a needed one. A sign that the business of casualty insurance is growing up.

C. A. KULP

Report of the Special Commission to Study Compulsory Motor Vehicle Insurance and Related Matters. Commonwealth of Massachusetts, Senate No. 280, 1930, Boston, January 1, 1930. Pp. 286.

This is a long and carefully written report, and apart from its legislative significance, a notable addition to literature on the important topic of automobiles, and their effect on the community, and of the development of public policy with relation thereto.

The advent of the automobile and the huge development of the industry within the space of a relatively few years has created a host of problems. It has profoundly affected the finances and the habits of the community, and made a whole series of changes in economic and social relations. The full effect on government has yet to be determined. The issues which have been most prominently before the State Legislature have been mainly incidental to the creation of a huge traffic over the highways, partly new, partly gained at the expense of established common carriers. This has forced enormous expenditures of public funds for new highways or the enlargement and betterment of old; has transformed road building from a matter to be handled by city, town or county to one demanding the attention of the state and even of the nation; and has created a perfect host of policing problems. It is these latter which have assumed a major importance, and chief among them is that which has given rise to the legislation with which this report deals.

The congestion of the ways and the speed and mass of the motor driven vehicles have produced a frightful toll of accidents, resulting

in death or personal injury. This in itself is a grave matter; controllable to a degree through proper measures of police, but only to a degree. Collaterally it produces a situation where the individual is placed at a striking disadvantage. A person is killed or seriously hurt. If this be through the fault of the driver of the motor vehicle, he or his employer should answer for it, making such indemnity as the law considers adequate. But apart from the difficulty of identifying the offender, who all too frequently makes haste to get away, legal rights and remedies all too often prove valueless, the driver being financially irresponsible and his car of a value inadequate to meet a judgment of any size.

This particular side of the problem can be met by legislation; and the report is of great worth in that it collects, not only laws actually enacted, but various proposals for legislation. Among these the Massachusetts law is a striking and as yet unique measure. It consists, generally speaking, in requiring an applicant for registration of a motor vehicle to give security for the payment of judgments on account of injuries caused by the car during the registration period. The security may be either a deposit of cash or securities, or the production of a certificate showing that the registrant has insured his liability to the extent of \$5000 for one casualty or \$10,000 for a single accident. Offhand this seems a simple matter; but a reading of this report is illuminating evidence of the complications which may arise from a matter apparently simple.

In the first place may be noted the effect on the courts. The act went into effect on January 1, 1927. Forthwith began a perfect flood of litigation, new entries of suits to be tried by jury increasing 50%; or from about 18,000 annually to over 27,000 annually. The capacity of the courts in Massachusetts is rated as 2500 per annum. Doubtless many of these new entries never come to trial, settlements out of court greatly outnumbering cases tried, but even so, the cases for trial increase much faster than they can be disposed of, and a situation is threatened when an interval of five years must intervene between entry and trial. The cause is not hard to seek. A situation is created whereby every owner of a car operating on the highways is worth suing, and whereby the bringing of a suit, no matter how baseless, is calculated to win at least a small settlement to avoid the cost of trial and the chance of an adverse verdict. Legal and medical specialists in automobile cases

have apparently arisen, the same names appearing with suspicious frequency in both the court registers and in the records of insurance companies. The commission notes in addition a great increase in criminal prosecutions for violations of the motor vehicle law or traffic regulations, indicating their conviction that in many cases these appear to have been pressed for the sake of obtaining a court record of conviction which might later be introduced as evidence in civil litigation.

The remedies proposed for this phase of the matter strike one as merely in the nature of palliatives. The list is lengthy, including:

(a) Requirement of notice to both defendant and insurer as a prerequisite to maintaining suit.

(b) Requirement of an entry fee, graduated to correspond to the damages claimed.

(c) A provision for settlement of cases by judicial arbitration.

(d) A provision for oral examination of parties in advance of trial.

(e) A provision to empower courts to prescribe a time limit within which suits must be brought.

(f) A provision for the examination of injured persons by an impartial physician.

(g) A provision making available to parties litigant hospital records and accident reports made to the registrar of motor vehicles.

(h) A provision making records of conviction for violation of the motor vehicle law or traffic ordinances inadmissible as evidence in civil causes.

(i) A provision for a one-year statute of limitations on claims for property damage. This now exists in case of claims for liability for personal injuries in motor vehicle cases.

(j) A provision for signed statements of claim on forms prescribed by the insurance commissioner.

All of these have their merits, though some smack of the legal doctrinaire. It may be doubted if their enactment would prevent the compulsory automobile law from being a litigation breeder. It may be noted that apart from the congestion there appears little evidence of demoralization in the courts. Plaintiffs' verdicts are not greatly in excess of defendants' verdicts, and the rendition of large verdicts in motor vehicle cases are relatively uncommon, only one in two years passing the \$20,000 mark.

Another interesting feature of the report is the listing of numer-

ous other projects for dealing with the legal side of the problem, the most ambitious being a bill designed to do away altogether with suits based on negligence and substitute a measured indemnity following more or less the compensation law. The number of remedies proposed, and the number and character of the remedies recommended are symptomatic of the gravity of the evil and of the broad field opened to legislative empiricism.

In the second place may be noted the effects upon insurance. With regard to the former class of problems it may be said that they all existed prior to the compulsory motor vehicle liability act, which at most served merely to aggravate them. In this class, now to be discussed, come problems new in kind, arising directly out of the act.

(a) The compulsory feature of the act has operated in the direction of increased insurance cost. This appears in several portions of the commission's report. It resulted in forcing insurance upon many cases that ought not to be insured. The law, the commission states, operates as an open invitation to insure cars defective in equipment, which are by that reason a public menace. One of its recommendations proposes the requirement of an inspection of the condition of brakes, steering apparatus, lights, horn, windshield wiper and other features directly pertinent to the safe operation of the car, the insurance company being required to certify to the registrar that it has a certificate of inspection on file before the car can be registered. The law, the commission also states, prevents companies from selecting their risks. This refers to the machinery set up to enable an applicant for insurance to appeal an adverse decision to a Board vested with authority to pass on the reasons for rejection and to issue an order that the insurance issue. It notes the very obvious fact that only in a moderate number of cases can reasons for rejection be stated so clearly as to justify rejection. An underwriter is under great handicap unless he may avail himself of evidence that cannot safely be aired in public, or evidence that comes in the form of confidential report.

Consequently the law has undoubtedly operated to force the insurance of risks highly undesirable from the standpoint of moral hazard. These factors, together with the inducement noted above for increased litigation, have operated in some measure for an increased insurance cost. It is to be regretted that as to the machinery for compelling the issuance of insurance, the commission did not

see fit to submit a specific remedy. They voice the opinion that the rating methods they propose to authorize will admit of a measure of selection of risk, but a reading of these methods does not lead one to that conclusion.

(b) The rates made under the act have been from the beginning inadequate. The rates for 1927 and 1928 were fixed without any basis of experience under the act. The companies requested rates somewhat higher than those in force under the old dispensation. The commissioner went on the assumption that increase in premium volume would make for lower loss costs and pared the company estimates very materially. For example, the companies, with a recorded loss experience in one territory for the year 1924 of \$23.41 per car and estimating an increase to \$28.30, requested an average rate of \$50.00 per car. The commissioner estimated the probable loss cost per car at \$22.22 and established a rate of \$37.00 per car. The actual experience for 1927 showed that the losses per car in this territory were \$33.03; and that 97.1% of the premiums were absorbed by the losses.

In 1928, the commissioner, making rates for 1929, proposed a rate of \$54.00 per car as against \$58.00 requested by the insurance companies. The political tumult over the proposal resulted in his resignation; and his successor, after revising the figures for outstanding losses and cutting the expense allowance, promulgated a rate of \$50.00 per car. The experience of the year 1928 indicated that this rate should have been \$55.00.

That a prodigious loss was sustained by insurance carriers may be readily inferred. It resulted proximately in the failure of three mutual insurance carriers, and caused one prominent mutual carrier to take steps to isolate its Massachusetts business, incorporating a participating stock company for the purpose. The commission implies that inability to select risks had something to do with it; but the great inadequacy of rates seems a more probable cause, though in candor it must be stated that the three companies which gave up the ghost were newly incorporated companies, and failure of a new company, organized without adequate capital stock and surplus, is by no means an unusual phenomenon. And here a comment should be added to that of the commission, endorsing the proposal of the commissioner of insurance to obtain further powers to check the operation of companies in a precarious condition. The time to check operations is before they begin.

It is not unreasonable to require a guarantee of permanency; and so long as a company may qualify for business merely on the basis of having a certain quota of applications for insurance, that guarantee does not exist. Especially is additional guarantee needed in case of companies organized to write lines like liability and compensation, wherein are involved rights of third persons not parties to the insurance contract.

(c) Rating procedure under the act has been a prolific theme of debate, both legal and political, touching both the general level of rates and the details. This, it is assumed, will quiet down in time; though probably never disappear. The main themes of trouble have been, first, the marked increase in rates due to their having originally been fixed far too low, and second, the necessity of making a new territorial classification which cast on certain municipalities an extraordinary burden, and led to a challenge of the commissioner's right to make territorial classifications. More specifically, the sore spots on the map were Chelsea and Revere, which are traversed by one of the most heavily traveled routes in the state; a condition for which they were not responsible, but which produced a large volume of accidents to cars garaged in those places. Ultimately the commissioner established Chelsea as a unit rating territory and Revere as a second; and the rates indicated by their experience were very high. The controversy that ensued ultimately went to the courts, resulting in a decision of the Supreme Judicial Court early in 1930 upholding the right of the commissioner to establish territorial classifications.

The acuteness of the controversy and its effect on rating procedure may best be judged by a statement of the recommendations of the Commission. These include

- (1) Transfer of the authority over automobile rates, classifications, etc., from the Commissioner of Insurance to a board of three, with the Commissioner as chairman, this board also to exercise the powers of the present Board of Appeal.

- (2) Making rates fixed by the Board maxima; but requiring consent of the Board to write at a rate below the maximum.

- (3) Giving the Board power to establish fleet classifications and provide for premium charges based on experience of each fleet.

- (4) Giving the Board power to authorize "blanket" policies for owners and operators of more than three cars.

- (5) Giving the Board power to authorize deductible policies.

(6) Prohibiting cancellations at request of owner or his agent unless number plates are returned.

(7) Requiring the Board to set up a system of "Demerit" rating.

(8) Providing for suspension of insurance and of registration without cancellation.

(9) Changing the name of the automobile bureau.

The commission gives an extended and interesting synopsis of the rating methods used. The controversies over general rate levels have not developed great differences of opinion as to methods, and in the determination of pure premiums in the last two revisions, the companies and the commissioner have not been far apart. The controversy over the territorial classification has been adverted to. The commissioner went with the company recommendations as to classification only to a degree; and the criticisms to his decision came chiefly from the communities affected. The substantial difference, so far as rates were concerned, came in the expense loading; the companies requesting a loading (rates of 1930) of 44.77, the commissioner allowing 35.5. The main part of the cut came in the one item of acquisition cost which has, ever since the act went into effect, been a theme of debate. In the rates of 1927-1928, the commissioner allowed 15% for acquisition. In 1929 the companies submitted actual expense of 19.79% and asked for acquisition allowance of 20%. Commissioner Monk proposed to allow 17% but after his resignation, acting Commissioner Linnell reduced this to 12%, which was also the figure adopted for the 1930 rates. The commissioner was influenced apparently by an opinion from the attorney general (and a very indefinite one) cited in this report, which was accepted by the acting commissioner as allowing him to cut the allowance for acquisition cost to a figure far below the amount actually expended. The commission expressed the opinion that the procedure was unjust, but indicated the only thing to do was to take the matter to the Supreme Judicial Court or to amend the law.

There is one curious misapprehension of the commission, i.e., that the 2½% "profit loading" allowed in automobile rates is "the same percentage allowed for many years under Workmen's Compensation Insurance." A profit loading has not figured in compensation rates since the revision of 1918.

(d) The act has led to a sustained and well financed drive in

favor of state fund insurance. This has taken shape in an initiative petition, now pending before the Massachusetts General Court.

The Commission devotes much time to the bill and its details. In 1929 there were some eight state fund bills pending; and doubtless this year produced others, but the initiative bill is the more formidable proposal. The commission advises strong reasons against the bill and against the principle of state fund insurance.

This particular phase of compulsory automobile insurance is far from reassuring. It has been charged against monopolistic compensation state funds that they have readily been made political agencies and on occasion means of private profit, and that in some cases they have been for political reasons allowed to drift into precarious financial conditions. All these results seem eminently possible with regard to an automobile insurance monopoly. Such a concern would need a large staff and would touch directly a great proportion of the community. Its rates as indicated in the bill under consideration are probably inadequate at the start, and to raise them would be a matter of some difficulty. The result in Massachusetts will be looked to with much interest, and may have a decisive effect on the legislative policy of other states. It is unfortunate that a measure designed to cure a great and increasing evil should be handicapped by this particular complication.

On the whole, after reading the report, one is less confident as to the advisability of the Massachusetts experiment. The police power of the state doubtless extends to affirmative compulsion, and is not restricted to mere prohibitions. It is, however, a power that is capable of misuse. The compensation acts deal somewhat gingerly with the matter of compulsion, particularly with regard to compulsion to insure the compensation hazard. And in the field of insurance there are notable compulsory possibilities. If compulsory automobile insurance, why not compulsory security for the payment of debts as a prerequisite for entering into business? Indeed there can be a case made out for compelling the giving of security before entering into any line of activity whatever. But this readily turns into an intolerable system of statutory slavery, which permits freedom of action only to the financially well equipped. To be sure, the Massachusetts experiment does not go a great way towards that bourn; it is but one small step in that direction. It is well the experiment has been made; and unless the difficulties heretofore experienced are ironed out in the future,

it may be that other states will have reason to refer gratefully to the Massachusetts experience and try something else.

CLARENCE W. HOBBS.

Versicherungswesen: System der Versicherungswirtschaft. Volume I. *Allgemeine Versicherungslehre.* Fifth enlarged edition. Alfred Manes B. G. Teubner, Leipzig and Berlin, 1930. Pp. xii, 436.

The appearance of the fifth edition of Manes' renowned work marks the completion of more than twenty-five years of productive effort by the author in the systematization of generalized insurance facts and principles and of specific insurance practices. The four preceding editions showed that Manes was progressively nearing the goal he set for himself when he began his teaching career at the beginning of this century. Manes started with the foundation of existing systems of insurance instruction. Twenty-five years of teaching in Berlin, contact with mature students from the principal countries of the world, and direct observation of insurance practices in these countries, have given Manes an opportunity to view insurance service internationally and to offer broad, rigorous training in the body of insurance knowledge.

Manes feels that insurance executives should do most of their thinking before emergencies arise, that new situations should be handled upon the settled foundation of existing and historical principles and practices. It is idle to conjecture how many mistakes have been made, and are being made, in the insurance business because of the lack of adequate training such as Manes and his forerunners have advocated. The present work, therefore, is first, an intensely practical handbook for insurance men who strive to be forehanded in their insurance thinking and, second, an indispensable text for young people preparing themselves for a career of sincere service in a great business. The volume now under review has already helped to answer queries from American insurance men in respect to certain international insurance practices. A Spanish translation is under way, and it is hoped to have the work translated into English.

Volume I of "*Versicherungswesen*" deals with generalized principles and practices of insurance. It is to be followed later in 1930 by the volumes on property and personal insurance and reinsurance, including social insurance. The volume before us organizes the generalities of insurance under six categories: I. The Scope

and Basic Principles of Insurance; II. The Development and Significance of Insurance; III. Organization of the Insurance Business; IV. Functional Mechanism of the Insurance Business; V. International, National and State Policy in Respect to Insurance (including the principles of insurance supervision, taxation, social insurance, and the civil law of insurance); and VI. The Organization and Dissemination of Insurance Science. Under each of these major categories we find a reasoned subclassification of principles and facts. No major consideration has been ignored; and there is no superfluous detail. What a book! So effectively has Manes arranged his material that a seasoned user of the work will not feel the need of the index.

Manes begins his work with a restatement of his definition of insurance, one which seems to be more precise and meaningful than the definitions heretofore in common use. "Insurance," he says, "is the reciprocal or 'mutual' coverage of a contingent need for money or for valuable things or services among numerous individuals or enterprises exposed to the homogeneous risk of such need." (Heterogeneous risks would, presumably, be made homogeneous to the first insurer through reinsurance and retrocession.) The emphasis in this definition is on the mutual or reciprocal character of all insurance, independent of specific instrumentality; upon the unpredictability of the time of need for money or its equivalent in individual cases subject to insurance, upon the existence of 'need,'—material, insurable 'interest,' and upon the homogeneity of risk among the class insured. The concept of 'loss' is secondary to that of 'need.' 'Need' broadly covers the required presence and use of money or valuable things to meet effectively a fortuitous event, whether that event actually involves the reparation of loss to property, or whether it requires only the funding of a new set of personal circumstances which merely follow the happening of an event. The remainder of Manes' section on 'begriffserläuterung' discusses in detail the definitions which have been offered by other scholars, and covers succinctly the historical and contemporary theories of risk and insurance. None of the classic conceptions of risk seems to have been ignored.* The literature to the end of 1928 is critically reviewed.

*For a similarly useful summary of fundamental aims and purposes of insurance see: Oswald Stein, *Le Droit International des Assurances*, Section 3, *Recueil des Cours*, Academie de droit International, 1927, IV, Tome 19, Paris. Librairie Hachette. 1928.

In his historical section, Manes traces the evolution of major insurance ideas from the earliest times to the present. New material of interest for American readers is contained in the sections dealing with the "fleet" or concentration movement, the World War and the Versailles Treaty, the inflation period in Germany and post-war valorization and stabilization; and the review of the American insurance history.

Regarding the future of insurance as a whole, the author observes that the future will be, in the nature of things, bound inseparably to the development of the economic life of the world's population; that tendencies at present under way suggest new forms of personal insurance, under both private and public auspices. Whether such extensions and innovations will come from private or public effort, may depend upon the relative capacity of public and private institutions to carry the load. It is conceivable that the framework and machinery of government may not be suited to carry additional burdens of new, personal insurances and that further progress may lie with private agencies suitably prepared for administering such insurances on the technical and executive side. This emphasizes the need for adequate training of the future technical and executive personnel of private insurance. Are such facilities available at the present time? Is there any agreement as to what constitutes adequate training? Furthermore, there is a possibility that the failure to anticipate the shrinkage of private, personal-insurance coverage under severe economic crises may lead to a demand for government insurance which may be hard to resist by an appeal to reason. The last thirteen pages of Manes' Chapter II contain valuable international statistics of public and private insurance not available in convenient form elsewhere.

The chapter on the organization of the insurance business deals with the major, formal types of institutions transacting public and private insurance, their virtues as well as their faults being impartially set forth. One learns from Manes that it does not behoove the protagonist of any of the broad types of insurance carriers, public or private, stock or mutual, to boast too loudly or to criticize carpingly. What he has presented in this chapter should induce special pleaders to examine their own institutions critically; to perfect service by remedying miscarriage of principle and practice and to quit traducing the work of their brethren in other and different, perhaps neither better nor worse, institu-

tions. "Humblepie" is an excellent item in the diet of an insurance man. There is much rock-bottom liberalism and common sense in this chapter of Manes. This, it is hoped, may come to the attention of needlessly contentious insurance factions when an English translation of this work is prepared. Manes' plea for tolerance is international and multitype in its application.

The internal machinery of insurance is discussed in Chapter IV, on the basis of an international literature of insurance administration. The new "management" movement in its bearing upon the insurance business (*rationalisierung*) is discussed. From the literature quoted by Manes one may conclude that in Germany "rationalization" has been discussed thoroughly, since one German writer recently presented a paper on "the irrationality of rationalization!" How much durable good there is in the American philosophy of "Taylorism" or "Fordism" remains to be seen. Some thinkers abroad feel that the new "management" philosophy may in the end prove to be a common nuisance. Manes' lucid discussion of insurance management problems is presented under nine heads: (1) Risk acquisition, agency work, new business, publicity methods; (2) Rate making methods and principles; (3) Risk limitation; the promotion of homogeneity of coverage, reinsurance in general; (4) Insurance coverages, contract stipulations; (5) Premium calculations; reserves; (6) Financial management, including (a) administrative expense problems, (b) investment of funds, (c) dividends and profits; (7) Modes of claim settlement (money settlements; settlements in goods; settlements in service, including some problems of price changes and of foreign exchange in their bearing on insurance settlements); (8) Insurance accounting; and (9) Risk mitigation; insurance preventive and health service.

Chapter V (*Versicherungspolitik*) deals with the relations subsisting between insurance and organized society. This comment is organized internationally under an introductory section, an historical section, a section on insurance supervision in the various countries, and then by sections on insurance contract law, insurance in the criminal law, insurance taxation, reserve investment law, and on the general principles of government, including social, insurance.

The final chapter (*Versicherungswissenschaft*) is perhaps the best available international survey of the scope, meaning and facilities

for insurance instruction. Enough historical information is given to show that "insurance science," the organization of insurance knowledge, has a long, dignified history and that where properly applied it has served to improve the quality, speed and effectiveness of insurance service. Specific information is given on contemporary educational facilities in the various countries of the world, starting with the international and national actuarial societies and ending with the "extension" or supplementary activities of universities, colleges and associations for employed insurance persons. An excellent review of the classics of insurance literature is also given in this chapter, along with a survey of recent, worthy treatises on insurance principles and practices.

The author is the dynamic General Manager of the German Society for Insurance Science, Honorary Professor of Insurance at the Commercial University in Berlin, Docent at the University of Berlin, member of the Advisory Council of the Supervisory Office for Private Insurance of the Republic of Germany, member of the Social Insurance Advisory Council of the International Labour Office, and editor of the Insurance Lexicon. The new *Versicherungswörterbuch* (Mittler, Berlin, 1930) is, by the way, another of Manes' monumental contributions to international insurance literature.

The publisher has provided an excellent Roman type-face for the book. This will be appreciated by readers who dislike the heavy Gothic type formerly in use in German publications. The German text is exceptionally clearly written. In this respect the author shows the effect of experience in dealing with students from many different countries. A German writing for Germans sometimes affects a ponderous style. But Manes writes simply and clearly at all times. The German language for an international audience needs simplification, after the manner of Manes. It may be possible within a year or two to offer American students an English translation of this most serviceable book.

EDWIN W. KOPF

Principles of Property Insurance. F. E. Wolfe. Thomas Y. Crowell Co., New York, 1930. Pp. xii, 393.

This is, in general, a very satisfactory textbook and thus will serve the primary purpose claimed in the preface, but will hardly be useful to "technical experts in underwriting," as there urged,

however valuable it may be to the average local agent. One might almost say that its very claims to consideration for the former object militate against it for the latter purpose. The treatment will seem over-simplified to those who are familiar with the complicated problems connected with various phases of the subject. On the other hand, this simplification enhances its value as a textbook, assuming it to be supplemented by discussions and lectures.

Like most textbooks, it strives for generalizations, and frequently generalizations prove upon examination not to be strictly true. For example, on one page it is stated that "any one who enters the contract must be able to disclose a valuable interest," while two pages later it appears "only necessary that there be an actual pecuniary interest at some time during the fire contract and at the time of loss;" the difficulty of dealing with the legal authority and limitations of an agent in two paragraphs is self-evident; to the general statement on the fire policy as a personal contract the commission clause described later is one exception; to the general conclusion on valued contracts there are some exceptions; that "the majority of courts have decided that an oral agreement between insured and agent may waive any provision or condition of the policy" is an overstatement, at least. Other illustrations might be given with respect to the graded rate system of coinsurance, other insurance, fire insurance rating, etc., which would show the difficulty of reducing complicated situations to terse paragraphs.

Some of the most debatable questions of fire insurance are scarcely mentioned, viz., the present level of expenses, the services actually rendered by agents, agency problems and the equitableness of fire insurance rates. The lack of any present statistical basis for fire insurance rates is insufficiently indicated, although briefly referred to at one point. Most of the remarks on automobile rates are inapplicable to fire insurance. In credit insurance the description is hardly adequate to indicate the actual nature of policies, loss adjustments and premiums.

The writer thinks some of the statements are incorrect, notably that an example of the violation of the "other insurance clause is a mortgagor and mortgagee who may insure their respective interests in the same property;" that a mortgagee with a separate policy "might obtain indemnity from the insurer and also

later collect the debt from the owner;" that "the reasons for applying coinsurance in fire underwriting are logically stronger than in the field of marine risks;" that "the great merit of the graded rate system (of coinsurance) is that the adjustment is made prior to the time the policy is issued;" that "criticisms (of fire insurance rates) appear to be of minor importance, if weighed in comparison with the record of practical success and advantages realized from schedule rating during the last forty years;" that "the standard policy sets a plane or level upon which companies may fairly compete for business;" that "the sum of the separate interests in the same property shall not exceed its actual cash value;" that "in no class of contracts is the element of good faith a greater essential than in contracts of fire insurance;" that prior to the standard fire policy "in the public interest the separate companies gradually added to the contract conditional and limiting provisions;" that the "agent is the experienced adviser and provider of the best protection obtainable at the lowest cost from reputable companies;" that "the original but now unfamiliar wording (of Lloyds' marine policy) is retained with only slight modifications by individual insurance companies."

For obvious reasons more space is usually devoted by reviewers to justifying adverse criticism than to praise, and in the present instance this is likely to create an unfair impression. Aside from the tendency to over-generalization and the individual points previously referred to, this book has much to recommend it as an elementary textbook. It is more up-to-date than other property insurance texts. The simplicity of treatment which will aggravate experts will probably delight the elementary student by the omission of divergent points of view, debatable social questions and conflicting court decisions. In many places the summarizations are well expressed, conveying the essential ideas in a minimum space. The space available is judiciously distributed in proportion to the approximate importance of the subjects and the order of treatment is in general logical for teaching purposes. Not the least of the good features of the book is its readability. With the qualifications mentioned, it is a good textbook, but like most good textbooks, contains little of interest to experts.

ROBERT RIEGEL

Cost of Compensation Year Ended June 30, 1928. Special Bulletin of the New York Department of Labor, No. 160. Albany, 1929. Pp. 73.

This pamphlet is Special Bulletin No. 160 of the New York State Department of Labor and presents an analysis of those industrial accidents for which closing awards of compensation were made in the year ended June 30, 1928. The data contained in the bulletin relate mainly to compensation costs, inasmuch as an analysis of the causes of compensated accidents is contained in other bulletins of the Department.

The bulletin is divided into two sections. The first section, consisting of Pages 1 to 33, inclusive, is made up, in the main, of a discussion and brief analysis of the more detailed tables appearing in the latter half of the pamphlet.

The data assembled are exhibited in seven tables as follows:

Table I: *Length of Disability and Compensation Cost in Temporary Disabilities*

This table shows in detail the number of temporary disability cases, together with the total number of accidents, compensation awarded and the monetary amount of such compensation.

Table II: *Nature and Compensation Cost of Permanent Partial Disabilities*

This table shows the number of cases compensated in accordance with the various provisions of the specific dismemberment schedule. The total number of weeks of disability awarded and the amount of compensation are also shown.

Table III: *Dependents and Compensation Costs in Fatal Cases*

This table shows the dependency distribution in connection with fatal cases, together with the present value of the awards.

Table IV: *Number, Extent of Disability and Cost of Compensated Accidents—By Nature and Location of Injury at the Time of Accident*

In this table, the total number of cases is shown tabulated according to nature and location of injury as well as according to kind of disability. The number of weeks awarded and the amount of compensation are also shown.

Table V: *Number, Extent of Disability and Cost of Compensated Accidents—By Industry*

The data in this table are the same as those contained in the previous table, tabulated according to various industry groups.

Table VI: *Weekly Wages of Injured Employees*

In this table are shown the weekly wages of injured employees by sex, tabulated at intervals of \$1.00, from a weekly wage of \$1.00 up to a weekly wage of \$400.

Table VII: *Age of Injured Employees*

In this table is shown the age of injured employees by sex, and kind of disability.

It is gratifying to note that in compiling this information the editors of the pamphlet are evidently quite well aware of the fact that the information contained therein may be of value to others than experienced statisticians and rate-makers. Hence, in the discussion of the various tables the editors have taken considerable care to define the terms used and to discuss certain details which to one thoroughly familiar with the use of data of this character may appear self-evident and, perhaps, superfluous. It is believed, however, that this attention to detail will measurably increase the usefulness of the data to those who may have occasion for information of this kind but at the same time are not in daily contact with compensation statistics.

A. Z. SKELDING

Public Service Retirement Systems, United States, Canada and Europe. Bulletin No. 477 of the United States Bureau of Labor Statistics. Washington, 1929. Pp. vii, 223.

This bulletin describes the main features of most of the important public service retirement systems in the states, and outlines briefly some of those in Europe. The information was brought down as far as the summer of 1927, being obtained by a field survey in the states and correspondence from the foreign countries.

Considerations of time and expense forbade an exhaustive study, so attention was confined to state-wide systems and municipal systems in cities with a population of at least 400,000 people. Some seventy plans were studied in all, but about twelve of these were those of foreign countries and are not given in much detail.

For each plan we are given the facts concerning administration, conditions for retirement, conditions for eligibility, the source of funds, with a special reference to contributions from the employees, options and provisions for dependents, the method of calculating retirement allowances, and other general conditions. In most cases we are also given statistics of operation and the finances of the system.

Chapters are devoted to the different classes of funds. Chapter 3 deals with state retirement systems; chapter 4, retirement systems for municipal employees; chapter 5, state and city retirement systems for teachers; and chapter 6, retirement systems for police and firemen. Each chapter contains a summary at the beginning and a table at the end showing comparisons with a description of individual plans in the main body of the chapter. The foreign systems are treated together in chapter 9. There are two short chapters, 7 and 8, on the systems in Hawaii and Canada, chapter 2 treats the Federal Employees' Retirement Act in some detail, and the first chapter gives a useful summary of the whole field.

The Federal Employees' Retirement Act gives a pension of $1/45$ of the final salary per year of service, with a maximum of \$1,000, retirement being compulsory at age 70. The employees contribute $3\frac{1}{2}\%$ of pay, and an extra $\frac{1}{2}\%$ from the government is estimated to be sufficient for the current cost. A further 2% from the government is being paid to extinguish the accrued liability. In Canada the employees contribute a flat amount of 5%, and the government guarantees the remainder of the cost.

The state systems studied are Connecticut, Maine, Massachusetts, New Jersey, New York, and Pennsylvania. Of these, Maine and Connecticut are non-contributory. In Massachusetts the employees contribute 5%; in New York and New Jersey there is a graded scale; and in Pennsylvania there is a choice between two rates. Retirement is in most cases compulsory at age 70 and optional at earlier ages, but it is stated that the optional rule is very rarely taken advantage of. In all the contributory systems the employees' contributions are returned with interest in the case of withdrawal or death.

The municipal retirement systems studied are those of Baltimore, Boston, Chicago, Detroit, Minneapolis, New York City, Philadelphia, Pittsburgh and San Francisco. Only one of these, Detroit, is non-contributory. Most of the others have a graded

scale, San Francisco having a scale based on sex and age at entry but a maximum contribution of 5%. Detroit, Pittsburgh and Philadelphia merely appropriate each year the amount needed to maintain the system. The other cities all have a plan under which they make contributions for current service and something towards the accrued liability.

This actuarial reserve plan is a comparatively recent development and is still far from general. One reason advanced to account for the objection to such a plan is that "such systems require careful, systematic operation, while the cash disbursement systems may be installed and operated for some time with little consideration of any kind." It is unfortunate that the temporary success of the assessment principle serves as a stumbling block to the creation of sounder schemes. So long as the plan is non-contributory actuarial reserves are hardly necessary since the rating power of a municipality should increase commensurately with its pension obligations. But once a plan is made contributory the setting up of reserves becomes almost obligatory. Another advantage of the reserve system is that the actual cash outlay is reduced because of the interest income. In New York City, for instance, in 1926, there was an average interest income of \$35 per member.

Most of these plans have had to pick up all the miscellaneous public employees and leave out such people as the police, the firemen and the teachers, since they already had plans working. The usual procedure seems to have been to give the older associations a chance to come in to the new scheme, and in some cases obliging all future employees to join the general scheme. The result is that those people who did not come into the new scheme belong to small dying organizations. However, the special needs of teachers, firemen and policemen make it advisable for them to have special consideration. Firemen and policemen are especially subject to disability because of their duty, and require corresponding benefits. Teachers, on the other hand, are not so interested in benefits for their dependents since in many cases these dependents are much older people. One encouraging feature is that the cost is being faced and heavy contributions are actually being made. It is noteworthy that in Norway the employees contribute as much as 10% of their salaries—a figure to provoke serious thought.

W. H. BURLING

Insurance in the Distribution of Wealth. Luke Flanagan. Published by author, New York, 1929. Pp. vii, 200, and appendices.

The reviewer of this amazing book, as he makes his way up and down its fantastic pages, is torn between two desires. Now, staggered by the impossible task of ever analyzing completely and fairly such a farrago of superstition, hearsay, faulty reasoning, ignorance and plain myth, he believes he will chuck the book over his shoulder and notify the book editor that it is unreviewable. Now, since people may read it who have only the layman's knowledge of insurance, he considers he should perhaps simply tabulate all the statements as those that are merely unfounded, those that are meaningless if true, those that are incorrect on their face. That which follows is a compromise somewhere between the two procedures.

It is the thesis of the author that the insurance business must bear alone the responsibility for the unequal distribution of wealth in this country. There are three steps in the proof attempted. The first consists of showing the exorbitant overcharges which the life, fire and accident companies are alleged to extract from the pockets of the American people. This, as far as it goes, is statistical, and deserves further analysis. The second step of the proof logically follows the first. The author has discovered to his satisfaction that insurance companies are charging too high premiums; it remains to see what effect this systematic purloining will have on the national well-being. He contends that excessive premiums represent a literal abstraction of what he calls currency from the national business cycle. Realizing that our concepts of the nature of the cycle are still not finally defined, he goes on to liken the effect of this to the net loss resulting when electric current is pilfered from a generator instead of being lost by leakage, a man loses money instead of spending it foolishly, a tourist spends money abroad and not at home. Plain wasting of "currency" is not nearly as evil as this heinous diversion to the pockets of the companies. Once the money gets into the hands of the companies, there is a net loss, or nearly a net loss, to the rest of the population. How so? It goes into the "assets of the companies, and later is taken over into the private estates of those who control the companies. It is this money that is not expended for current products and that we have been recovering in the past by surrendering or replying our fixed assets." The world is sinking deeper and deeper in debt to the insurance Shylock.

This is the proof of the responsibility, partly at least, of the insurers. No statistical proofs are offered to show greater maldistribution of wealth, a serious omission considering the purpose of the book. The reader may determine how much of it is prejudice, how much fallacious economics, how much bad reasoning. There is still to come the third and last step in the proof, that which will clinch the argument and hold the insurance companies uniquely responsible. Perhaps there are other causes of this alleged maldistribution. No. In a half-page the author passes rapidly in review all the other groups in the community that might possibly be charged; he excuses them all: manufacturers, merchants, bankers, stock-traders and money-lenders. The insurance business gets a lengthy trial in this case, fair or not depending on one's opinions or experience. All the other suspected characters are rushed through with what must seem to the accused to be suspicious haste. Suspicion deepens when the reader comes to this candid phrase on page 116: "The writer, before commencing any investigation, believed that some one group was responsible for the unequal distribution of wealth in this country."

It is apparent that the verdict as arrived at in step 3 of the proof depends vitally on the truth or falsity of step 1. If there is no overcharge, there is no diversion of "currency" and consequently no blame for the insurers.

By a complicated process of induction and interpolation based on the figures of the 1927 New York Insurance Report, \$7,000,000,000 is set as the amount of the annual drain. A single illustration must serve here to show the general method. 1926 income of the accident (liability) companies reporting in New York was \$727,000,000; against this are set the amounts expended for claim payments, dividends, and taxes, totalling \$333,000,000. The latter is 46 per cent. of the former, therefore the companies charged premiums approximately twice too high. Since these figures are not complete for the entire country, interpolation is necessary. New York state premiums alone for these companies were \$186,000,000, so that if one-half of the premium is redundant, over \$90,000,000 excess cost is borne by the people of New York State, an average the author estimates at "nearly \$10." Approximating the national average of excess insurance cost at \$8.50 (based on an assumption of the relation of New York and United States experience) the average U. S. supercharge is calculated to be \$8.50.

“According to this figure, the losses which the American people sustained on their insurance transactions in the year 1926 were about \$1,000,000,000.” One’s faith in the accuracy of thus piling estimate on estimate, conjecture on conjecture, is further disturbed by noticing that the author has compared expenditures, not with premium income but with total income, a difference of \$63,000,000 against the companies; that on one hand he has entirely excluded from expenditures \$51,000,000 of inspection and claim expenses, universally regarded as so nearly like loss payments as generally to be considered a part of them; that on the other hand he has included as a return to the people (as distinguished from the owners) \$26,000,000 dividends, although \$17,000,000 of this represents payments to the latter. Even if one disregards completely all of the other services covered by large expenditures for commissions and inspections, the case for the companies has been understated by \$97,000,000: \$63,000,000 overstatement for premiums, \$34,000,000 understatement for expenditures. (I write this knowing that the matter of investment earnings is not settled forever.) Moreover the comparison is grievously at fault because it assumes a steady rate of business year after year. In a growing business, it is patently unfair to compare the income *this year* with expenditures *this year* for a great part of the effect of more business this year will be postponed and is reflected in losses incurred, not losses paid. Such a comparison is especially misleading in using life insurance premiums and claim payment data.

The remedies? For fire lines, competitive municipal public funds. For life insurance he advises status quo, but insists principally on maximum premiums set by the state based on costs established by government life insurance and assessment associations. Other suggested changes include further limitation of commissions, commissions to be paid directly by the insured, various proposals to eliminate fraud which the author believes costs \$400,000,000 annually. For automobile third party insurance a state fund issuing policies of compensation, not indemnity for common law liability. To carry out these projects he places the entire burden on the legal profession, since he is hopeless of reform from within and believes that only the trained lawyer has the social viewpoint. So completely is our entire economic and political structure dominated by the insurance monopoly (p. 145) that the

only feasible way to introduce the new ideals of social justice is through legislators nominated directly by the citizens. Typical of the new day will be the closer coordination between the at present dissimilar functions of providing police protection and insurance protection. Our police, it appears, at present are not as efficient as they might be "because no practical method of rewarding the members for the faithful performance of their duties has ever been put into effect. . . . Positions could be provided by the establishment of public insurance funds, and the adoption of a system of transferring to positions in those funds (of) policemen who have reached the retirement age." Better legislators, better laws, better insurance; the progression seems irresistible.

C. A. KULP

Mathematics Preparatory to Statistics and Finance. George M. Bauer. The Macmillan Company, New York 1929. Pp. vii. 337.

In the Preface the author says: "Many students in our universities are studying statistics and the mathematics of finance as part of a business course." It seems to the reviewer that all students in a course in commerce should be required to take at least a year's course in Collegiate mathematics (College Algebra and Analytical Geometry), in which case a considerable part of the text might be omitted, such as the chapters on analytical geometry, roots of quadratic equations, the theory of logarithms, the progressions, permutations and combinations. If, however, a year of college mathematics is not a prerequisite to courses in statistics and finance, then a course such as this text provides is necessary, and the author has made a splendid selection of the fundamentals required. Not only is the selection of the topics good, but the presentation is exceptionally good, and the "review questions" at the end of some of the chapters make the student take stock to find out whether he has grasped all the principles presented.

Many teachers of statistics, using the ordinary textbooks will be glad to supplement the matter in those textbooks, or rather precede it by material from this book. In the great majority of textbooks on statistics the student is asked to take the author's word for many of the fundamental relations used, the author stating that "a formal proof of such and such is beyond the scope

of this book." Is it not a serious reflection on the position of mathematics in our colleges that the great body of students who study statistics must be spoon-fed with results and formulae rather than be asked to develop and master the underlying principles? If there is one criticism that the reviewer would make of this text, it is that in a textbook which bears the title of "Mathematics," on several occasions the author simply states results without proof. Such is not "mathematics" as that term is generally used.

The author has introduced some new expressions such as the "straight line law" and the "law of the parabola." The use of the term "display" on page 177 is novel, but expresses the idea very well.

L. A. H. WARREN

CURRENT NOTES

ARTHUR N. MATTHEWS, CURRENT NOTES EDITOR

FURTHER CHANGES IN AUTO COVERAGE

A further adjustment in the automobile liability and property damage insurance rates which will, in effect, result in a saving to the assured, has been announced. This adjustment consists in increasing the property damage cover from \$1,000 to \$5,000 without change in the rate and in raising the limit of light commercial cars from one ton to one and a half tons, the rate on the increased weight to be the same as heretofore for the lightweight trucks. These changes were made effective as of February 3, 1930. At the same time a new schedule of charges for limits in excess of \$5,000 went into effect, resulting in substantial reductions from the present schedule.

The National Bureau of Casualty and Surety Underwriters, in announcing the change, says: "It has been felt that coverage to the extent of only \$1,000 has not adequately protected the policyholder but has exposed him to a possible liability well in excess of his limit of coverage. There are many cars on the highway now that cost more than \$1,000, which, if damaged through the negligence or fault of a policyholder might involve the payment by him of a considerable sum in excess of his \$1,000 coverage.

"Then, too, there are cases where an automobile has damaged other property along the road, causing considerable damage, part of which would not be covered if the amount of property damage insurance were limited to \$1,000. The increase in the amount of property damage coverage from \$1,000 to \$5,000 makes certain that an assured is fully protected against the average accident and at the same time the reduced charges for coverage over \$5,000 make it easier for him to take out insurance against the catastrophe or unusual accident at a low cost."

Another change of importance lowers the minimum age of operators from 16 to 14 years in those States where persons under the age of 16 years may operate cars legally. It has been felt that the standard policy of insurance should provide coverage in those States where persons of 14 years of age may operate automobiles under the law.

MERIT RATING OF PUBLIC LIABILITY

Announcement is made by the National Bureau of Casualty and Surety Underwriters of the adoption of an experience rating plan for the rating of miscellaneous public liability risks. The new plan will become effective on January 1, 1930, and will be applicable only in the States of Minnesota, Missouri and New York.

At the present time the only public liability risks aside from automobiles subject to experience rating are apartments, tenements, boarding and rooming houses in Greater New York. Under the new plan experience rating in addition will be applied to other types of owners, landlords and tenants' risks such as office buildings, mercantile buildings, stores, hotels, etc. It will be applicable also to theatres, residences, farms, elevators, manufacturers and contractors' risks, teams and product public liability risks.

All public liability risks will not be subject to experience rating. The plan provides that the risk must be of a certain size measured in terms of premium before it is eligible for experience rating, this being the principle which is uniformly followed in all similar plans of rating for other casualty lines of insurance.

STATE FUND BILL LOST IN MASSACHUSETTS

In a unanimous decision, the full bench of the Massachusetts Supreme Court has declared the "State fund bill" for automobile liability insurance under the compulsory law unconstitutional.

Holding this bill would create a monopoly, the decision says: "Monopolies are odious to the law." It is held that this proposed scheme could not be attached to any department under the State administration and so could have no constitutional standing as a State board of any kind.

The court holds that a citizen may not have the right taken from him to contract with a company of his own choice and that he may not be forced to contribute to such a fund as proposed. The court finds against the proposed fund on its financial side, holding it unconstitutional to require a citizen to pay premiums or contributions to a "quasi-public corporation," which is without the usual reserve and other safeguards required by law of insurance companies.

It also holds that the bill would be unconstitutional on the grounds that it would violate the constitutional rights of companies now engaged in the business by creating a monopoly and forcing them out of business and unreasonably debarring them from engaging in the business in competition. While the court holds that the proposed plan is very loosely drawn and would create a fund with very poorly defined responsibilities, the pith of the opinion revolves around the inherent unconstitutionality of a compulsory monopolistic State fund.

CROP INSURANCE*

From a social point of view the farmer enjoys rather exceptional independence. For success in his farming enterprise, however, he is dependent to a very marked degree upon natural forces and agencies. He plants and cultivates his fields in his own way, but he cannot control the weather. If he does his own part well and nature is favorable, he reaps a substantial harvest. But he can never be certain that nature will be favorable. Between the dates of planting and harvest, his crop may be ruined by drought, excessive moisture, floods, frost, hail, excessive heat, deficient heat, or by some uncontrollable plant disease or insect pest. Most of these hazards, as you know, are weather hazards, and the uncertainty of the weather is proverbial. The total wheat crop, corn crop, cotton crop, or other crop of the farmers in the United States, collectively considered, varies in amount only moderately from year to year. But every year the crops of the farmers, individually considered, vary all the way from bumper crops to total failures.

By reason of this possibility of failure or, in other words, the risk involved in crop production, someone has said that farmers are the greatest gamblers in the world. There is no denying the presence of risk in farming, but it might rightly be denied that farmers as a class are gamblers. The term "gambling" implies the assumption of an unnecessary risk—the taking of a needless chance. The risk in farming is not a risk brought about or assumed for the excitement of taking a chance. It is rather an unavoidable risk, that must be borne by someone, if the human

*This is a copy of a radio talk by Mr. V. N. Valgren, Senior Agricultural Economist of the Bureau of Agricultural Economics and is printed by special permission of the author.

family shall continue to be fed and clothed. It can often be reduced by diversification and other expedients, but it cannot be eliminated.

The modern method of dealing with unavoidable risk is insurance. The only form of crop insurance that is now quite generally available to the farmer is insurance against the hazard of hail. American farmers spend annually about \$25,000,000 for insurance protection against the hail hazard. It may be estimated that in recent years about 10 per cent. of all crops in the United States has been insured against this cause of crop damage.

Hail insurance is written by three different groups or types of insurance organizations. One of these groups consists of about 100 joint-stock fire insurance companies that write hail insurance more or less as a side line. The second group or type of insurance organization consists of about 30 specialized mutual hail insurance companies. The third group consists of 5 state hail insurance funds or departments, these being found in North Dakota, South Dakota, Montana, Nebraska, and Colorado. About one-half of the hail insurance in the United States is written by joint-stock fire insurance companies. The other half of such insurance is divided, on approximately a two to one basis, between the group of mutual hail insurance companies, and the state hail insurance departments.

Hail insurance gives protection against loss from a hazard that exists in most of the farming areas of the United States, and that is really serious in a number of these areas. For the country as a whole, hail is a minor rather than a major cause of crop damage. But even in states or sections where the total hail damage is relatively small, severe damage is likely to occur to the crops of many individual farmers.

The cost of hail insurance varies greatly for different states and districts. It also varies to some extent with different crops in the same district and with the different types of insurance organizations. The actual cost varies from \$1.00, or even less, per hundred dollars of insurance, to \$20.00 or more per hundred. The average cost for all sections, crops, and insurance organizations, is probably somewhat over \$5.00 per hundred dollars of insurance for the season. If hail insurance contracts were so written that all damage below a stipulated amount, such as 20 per cent. for example, were borne by the farmer himself, it would then

be possible to quote a far lower rate for insurance covering the more serious losses against which protection is urgently needed.

Unfortunately, as I have already emphasized, hail is only one of the uncontrollable hazards to farm crops. To make the farmer as sure of his results in crop production as the up-to-date and well-established manufacturer or merchant is of his results, the farmer needs insurance not only against one of the dangers to his crop, but against all hazards that he cannot himself control.

Two outstanding attempts have been made to develop a really broad and comprehensive crop insurance for the farmer. Both of them proved discouraging to the insurance organizations. One of these attempts occurred in a portion of the spring wheat belt in 1917. This resulted in unexpectedly heavy losses by reason of a drought that affected the major part of the too-limited territory to which the experiment was confined. The insurance in this case was really yield insurance, since the unit-value of the crop for insurance purposes was stipulated in the contract. The second outstanding attempt was made on a nation-wide basis in 1920. This attempt resulted adversely to the insurance organization by reason of the almost unprecedented drop in prices of farm products that occurred in that year, coupled with the fact that the insurance in this case was written on an income basis, and therefore covered price as well as yield. Neither of these two serious attempts to develop crop insurance prove, in my opinion, that crop insurance is impracticable. But that it involves many difficult problems must be admitted. Since 1920, very little general crop insurance has been offered or written, and most of this has been on fruit and vegetable crops rather than on staple field crops.

To some extent the farmer himself may be to blame for the present lack of crop insurance facilities. Quite often he is inclined to be unduly optimistic on his crop prospects. When no serious crop damage has occurred during the last three or five years, he is too often inclined to assume that the new season upon which he enters in the spring will surely bring a substantial harvest. Under such circumstances he is reluctant to buy insurance even when the cost is low relative to the actual risk involved.

Yet the same farmer as a rule very properly carries insurance against fire and windstorm on his buildings and personal property, even though experience indicates that the chance of a serious loss

to a farm building in any one year, is on the average less than one in 500. If a serious crop failure occurs on an average only once in 20 years, the chances of such failure in any given year are about 25 times as great as the probability that a building will be lost. In order that real all-risk crop insurance become generally available and widely used, it may be necessary that many farmers revise their attitude on the risk involved in crop production, and on the need of shifting at least a part of this risk to some kind of insurance organization.

It is improbable that the farmer will ever find himself in position to shift to others the entire risk inherent in the growing of his crops. The cost of such insurance would quite surely be prohibitive. But it should be possible to provide insurance that will relieve him of the unduly heavy risk that he now carries entirely unaided.

Assume, for example, an insurance contract under which the farmer is guaranteed that if he himself does his part according to proper standards, he will be indemnified for any amount by which the crop falls below one-half or two-thirds of his average yield. Even such a modest degree of insurance protection would be an enormous improvement on the present situation. Under such a plan the farmer would not be certain that he would receive, either from his harvest or from insurance indemnities, a sum equal to his entire cost of production in the form of labor, and cash outlays, including interest on his investment. But he would be safeguarded against the possibility of working an entire season for nothing and in addition losing a part if not all of his hard earned savings. As I see it, there is a real need for crop insurance on a plan that will protect the farmer against serious or disastrous loss, without compelling him also to pay for protection against numerous minor losses. The latter, he himself can care for more cheaply than any insurance organization can do it for him. Without suitable crop insurance facilities I do not see how the sound principle of "safety first" can ever be fully and effectively applied to the financial plans and problems of the farmer.

EMPLOYERS' LIABILITY INSURANCE IN ENGLAND AND SCOTLAND

On March 10, 1930, a paper was presented to the Faculty of Actuaries in Scotland by Hugh W. Brown, F. F. A., F. I. A., F. R. S. E., on employers' liability insurance. This paper con-

tained a broad survey of the employers' liability situation in Great Britain with a history of its development and some suggestions as to probable future legislation. The evolution of the law relating to workmen's compensation was traced through the successive acts of Parliament, and the provisions of the Workmen's Compensation Act of 1925 which codifies the law on this subject were summarized so far as they relate to the liability covered by an insurance policy. It is interesting to note that the first workmen's compensation act in England was passed in 1897, several years before any similar legislation was made effective in the United States. The legal situation as regards compensation seems to be about the same in England as in the United States with one outstanding difference, namely, that the injured workman may sue for damages both under the common law and under the workmen's compensation act, provided that he sue under the common law first. If unsuccessful, he may sue under workmen's compensation but he must pay all costs incurred by the defendant in the common law suit out of any award granted under workmen's compensation.

A considerable part of the paper and the discussion which followed its presentation was given up to a treatment of the method for determining the reserve for outstanding claims. Under the Assurance Companies Act of 1909 an actuarial valuation of the outstanding claims that have been in existence for five years or more is called for on an annuity basis but no regulations are laid down for estimating the liability in respect to outstanding claims of shorter duration. The present method is to take each of such claims and after considering the facts—nature of injury, rate of compensation, etc.,—to make the best possible estimate of the ultimate cost to the insurance company. A plea was advanced for the investigation into the liability in respect to outstanding claims in the hope that it may be found possible to arrive at average factors that could be used with a suitable grouping of the claims to determine the liability under the outstanding claims from the first occasion of their becoming outstanding. In the discussion which followed the paper it was the consensus of opinion that some easier method of estimating outstanding claims was desirable although no method based upon the number of claims or upon a percentage of earned premium was deemed practicable.

In 1923 an agreement was made between the government and some of the tariff companies, which correspond roughly to stock companies in America writing at manual rates, to maintain a loss ratio of $62\frac{1}{2}\%$ for the combined figures of the companies entering into the agreement. If at the end of the year it is found that the loss ratio for the combined business falls short of $62\frac{1}{2}\%$ the policyholders are to be allowed a corresponding rebate in the premium which next falls to be paid thereafter. If on the other hand the loss ratio exceeds this percentage the companies are to be entitled to make a corresponding additional charge. For the five years ending in 1928 there were no additional charges made and the rebates ranged between 5.35% and 10.87%. It was pointed out that this scheme was necessary because there has been no inclusive revision of the rates since 1906. The plan is not entirely equitable since the rebate to the assured is based on the aggregate results irrespective of the experience of individual classes of employment.

The trend of probable future legislation was discussed and the questions of compulsory insurance and state insurance were touched upon.

A few statistics relating to the extent of the business were given which showed that for the year 1928 the earned premium for all companies in the entire country amounted to slightly less than seven million pounds, of which more than two-thirds was the business of the tariff companies.

CONTEMPORARY INSURANCE INSTRUCTION IN FRANCE

Some interesting items on insurance instruction in France have just become available. At the *Ecole de Legislation Professionnelle et de Pratique Coloniale* the following courses are given: (1) Accidents and the common law (*Prof. Leblanc*); (2) Work accidents (*Prof. Sicot*); (3) Life insurance; and (4) Fire insurance (*Prof. Fructus*). The *Ecole Polytechnique d'Assurances* offers the following instruction: general theory of insurance, fire insurance, life insurance, reinsurance, insurance and the common law, accident insurance. The professors include *Odillon, Le Taro, Lenoble, Guilhot, Sueur, Leroy, Vimart'Bedour, Plieux de Duisse, de Longevialle* and *Crozet*. Information regarding the latter group of courses may be obtained from the Secretary of the School, 28 rue Serpente, Paris, XVIe.

A course in life insurance theory and in the mathematics of statistics and finance is offered by the Institute of Statistics of the University of Paris, under the leadership of M. Alfred Barriol, Secretary of the Statistical Society of Paris. The *Association Philotechnique*, 47, rue St. Andre des Arts, Paris, VI^e, also provides instruction in insurance subjects. The courses are as follows: Dr. Bernardin (marine insurance law); M. Masches (accident insurance law); M. Matray (theory and practice of long-term finance); Dr. Lale (life insurance law); M. Bande (probabilities); M. de Riedmatten (fire insurance company practices); M. Chevalier (social insurance); M. Plazen (reinsurance); M. Aubourg (money and foreign exchange); M. Hoppenot (actuarial theory) and M. Cottin (theory of equations). Alfred Barriol, 17 rue de Londres, Paris, IX^e, is director of this course.

COMBINATION OF LIFE AND SICKNESS INSURANCE IN ONE POLICY

The Leipzig Verein für Krankenversicherung and the Verein für Lebensversicherung are advertising in current German journals a combination life and sickness insurance policy. The claim is made that this is the only combination policy of its kind in the world. The policy covers also surgical operation allowances and medical attendance at clinics. It will be interesting to see how this works out.

ANNUAL MEETINGS AND ELECTIONS OF GERMAN SOCIETY FOR INSURANCE SCIENCE

The meetings of the German Society for Insurance Science in Berlin, March 20-22, 1930, resulted in the election of Professor Hanns Dorn of Munich as President of the Society and of Dr. Alfred Manes as General Manager and Editor. It was reported that the Society had 1,774 members on December 31, 1929, of which 488 were corporate and 1,286 individual members. Some 39 countries are represented in the membership. Thirty per cent. of the members live in countries outside of Germany. During 1929, the Society issued four numbers of its Journal, with the Actuarial supplement, in addition to two technical treatises, Dr. Scharlau's "Origin of the Newer Insurance Branches" and Dr. Gürtler's "Theory and Technique of Insurance Accounting." The thirtieth birthday of the Society was also celebrated by the

issue of the third edition of the monumental "Insurance Lexikon," an encyclopedia of international insurance practice.

During the last year the Society finished its new building in the Wilmersdorf section of Berlin. The cost was 200,000 gold marks. The Society's general income for the year was about 120,000 marks, largely from membership dues and from the sale of publications. During 1930 the work of the Society will consist in publishing four additional issues of its Journal, the publication of further technical treatises on insurance science, the development of its splendid library, and the spread of insurance knowledge throughout the insurance industry. The Society welcomes to membership all persons sincerely interested in the development of scholarship and effectiveness of insurance service. American members among the officers and directors of the Society are Mr. M. Albert Linton (Provident Mutual) as a general vice president of the Society and Mr. E. W. Kopf (Metropolitan Life) as member of the executive committee of the Law and Economics Section.

The Society's address is: Johannisberger Strasse, 31, Berlin-Wilmersdorf. The Society consists of four sections: the law and economics division (*Petersen and Zahn*, Chairmen), the actuarial division (*Bortkiewicz*, Chairman), the insurance medicine division (*Florschütz*, Chairman) and the insurance education division (*Oldenberg*, Chairman).

COMPULSORY ACCIDENT INSURANCE IN SWITZERLAND

The Swiss National Accident Insurance Fund has recently published a statistical report on the results of its work during the second quinquennial period, from 1923 to 1927 inclusive. This report is more extensive than that on the first period and contains a particularly interesting innovation, for it gives the frequency and severity rates per full-time worker, and that not only for all accidents, but also by industry and by cause. It points out that the stabilization of the general situation during this second period has made the data lend themselves much better to detailed statistical treatment than those for the preceding period. Economic conditions too have been more favorable, and the method of compensation has become stabilized. In dealing with the figures for this period it was therefore possible to take the demands of international statistics into account.

**CHANGES IN THE MISCELLANEOUS (CASUALTY) ANNUAL
STATEMENT BLANK**

The following is a list of the changes in the Miscellaneous (Casualty) Annual Statement Blank as recommended by the Committee on Blanks of the National Convention of Insurance Commissioners for 1930 and approved by the Executive Committee of the Convention:

Inside of Front Cover, Item 8.

Add new paragraph after item 8 to read as follows:

"Companies should report all bonds and stocks owned or held as collateral at the market rates promulgated by the National Convention of Insurance Commissioners."

Reason: To show all statements on the same basis and to facilitate their audit.

Page 2, Premium Income Exhibit.

Amend columns (3) and (4) to read "Return premiums on policies cancelled (written basis)" and "Reinsurance (written basis)," respectively.

Reason: To insure the same treatment of premiums as in column (1).

25. Page 3.

Combine tax disbursement items 37-43, inclusive, in one item, to be numbered 37 and to read as follows:

"37. Taxes, licenses and fees

(a) State taxes on premiums.....	\$.....
(b) Insurance Department.....	.....
(c) Other state taxes.....	.....
(d) Federal.....	.....
(e) All other (except on real estate)....."

The above will require a renumbering of items 44-59 on page 3.

Reason: To group all tax items except taxes on real estate.

Page 3, Line 29.

Amend line to read as follows:

"Salaries and all other compensation of officers, directors, trustees and Home Office employees" and add a new line 29A "Home Office Travel."

Reason: To obtain more detailed information.

27. Page 4, Item 8.

Amend item to read as follows:

"Gross premiums, less return premiums and reinsurance, in course of collection."

Reason: To insure uniform treatment of these items.

28. Page 5, Items 16, 17 and 18.

Eliminate the word "Special".

Reason: The use of the word "Special" is improper, since the reserves in question are definite reserves put up to cover unpaid losses.

29. Page 5, Items 36 and 37.

Eliminate these items from page 5 and renumber remaining items.

Reason: To conform with changes in paragraph 27.

Page 8, Items 2, 3, 4, 5 and 41.

Eliminate entirely these items from page 8 and renumber all remaining items on pages 8 and 9.

Reason: To conform with changes in paragraph 29. Item 41 is unnecessary and can be omitted at this time.

On account of the changes in paragraph 25, the following references should be corrected:

Page 6, Item 6A—reference should be to item 43, page 3, rather than to item 48A, page 3.

Page 8, Item 32—reference should be to item 50, page 3, rather than to item 55, page 3.

Page 8, Item 33—reference should be to items 6 and 15 of this exhibit, rather than to 10 and 19 of this exhibit.

Page 8, Item 35—reference should be to items 22 to 30, rather than to items 26 to 34.

Page 8, Item 38—reference should be to items 32 and 33, rather than to items 36 and 37.

Page 8, Footnote (c)—reference should be to item 50, page 3, rather than to item 55, page 3.

Page 9, Item 43—reference should be to item 49, page 3, rather than to item 54, page 3.

Page 9, Item 62—reference should be to item 51, page 3, rather than to item 56, page 3.

Page 9, Item 63—reference should be to item 52, page 3, rather than to item 57, page 3.

Page 9, Item 78—reference should be to items 65-72, rather than to items 70-77.

Page 9, Item 81—reference should be to item 47, page 5, rather than to item 49, page 5.

Page 9, Item 87—reference should be to the sum of lines 20, 50, 61, 65 and 66 divided by the sum of lines 5, 35, 45 and 56, rather than to the sum of lines 24, 55, 66, 70 and 71 divided by the sum of lines 9, 39, 50 and 61.

Schedule D, Parts 2, 3 and 4.

In Schedule D, Part 2, change heading of description column to read:

"Give complete and accurate description of all stocks owned, including redeemable options, if any, and location of all street railway, bank, trust and miscellaneous companies."

In Schedule D, Parts 3 and 4, change headings of description columns to read:

"Give complete and accurate description of each bond and stock, including location of all street railway, bank, trust and miscellaneous companies. If bonds are serial issues give amounts maturing each year. Give full information as to redeemable options, if any, for each bond and stock."

Reason: When a corporation has more than one class of preferred stock, some of which are not redeemable, the value can be more readily ascertained if information as to redemption is given.

32. Schedule J.

Change heading to read:

"Showing all Fidelity and Surety losses and claims (with itemized list of claims on bonds in excess of \$5,000 penalty, except where the amount claimed under Blanket Bonds is \$100 or less) unpaid December 31, of previous year, including ALL NOTICES received by the company of the occurrence of any event which may result in a loss under Fidelity and Surety contracts and the disposition of same."

At the bottom of the schedule above the total, insert a line reading as follows: "Total of Blanket Bond Claims (number) where the amount claimed is \$100 or less," and place stars (**) in columns 5, 6, 7, 13, 14 and 16 so that no entries can be made therein.

Reason: The majority of claims under Blanket bonds of \$100 or less are generally settled for not exceeding the amount originally claimed and consequently could reasonably be omitted from Exhibit J, which is particularly concerned with the amount of the reserve being carried on unpaid losses.

Schedule K.

Change heading to read:

"Showing all Fidelity and Surety losses and claims (with itemized list of claims on bonds in excess of \$5,000 penalty except where the amount claimed under Blanket Bonds is \$100 or less) of which notice was received during the year, including ALL NOTICES received by the company of the occurrence of any event which may result in a loss under Fidelity and Surety contracts and which remain unpaid or not disposed of December 31, of current year."

At the bottom of the schedule, above the total, insert a line reading as follows: "Total of Blanket Bond Claims (number) where the amount claimed is \$100 or less," and place stars (**) in columns 5, 6, 7, 9, 10 and 12 so that no entries can be made therein.

Reason: See paragraph 32.

Schedule P, Parts 1 and 2.

Eliminate the word "Special" in the heading of these schedules.

Reason: See paragraph 28.

PERSONAL NOTES

Wendell M. Strong, a Fellow of the Society, has been honored by having been elected President of the Actuarial Society of America.

James F. Little, a Fellow of the Society, has been honored by having been elected President of the American Institute of Actuaries.

Henry Collins is now Manager and Attorney of the Ocean Accident & Guarantee Corporation in New York.

Harold J. Ginsburgh is now Assistant Secretary of the American Mutual Liability Insurance Company in Boston.

Robert S. Hull is now Supervising Accountant with Woodward, Fondiller & Ryan, Consulting Actuaries in New York.

Ray D. Murphy is now Vice-President of the Equitable Life Assurance Society in New York.

Guido Toja, formerly Professor of Financial and Actuarial Mathematics at the University of Florence, is now Director-General of the Istituto Nazionale Delle Assicurazioni in Rome, Italy.

Helmuth G. Brunnquell, previously Actuary of the Wisconsin Insurance Department, is now Assistant Actuary of the Northwestern Mutual Life Insurance Company in Milwaukee.

Malvin E. Davis is now Assistant Actuary of the Metropolitan Life Insurance Company in New York.

Carl N. Jacobs is now President of the Hardware Mutual Casualty Company in Stevens Point.

Alexander A. Speers has left the Toledo Travelers Life Insurance Company and is with the Michigan Life Insurance Company in Detroit.

John J. Taheny, formerly Attorney, Compensation Insurance Expert with the Arizona Industrial Commission, is now Assistant Vice-President and Attorney of the Associated Indemnity Corporation in San Francisco.

Alexander C. Wellman is now Vice-President and Actuary of the Protective Life Insurance Company in Birmingham.

LEGAL NOTES

BY

SAUL B. ACKERMAN
(OF THE NEW YORK BAR)

ACCIDENT AND HEALTH

Confining Illness.—[Buske vs. Federal Casualty Co. (Wis.)
227 N. W. 239.]

An accident and health policy provided that "for the period during which the insured shall be necessarily and continuously confined within the house and therein regularly and personally visited by a legally qualified physician, and wholly and continuously disabled—****," the company will pay full indemnity and for "non-confining illness, during which the insured shall be regularly and personally attended by said physician and wholly and continuously disabled." the company will pay one-half indemnity. The insured was thereafter confined to an insane asylum and was wholly and continuously disabled but during her confinement the insured was at no time confined to her bed or within the building by reason of physical incapacity.

The court held that the injured was not entitled to full indemnity. It said:

"An exactly similar policy was continued in *Reeves v. Midland Casualty Co.* 170 Wis. 370, 174 N. W. 475, 959 and it was there held that in order to recover full indemnity, necessary and continuous confinement within the four walls of the house was required. It was there pointed out that the policy itself prescribed two degrees of illness, and that full indemnity could be recovered only during the time that the insured was necessarily and continuously confined within the four walls of the house, and therein regularly attended by a physician. The classification thus attempted is of degrees of sickness, and the confinement therein referred to is, plainly, confinement induced by the character and degree of sickness; a physical incapacity to leave the house resulting directly from the sickness.

"In this case there was no such physical incapacity. The insured was at all times physically capable of leaving the house and moving about as she pleased. Her illness imposed no restraint upon her physical abilities. While it is true that her illness resulted in complete inability to pursue her usual occupation, it is not such a disability as is prescribed

by the policy to entitle her to full indemnity. The policy sets up a physical, and not a mental, disability. The policy plainly contemplates a confinement to the house as the result of physical disability induced by sickness to entitle the insured to full indemnity.

"In this case the confinement suffered by the insured was not a confinement due to natural causes. It was a legal, rather than a natural, confinement. Her confinement was not to the house, but to the premises of the institution. While the extent of her disability to pursue her usual occupation could not have been greater as the result of physical disability, nevertheless her disability does not fall within the contractual classification which entitles her to full indemnity. It plainly falls within that provision of the contract providing for partial indemnity.

"Neither is her situation comparable to that of a tuberculosis patient, who, though confined in bed, lives in the open air. Such a situation presents a case of complete physical disability, and might very well be held to respond to the spirit of the requirements set up by the policy for full indemnity."

AUTOMOBILE

Immediate Notice:—[*Newborn vs. Employers' Liability Assur. Corp.* (N. C.) 150 S. E. 887.]

An automobile policy required that immediate notice be given of the happening of an accident. The accident occurred on June 28, a passenger, the insured's nephew, died on August 8 and notice was given to the company on September 12. The insured was shown to be a man of fine sensibility and to have been so shocked and overcome by the accident to his nephew as to affect his mental processes and rendered him incapable of "originating an idea or discovering an old one," and unfit to attend to business matters up to the time notice was given to the company. The trial court allowed the jury to decide whether under the circumstances "immediate" notice was given, and was the jury's finding that the proper notice was given contrary to the evidence. The Appellate court held that the circumstances constituted a question for the jury and that the jury's finding was proper. It said:

"It may be conceded, that the decisions on the subject are variant, some holding that, 'as a man consents to bind himself, so shall he be bound,' according to the literal meaning of the terms used in the contract, while others seemingly take a more liberal view of what the parties really intended,

look with disfavor upon forfeitures, and sustain a recovery even in the face of a failure strictly to comply with the requirements of notice, where the notice given complies substantially with the spirit and meaning of the contract. 14 R. C. L. 1333. With this latter view, our own decisions are in full accord.

"It should be observed, perhaps, that we are not now dealing with a provision requiring something to be done before loss or injury, such as the paying of premiums at a stipulated time, or observing conditions which affect the nature and desirability of the risk. Such stipulations are usually regarded as of the essence of the contract, and on their compliance depends the life and success of the insurance company. It is also conceded that there is a reasonable basis and valid cause for inserting the present stipulation in the contract.

"But the risk assumed has neither been increased nor the rights of the defendant jeopardized, by the delay of the plaintiff in giving notice of the injury. We are not, therefore, disposed to adopt a hard and fast rule which would relieve the defendant from liability, voluntarily assumed on its part for a consideration, and deny to the plaintiff all right of recovery."

BURGLARY

Entry by Force and Violence:—[*Jackson Steam Laundry vs. Aetna Casualty & Surety Co.* (Miss.) 126 So. 478.]

A safe burglary policy insured a safe "after entry into such safe or vault has been effected by force and violence by the use of tools, explosives, gas or other chemicals directly upon the exterior thereof, of which force and violence there shall be visible marks." The insured safe was opened by burglars by manipulation of the lock without evidence of violence on the exterior, but with breakage of drawers inside the safe.

The Court held that the insurance company was not liable and said quoting from the case of *Blank v. National Surety Co.* (Iowa) 165 N. W. 46:

"The policy is not a general policy providing indemnity against all losses resulting from burglary, but only such loss as results from means employed according to the terms of the policy. The language of the policy certainly does not contemplate indemnity in a case where access is gained to the inner chamber of the safe without the use of tools or

explosives, nor against loss resulting from breaking or destroying a wooden drawer which would offer but indifferent resistance to the simplest tools after the outer door has been opened by working the combination to the lock thereon."

COMPENSATION

Admiralty:—[Employers' Liab. Assur. Corp. vs. Cook, 50 S. Ct. 308.]

While regularly employed by the Motor Company and "open for any kind of work" Hall Cook was instructed as "a part of his contract of employment to assist in unloading cargo off" the steamship Lake Gorian, lately arrived at Houston, Tex., from the high seas and then tied up at the dock. While at work in the hold of the vessel, he received serious injuries, from which it is asserted he died.

The Supreme Court of the United States held that the injury comes within the admiralty jurisdiction of the United States and outside the jurisdiction of the State Compensation acts. It said:

"The proceeding to recover under the State Compensation Act necessarily admitted that the decedent was employed by the insured when injured. Any right of recovery against the insurance carrier depends upon the liability of the assured. Whether Cook's employment contemplated that he should work regularly in unloading vessels or only when specially directed so to do is not important. The unloading of a ship is not matter of purely local concern as we have often pointed out. Under the circumstances disclosed, the state lacked power to prescribe the rights and liabilities of the parties growing out of the accident."

FIDELITY

Liability:—[Nat. Surety Co. vs. Fletcher Sav. & Trust Co. (Ind.) 169 N. E. 524.]

A fidelity bond indemnified a company against loss of any money or other personal property for which the company was responsible, through the fraud, dishonesty, forgery, theft, embezzlement, or wrongful abstraction of its treasurer. The receiver of the company sued the surety alleging the following acts on the part of the treasurer:

1. That he manipulated the books of the company so as to show a profit and to conceal the insolvent condition of

the company so that dividends might be declared and paid, and that thereafter dividends were paid of which he, as one of the stockholders, received a large sum.

2. That by such manipulation of the books he induced persons and organizations to believe the company solvent and to lend it money which was thereafter used by the company and lost.

3. That he lent money of the company's money without security to irresponsible persons.

4. That the Company held mortgages, and bonds issued thereunder, and that he negotiated the bonds and when he received money on the mortgages, instead of paying it to the bondholders, he permitted it to be used and lost in the transactions of the company.

5. That he wrongfully permitted the company to carry on a banking business and accept deposits and wrongfully permitted money so deposited to be appropriated by the company and lost.

The Court held that the surety is liable for the first and third but not for the other acts of the officer. The headnote of the case summarizes the holdings as follows:

(1) "Losses resulting to investment company from payment of dividend when insolvent held recoverable from surety on fidelity bonds, where payment of dividend resulted from manager's permitting books to be incorrectly kept and false entries to be made therein, for purpose of concealing company's true financial condition, while manager was stockholder."

(2) "Conduct of manager of corporation in making false representations as to financial conditions of the company to secure loans from banks, which would otherwise not have been made, held not to afford basis for recovery against surety company on fidelity bonds protecting corporation only, since the loss was not sustained by the corporation."

(3) "Losses sustained by investment company as result of manager's loans of large sums of money to persons known by him to be financially irresponsible held recoverable under fidelity bond protecting corporation against loss by reason of fraud or dishonesty of manager."

(4) "Conduct of manager of investment corporation in permitting moneys received by it as mortgagee to be appropriated and used by the company, instead of being transferred to its customers to whom it sold the mortgages, held not to afford basis for recovery on fidelity bonds protecting

company only, since loss sustained as a result of such conduct would not be that of the corporation."

(5) "Losses resulting from conduct of manager of investment company, operating and carrying on general banking and trust business, in accepting money of divers persons as bank deposits, which manager permitted to be used by the company, held not recoverable in action on fidelity bonds covering losses resulting to company from manager's fraud, since losses were not those of company."

OBITUARY**EDWARD BONTECOU MORRIS**
1875-1929

The friends and associates of Edward Bontecou Morris, Actuary of the Life department of The Travelers Insurance Company, were greatly surprised and shocked by his sudden death Thursday, December 19, 1929, of circulatory failure following an emergency operation. Mr. Morris was a native of Hartford, Connecticut, where he was born August 16, 1875. After his graduation from the public schools of Hartford, he entered the Sheffield Scientific School at Yale and graduated in 1897 with the degree of Ph.B. On September 12, 1898, he joined The Travelers Insurance Company. Seven years later, in 1906, he was named Assistant Actuary, and in 1914 he became Actuary of the Life department, a position which he held until his death.


Mr. Morris was elected a fellow of the Casualty Actuarial Society in 1915 and has contributed various papers to the "Proceedings." At the time of his death he was vice-president of the Actuarial Society of America, in which society he had been very prominent and active from the time of his election as a fellow by examination in 1906. He served four terms as a member of the Council of the Actuarial Society from 1914 to 1917, 1918 to 1920, 1922 to 1925, and from 1926 until his election as vice-president in 1928. He was a Fellow of the American Institute of Actuaries and took a prominent part in the meetings of that society, also. He will be keenly missed at the meetings of all three actuarial societies.

He was a member of the Royal Statistical Society of London, England, the American Statistical Association, the American Mathematical Society, Mathematical Association of America, the American Academy of Political and Social Science, American Association for the Advancement of Science, the Royal Economic Society, Permanent Committee of International Congress of Actuaries, the American Economic Association, and American Public Health Association. He was also a member of many clubs, associations and societies other than those incident to his professional activities.

Mr. Morris was widely noted for the range and originality of his

ideas, having originated many new features and improvements in Life policies, many of which have now become standard. He took an important part in the early development of Group insurance, doing much to foster the growth of that great line in its earliest years. Of great importance to the Life insurance world as a whole was the time and energy given by Mr. Morris to the selection and careful training of men for actuarial work. Many men who are today occupying responsible positions willingly acknowledge that they owe a great debt of gratitude to Mr. Morris for the training and guidance he gave them in their early years in the business.

Edward Morris was a truly lovable man. He liked to meet men and men liked to meet him. His friendly smile, his cheerful disposition, and his courteous manner left an impress even on the casual acquaintance which caused him promptly to remember Mr. Morris when he met him again. He was a true sportsman, being a quiet winner, a cheerful loser, and caring more for the game itself than whether he won or lost. His loss is deeply felt by his many friends and associates.



CASUALTY ACTUARIAL SOCIETY

MAY 9, 1930

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ABSTRACT FROM THE MINUTES OF THE MEETING
MAY 9, 1930

The semi-annual (thirty-fourth regular) meeting of the Casualty Actuarial Society was held at the Lord Baltimore Hotel, Baltimore, Maryland, on Friday, May 9, 1930.

President Moore called the meeting to order at 10:15 A. M., daylight saving time. The roll was called showing the following thirty-three Fellows and nineteen Associates present:

FELLOWS

BARBER	HULL	NICHOLAS
BENJAMIN	HUNT	ORR
BROWN, F. S.	LAWRENCE	PERKINS
CRANE	LESLIE	PINNEY
DORWEILER	LINDER	ROEBER
FONDILLER	MARSHALL	SENIOR
FREDRICKSON	MASTERTON	SKELDING
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HAUGH	MICHELbacher	VAN TUYL
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BROOKS	MARSH	SOMMER
CONSTABLE	MONTGOMERY	THOMPSON, A. E.
FITZGERALD	PENNOCK	
FLEMING	PERRYMAN	

President Moore read his presidential address.

The minutes of the meeting held November 19, 1929 were approved as printed in the *Proceedings*.

The Secretary-Treasurer read the report of the Council and upon motion it was adopted by the Society. Richard W. Gallon and John R. Lange had been enrolled as Associates without examination and J. J. Smick as an Associate by examination. The publication of "Casualty Insurance Accounting" by R. S. Hull by the Ronald Press Company was authorized. This textbook will be published about September 1930.

The report of the Committee on Compensation and Liability Loss Reserves was read in full. The Council will give further consideration to this report at its next meeting after due notice has been mailed to members and others interested in the contents of the report.

The President announced the death since the last meeting of the Society of Edward B. Morris, Fellow, and the memorial notice appearing in this Number was thereupon read.

The following topics for which speakers had been selected were informally discussed:

In view of recent experience is the present Compensation rate making plan proving satisfactory?

Should experience projection factors be incorporated by formula in the rate making plans for the various casualty lines?

Recess was taken until 2:15 P. M.

By invitation of the Committee on Program, Mr. Austin J. Lilly, General Counsel, Maryland Casualty Company, Baltimore, Maryland, addressed the Society on "A Study of Motor Vehicle Safety Responsibility Legislation" and Edward S. Brashears, Attorney of Washington, D. C., addressed the Society on "What Do We Prove As Actuaries?"

The papers printed in this Number were read or presented.

The papers read at the last meeting of the Society were discussed.

The members were the guests of the Baltimore Companies at the Baltimore Country Club at dinner on the evening of the meeting; also for golf or a trip to Annapolis on the next day. By a rising vote of thanks the members expressed their appreciation of the hospitality of the Baltimore Companies.

Upon motion, the meeting adjourned at 4:30 P. M., daylight saving time.

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Those marked (†) were Charter Members at date of organization, November 7, 1914.

Those marked (*) have been admitted as Fellows upon examination by the Society.

Date Admitted	
May 23, 1924	Bailey, William B., Economist, The Travelers Insurance Co., 700 Main St., Hartford, Conn.
*Nov. 20, 1924	Barber, Harmon T., Assistant Actuary, Casualty Actuarial Department, The Travelers Insurance Co., 700 Main St., Hartford, Conn.
†	Benjamin, Roland, Treasurer, Fidelity & Deposit Co., Baltimore, Md.
†	Black, S. Bruce, President, Liberty Mutual Insurance Co., Park Square Building, Boston, Mass.
Apr. 20, 1917	Blanchard, Ralph H., Professor of Insurance, School of Business, Columbia University, New York.
May 24, 1921	Bond, Edward J., Jr., First Vice-President, Maryland Casualty Co., Baltimore, Md.
May 19, 1915	Bradshaw, Thomas, Vice-President and General Manager, Massey-Harris Co., Limited, 915 King St., Toronto, Canada; President, North American Life Assurance Co. of Canada, Toronto, Canada.
†	Breiby, William, Consulting Actuary, Fackler & Breiby, 25 Church St., New York.
*Nov. 18, 1927	Brown, F. Stuart, Deputy Comptroller, Lloyds Casualty Co., 75 Maiden Lane, New York.
Oct. 22, 1915	Brown, Herbert D., Chief of U. S. Efficiency Bureau, 408 Winder Building, 17th and F. Sts., N. W., Washington, D. C.
Oct. 22, 1915	Brown, William H., Second Vice-President and Secretary, Columbian National Life Insurance Co., 77 Franklin St., Boston, Mass.
June 5, 1925	Brosmith, William, Vice-President and General Counsel, The Travelers Insurance Co. and The Travelers Indemnity Co., 700 Main St., Hartford, Conn.
†	Buck, George B., Consulting Actuary for Pension Funds, 25 Spruce St., New York.
May 26, 1916	Bucklin, Walter S., President, National Shawmut Bank, 40 Water St., Boston, Mass.
†	Budlong, W. A., Superintendent of Claims, Commercial Travelers Mutual Accident Association, Utica, N. Y.
Apr. 20, 1917	Burhop, William H., Secretary, Employers Mutual Liability Insurance Co., Wausau, Wis.

FELLOWS

Date Admitted	
*Nov. 23, 1928	Burling, William H., The Travelers Insurance Co., 700 Main St., Hartford, Conn.
Feb. 19, 1915	Burns, F. Highlands, President, Maryland Casualty Co., Baltimore, Md.
*Nov. 19, 1929	Cahill, James M., The Travelers Insurance Co., 700 Main St., Hartford, Conn.
†	Cammack, Edmund E., Vice-President and Actuary, Aetna Life Insurance Co., Hartford, Conn.
†	Carpenter, Raymond V., Actuary, Metropolitan Life Insurance Co., 1 Madison Ave., New York.
*Nov. 15, 1918	Coates, Barrett N., Coates and Herfurth, Consulting Actuaries, 114 Sansome St., San Francisco, Calif.
*Nov. 17, 1922	Coates, Clarence S., Federal California Underwriters, Insurance Center Building, San Francisco, Calif.
Oct. 27, 1916	Cogswell, Edmund S., Second Deputy Commissioner of Insurance, State House, Boston, Mass.
Feb. 19, 1915	Collins, Henry, Deputy Manager, Ocean Accident & Guarantee Corporation and Vice-President, Columbia Casualty Co., 1 Park Ave., New York.
*Nov. 23, 1928	Comstock, W. Phillips, Continental Casualty Co., 75 Fulton St., New York.
†	Copeland, John A., Consulting Actuary, Candler Building, Atlanta, Ga.
*Nov. 18, 1925	Corcoran, William M., Office of S. H. and Lee J. Wolfe, Consulting Actuaries, 165 Broadway, New York.
†	Cowles, Walter G., Vice-President, The Travelers Insurance Co., 700 Main St., Hartford, Conn.
†	Craig, James D., Actuary, Metropolitan Life Insurance Co., 1 Madison Ave., New York.
*Nov. 19, 1926	Crane, Howard G., Assistant Comptroller, General Reinsurance Corporation, 80 John St., New York.
*Nov. 18, 1927	Davis, Evelyn M., Associate Actuary, Woodward, Fondiller & Ryan, Consulting Actuaries, 75 Fulton St., New York.
†	Dawson, Alfred B., Miles M. Dawson & Son, Inc., 36 W. 44th St., New York.
†	Dawson, Miles M., Consulting Actuary and Counsellor at Law, 36 W. 44th St., New York.
†	DeKay, Eckford C., President, Industrial Service Corporation, 84 William St., New York.
†	Dearth, Elmer H., Detroit Athletic Club, Box 38, Detroit, Mich.
*Nov. 17, 1920	Dorweiler, Paul, Actuary, Accident and Liability Department, Aetna Life Insurance Co., Hartford, Conn.
†	Dublin, Louis I., Statistician, Metropolitan Life Insurance Co., 1 Madison Ave., New York.
May 19, 1915	Dunlap, Earl O., Assistant Actuary, Metropolitan Life Insurance Co., 1 Madison Ave., New York.
†	Egbert, Lester D., Director, Brown, Crosby & Co., Inc., Insurance Brokers, 96 Wall St., New York.
*Nov. 17, 1922	Elston, James S., Assistant Actuary, Life Department, The Travelers Insurance Co., 700 Main St., Hartford, Conn.
†	Epsteen, Saul R., 418 U. S. National Bank Building, Denver, Colo.

FELLOWS

Date Admitted	
†	Fackler, Edward B., Consulting Actuary, Fackler & Breiby, 25 Church St., New York.
†	Fallow, Everett S., Actuary, Accident Department, The Travelers Insurance Co., 700 Main St., Hartford, Conn.
†	Farrer, Henry, Assistant Secretary, Independence Companies, Independence Building, Philadelphia, Pa.
Feb. 19, 1915	Fellows, Claude W., President, Associated Indemnity Corporation, Associated Fire & Marine Insurance Co., Associated Insurance Fund, Inc., Associated Insurance Building, 332 Pine St., San Francisco, Calif.
Feb. 19, 1915	Flanigan, James E., Agency Manager, Bankers Life Co., 225 Broadway, New York.
†	Flynn, Benedict D., Secretary and Actuary, The Travelers Insurance Co., 700 Main St., Hartford, Conn.
Feb. 19, 1915	Fondiller, Richard, Woodward, Fondiller & Ryan, Consulting Actuaries, 75 Fulton St., New York.
†	Forbes, Charles S., Treasurer, Smyth, Sanford and Gerard, Inc., Insurance Brokers, 68 William St., New York; President, Service Mutual Liability Insurance Co., Park Square Building, Boston, Mass.
Nov. 19, 1929	Foster, R. Leighton, Superintendent of Insurance, Province of Ontario, Parliament Building, Toronto, Canada.
May 26, 1916	Frankel, Lee K., Second Vice-President, Metropolitan Life Insurance Co., 1 Madison Ave., New York.
†	Franklin, Charles H., Secretary, Continental Casualty Co., 910 South Michigan Ave., Chicago, Ill.
*Nov. 18, 1927	Fredrickson, Carl H., Actuary, Canadian Automobile and Casualty Underwriters Association, 330 Bay St., Toronto, Canada.
Feb. 25, 1916	Froggatt, Joseph, President, Joseph Froggatt & Co., Insurance Accountants, 74 Trinity Place, New York.
†	Furze, Harry, Treasurer, Globe Indemnity Co., Washington Park, Newark, N. J.
Feb. 19, 1915	Garrison, Fred S., Assistant Secretary, The Travelers Indemnity Co., 700 Main St., Hartford, Conn.
*Nov. 20, 1924	Ginsburgh, Harold J., American Mutual Liability Insurance Co., 142 Berkeley St., Boston, Mass.
May 19, 1915	Glover, James W., Professor of Mathematics and Insurance, University of Michigan, 620 Oxford Road, Ann Arbor, Mich.
†	Goodwin, Edward S., Goodwin-Beach & Co., Brokers, 64 Pearl St., Hartford, Conn.
†	Gould, William H., Consulting Actuary, 75 Fulton St., New York.
*Nov. 19, 1926	Graham, Charles M., Assistant Actuary, State Insurance Fund, 432 Fourth Ave., New York.
Oct. 22, 1915	Graham, George, Vice-President, Central States Life Insurance Co., 3663 Lindell Blvd., St. Louis, Mo.
Oct. 22, 1915	Graham, Thompson B., Assistant Secretary, Metropolitan Life Insurance Co., 1 Madison Ave., New York.
†	Graham, William J., Vice-President, Equitable Life Assurance Society, 393 Seventh Ave., New York.

FELLOWS

Date Admitted	
May 25, 1923	Granville, William A., Director of Publications, Washington Fidelity National Insurance Co., 1607 Howard St., Chicago, Ill.
Nov. 19, 1929	Gray, V. Evan, Barrister-at-law, Sterling Tower, 372 Bay St., Toronto, Canada.
†	Greene, Winfield W., Comptroller, General Reinsurance Corporation, and U. S. Branch of United British Insurance Co., Ltd., 80 John St., New York.
†	Hamilton, Robert C. L., Comptroller, Hartford Accident & Indemnity Co., Hartford, Conn.
†	Hammond, H. Pierson, Actuary, Life Department, The Travelers Insurance Co., 700 Main St., Hartford, Conn.
†	Hansen, Carl M., President, International Reinsurance Corporation, Pacific Finance Bldg., Los Angeles, Calif.
Oct. 27, 1916	Hardy, Edward R., Assistant Manager, New York Fire Insurance Exchange, 85 John St., New York.
Oct. 22, 1915	Hatch, Leonard W., Member, State Industrial Board, 124 East 28th St., New York.
*Nov. 19, 1926	Haugh, Charles J., Jr., Assistant Actuary, National Bureau of Casualty & Surety Underwriters, 1 Park Ave., New York.
Nov. 17, 1920	Heath, Charles E., Vice-President and Secretary, Standard Surety & Casualty Company of New York, 80 John St., New York.
Nov. 21, 1919	Henderson, Robert, Vice-President and Actuary, Equitable Life Assurance Society, 393 Seventh Ave., New York.
May 17, 1922	Heron, David, Secretary and Chief Statistician, London Guarantee & Accident Co., Ltd., 20 Lincoln's Inn Fields, London, W. C. 2, England.
Oct. 22, 1915	Hess, Herbert, Herbert Hess & Co., Public Accountants and Auditors, 120 Broadway, New York.
†	Hillas, Robert J., (Retired) 2 Whippany Road, Morristown, N. J.
Nov. 15, 1918	Hinsdale, Frank W., Secretary, Workmen's Compensation Board, Vancouver, B. C., Canada.
May 23, 1924	Hobbs, Clarence W., Special Representative of the National Convention of Insurance Commissioners, National Council on Compensation Insurance, 151 Fifth Ave., New York.
Nov. 19, 1926	Hodges, Charles E., President, American Mutual Liability Insurance Co., Allied American Mutual Automobile Insurance Co., American Policyholders' Insurance Co., 142 Berkeley St., Boston, Mass.
Oct. 22, 1915	Hodgkins, Lemuel G., Secretary, Massachusetts Protective Association and Massachusetts Protective Life Assurance Co., Worcester, Mass.
†	Hoffman, Frederick L., Consulting Statistician, Prudential Insurance Co.; Research Consultant, Babson Institute, Wellesley Hills, Mass.; Director of Research, Aviation Business Bureau, Inc., 72 Wall St., New York.
Oct. 22, 1915	Holland, Charles H., President, Independence Indemnity Co., Independence Building, Philadelphia, Pa.
†	Hughes, Charles, Auditor and Actuary, New York Insurance Department, 111 John St., New York.

FELLOWS

Date Admitted	
Nov. 19, 1929	Hull, Robert S., Comptroller, Standard Accident Insurance Co., 640 Temple Ave., Detroit, Mich.
†	Hunt, Burritt A., Assistant Secretary, Accident and Liability Department, Aetna Life Insurance Co., Hartford, Conn.
†	Hunter, Arthur, Second Vice-President and Chief Actuary, New York Life Insurance Co., 51 Madison Ave., New York.
Nov. 18, 1921	Hutcheson, William A., Second Vice-President and Actuary, Mutual Life Insurance Co., 32 Nassau St., New York.
Feb. 25, 1916	Jackson, Charles W., Actuary, Postal Life Insurance Co., 511 Fifth Ave., New York.
*Nov. 19, 1929	Jackson, Henry H., Actuary, National Life Insurance Co., Montpelier, Vt.
May 19, 1915	Johnson, William C., Vice-President, Massachusetts Protective Association, Worcester, Mass.
Nov. 23, 1928	Jones, F. Robertson, General Manager, Association of Casualty and Surety Executives; and Secretary-Treasurer, Workmen's Compensation Publicity Bureau, Bureau of Personal Accident and Health Underwriters, International Association of Casualty and Surety Underwriters and Committee of Nine on "Financial Responsibility for Automobile Accidents," 1 Park Ave., New York.
*Nov. 19, 1926	Kelton, William H., Assistant Actuary, Life Department, The Travelers Insurance Co., 700 Main St., Hartford, Conn.
†	King, Walter I., Vice-President, Connecticut General Life Insurance Co., 55 Elm St., Hartford, Conn.
*Nov. 21, 1919	Kirkpatrick, A. Loomis, W. A. Alexander & Co., 134 So. LaSalle St., Chicago, Ill.
†	Kopf, Edwin W., Assistant Statistician, Metropolitan Life Insurance Co., 1 Madison Ave., New York.
Nov. 23, 1928	Kulp, Clarence A., Professor of Insurance, University of Pennsylvania, Logan Hall, 36th St. and Woodland Ave., Philadelphia, Pa.
Feb. 19, 1915	Laird, John M., Vice-President, Connecticut General Life Insurance Co., 55 Elm St., Hartford, Conn.
Nov. 17, 1922	Lawrence, Arnette R., Special Deputy Commissioner of Banking and Insurance, 1203 Military Park Building, 60 Park Place, Newark, N. J.
†	Leal, James R., Vice-President and Secretary, Interstate Life and Accident Co., Interstate Building, 540 McCallie Ave., Chattanooga, Tenn.
†	Leslie, William, Associate General Manager, National Bureau of Casualty & Surety Underwriters, 1 Park Ave., New York.
*Nov. 20, 1924	Linder, Joseph, Associate Actuary, Woodward, Fondiller & Ryan, Consulting Actuaries, 75 Fulton St., New York.
Nov. 18, 1921	Little, James F., Second Vice-President and Associate Actuary, Prudential Insurance Co., Newark, N. J.
Nov. 23, 1928	Lunt, Edward C., Vice-President, Great American Indemnity Co., 1 Liberty St., New York.
Feb. 19, 1915	Maddrill, James D., Consulting Actuary, 351 West 42nd St., New York.
†	Magoun, William N., General Manager, Massachusetts Rating and Inspection Bureau, 80 Broad St., Boston, Mass.

FELLOWS

Date Admitted	
*Nov. 23, 1928	Marshall, Ralph M., National Council on Compensation Insurance, 151 Fifth Ave., New York.
*Nov. 18, 1927	Masterson, Norton E., Actuary, Hardware Mutual Casualty Co., Stevens Point, Wis.
*Nov. 19, 1926	Matthews, Arthur N., The Travelers Insurance Co., 700 Main St., Hartford, Conn.
May 19, 1915	Maycrink, Emma C., Examiner, New York Insurance Department, 111 John St., New York.
*Nov. 16, 1923	McClurg, D. Ralph, Secretary and Treasurer, National Equity Life Insurance Co., Little Rock, Ark.
May 23, 1919	McDougald, Alfred, Ellerslie, Beddington Gardens, Wallington Surrey, England.
*Oct. 31, 1917	McManus, Robert J., Statistician, Casualty Actuarial Department, The Travelers Insurance Co., 700 Main St., Hartford, Conn.
Feb. 19, 1915	Mead, Franklin B., Executive Vice-President, The Lincoln National Life Insurance Co., Fort Wayne, Ind.
Apr. 20, 1917	Meltzer, Marcus, Statistician, National Bureau of Casualty and Surety Underwriters, 1 Park Ave., New York.
†	Michelbacher, Gustav F., Vice-President and Secretary, Great American Indemnity Co., 1 Liberty St., New York.
†	Miller, David W., Assistant Treasurer, S. W. Strauss & Co., Investment Bonds, 565 Fifth Ave., New York.
†	Milligan, Samuel, Third Vice-President, Metropolitan Life Insurance Co., 1 Madison Ave., New York.
†	Mitchell, James F., Assistant U. S. Manager, General Accident Fire and Life Assurance Corporation, Ltd., 414 Walnut St., Philadelphia, Pa.
†	Moir, Henry, President, United States Life Insurance Co., 156 Fifth Ave., New York.
*Nov. 18, 1921	Montgomery, Victor, Secretary and General Manager, Pacific Employers Insurance Co., 928 So. Figuerva St., Los Angeles, Calif.
Nov. 19, 1926	Mooney, William L., Vice-President, Aetna Life Insurance Co., Hartford, Conn.
†	Moore, George D., Comptroller, Standard Surety & Casualty Company of New York, 80 John St., New York.
May 19, 1915	Morris, Edward B., Actuary, Life Department, The Travelers Insurance Co., Hartford, Conn. (Deceased, December 19, 1929)
†	Morrison, James, Secretary-Treasurer, Independence Indemnity Co., Independence Building, Philadelphia, Pa.
†	Mowbray, Albert H., Consulting Actuary, 806 San Luis Road, Berkeley, Calif.; Professor of Insurance, University of California, Berkeley, Calif.
May 20, 1918	Mudgett, Bruce D., Professor of Economics, University of Minnesota, Minneapolis, Minn.
*Nov. 17, 1920	Mueller, Louis H., President, Varney Air Lines, Inc., 310 Balboa Building, San Francisco, Calif.
†	Mullaney, Frank R., Secretary, American Mutual Liability Insurance Co., and American Policyholders' Insurance Co., 142 Berkeley St., Boston, Mass.

FELLOWS

Date Admitted	
May 28, 1920	Murphy, Ray D., Second Vice-President and Associate Actuary, Equitable Life Assurance Society, 393 Seventh Ave., New York.
†	Nicholas, Lewis A., Assistant Secretary, Fidelity & Casualty Co., 92 Liberty St., New York.
†	Olifiers, Edward, Consulting Actuary, P. O. Box 1817, Rio-de-Janeiro, Brazil.
Nov. 18, 1927	O'Neill, Frank J., President, Royal Indemnity Co. and Eagle Indemnity Co., 150 William St., New York.
†	Orr, Robert K., President, Wolverine Insurance Co., Lansing, Mich.
†	Otis, Stanley L., Counsellor at Law, 110 William St., New York.
*Nov. 21, 1919	Outwater, Olive E., Assistant Actuary, Benefit Association of Railway Employees, 901 Montrose Ave., Chicago, Ill.
Nov. 19, 1926	Page, Bertrand A., Vice-President, The Travelers Insurance Co., 700 Main St., Hartford, Conn.
*Nov. 18, 1921	Perkins, Sanford B., Assistant Secretary, Compensation and Liability Department, The Travelers Insurance Co., 700 Main St., Hartford, Conn.
Nov. 15, 1918	Perry, W. T., Assistant Manager, Ocean Accident and Guarantee Corporation, 36 Moorgate, London, E. C. 2, England.
Nov. 19, 1926	Phillips, Jesse S., President, Great American Indemnity Co., 1 Liberty St., New York.
*Nov. 17, 1922	Pinney, Sydney D., Associate Actuary, Casualty Actuarial Department, The Travelers Insurance Co., 700 Main St., Hartford, Conn.
May 13, 1927	Reid, A. Duncan, President and General Manager, Globe Indemnity Co., Washington Park, Newark, N. J.
†	Remington, Charles H., Insurance Counselor and Advisor, Suite 1801-1805, French Building, 551 Fifth Ave., New York.
May 23, 1919	Richardson, Frederick, U. S. Manager and Director, General Accident Fire and Life Assurance Corporation, 414 Walnut St., Philadelphia, Pa.
*Nov. 19, 1926	Richter, Otto C., American Telephone & Telegraph Co., 195 Broadway, New York.
May 24, 1921	Riegel, Robert, Professor of Statistics and Insurance, University of Buffalo, Buffalo, N. Y.
*Nov. 16, 1923	Roeber, William F., Assistant Manager, National Council on Compensation Insurance, 151 Fifth Ave., New York.
†	Rubinow, Isaac M., Secretary, Independent Order of B'nai B'rith, 40 Electric Bldg., Cincinnati, O.
†	Ryan, Harwood E., Woodward, Fondiller & Ryan, Consulting Actuaries, 75 Fulton St., New York.
†	Scheitlin, E., Assistant Treasurer, Globe Indemnity Co., Washington Park, Newark, N. J.
†	Senior, Leon S., Manager and Secretary, Compensation Inspection Rating Board, 370 Seventh Ave., New York.
*Nov. 19, 1929	Skelding, Albert Z., Assistant Actuary, National Council on Compensation Insurance, 151 Fifth Ave., New York.
*Nov. 19, 1929	Skillings, Edward S., Associate Actuary, Woodward, Fondiller & Ryan, Consulting Actuaries, 75 Fulton St., New York.

FELLOWS

Date Admitted	
Apr. 20, 1917	Smith, Charles G., Manager, State Insurance Fund, 432 Fourth Ave., New York.
Nov. 18, 1927	Stone, Edward C., U. S. Manager, Employers' Liability Assurance Corporation, Limited, and President, American Employers' Insurance Company, 110 Milk St., Boston, Mass.
Feb. 25, 1916	Strong, Wendell M., Associate Actuary, Mutual Life Insurance Co., 32 Nassau St., New York.
Oct. 22, 1915	Strong, William Richard, No. 4 "Sheringham," Cotham Road, Kew, Victoria, Australia.
†	Sullivan, Robert J., Vice-President, The Travelers Insurance Co., and The Travelers Indemnity Co., 700 Main St., Hartford, Conn.
*Nov. 17, 1920	Tarbell, Thomas F., Actuary, Casualty Actuarial Department, The Travelers Insurance Co., 700 Main St., Hartford, Conn.
†	Thompson, John S., Vice-President and Mathematician, Mutual Benefit Life Insurance Co., 300 Broadway, Newark, N. J.
Nov. 18, 1921	Toja, Guido, Professor of Financial and Actuarial Mathematics, University of Florence, Florence, Italy.
†	Train, John L., Secretary and General Manager, Utica Mutual Insurance Co., 185 Genessee St., Utica, N. Y.
Nov. 17, 1922	Traversi, Antonio T., Consulting Actuary and Accountant, Barrack House, 16 Barrack St., Sydney, Australia.
*Nov. 23, 1928	Valerius, N. M., Accident & Liability Department, Aetna Life Insurance Co., Hartford, Conn.
*Nov. 21, 1919	Van Tuyl, Hiram O., Actuary, Constitution Indemnity Company of Philadelphia, Independence Building, Independence Square, Philadelphia, Pa.
*Nov. 17, 1920	Waite, Alan W., Chief Underwriter, Accident and Liability Department, Aetna Life Insurance Co., Hartford, Conn.
*Nov. 18, 1925	Warren, Lloyd A. H., Professor of Mathematics, University of Manitoba, 64 Niagara St., Winnipeg, Manitoba, Canada.
May 23, 1919	Welch, Archibald, A., President, Phoenix Mutual Life Insurance Co., Hartford, Conn.
Nov. 19, 1926	Wheeler, Roy A., Vice-President and Actuary, Liberty Mutual Insurance Co., Park Square Building, Boston, Mass.
†	Whitney, Albert W., Associate General Manager and Actuary, National Bureau of Casualty & Surety Underwriters, 1 Park Ave., New York.
†	Wolfe, Lee J., Consulting Actuary, 165 Broadway, New York.
May 24, 1921	Wood, Arthur B., Vice-President and Actuary, Sun Life Assurance Company of Canada, Montreal, Canada.
*Nov. 17, 1920	Young, Charles N., Manager, Safety Engineering Department, Constitution Indemnity Company of Philadelphia, Independence Building, Philadelphia, Pa.

ASSOCIATES

Those marked (*) have been enrolled as Associates upon examination by the Society.

Those marked (1) or (2) have passed Part I or Part II of the Fellowship Examination.

Date Enrolled	
May 23, 1924	Acker, Milton, Manager, Compensation and Liability Department, National Bureau of Casualty and Surety Underwriters, 1 Park Ave., New York.
*Nov. 15, 1918	Ackerman, Saul B., Associate Professor of Insurance, New York University, 90 Trinity Place, New York.
(1)*Nov.23,1928	Ainley, John W., The Travelers Insurance Co., 700 Main Street, Hartford, Conn.
April 5, 1928	Allen, Austin F., Vice-President, Texas Employers Insurance Association and Employers Casualty Co., Dallas, Texas.
*Nov. 15, 1918	Ankers, Robert E., Secretary and Treasurer, Continental Life Insurance Co., District National Bank Building, Washington, D. C.
(1)*Nov.16,1923	Ault, Gilbert E., Associate Actuary, Woodward, Fondiller & Ryan, Consulting Actuaries, 75 Fulton St., New York.
(1)*Nov.17,1922	Barter, John L., Superintendent, Liability Department, Pacific Department, Hartford Accident & Indemnity Co., 720 California St., San Francisco, Calif.
(1)*Nov.23,1928	Bateman, Arthur E., Liberty Mutual Insurance Company, Park Square Building, Boston, Mass.
*Nov. 19, 1926	Batho, Elgin R., Assistant Actuary, Ontario Equitable Life & Accident Insurance Co., Waterloo, Ontario, Canada.
*Nov. 18, 1925	Bittel, W. Harold, Peoria Life Insurance Co., 410 Main St., Peoria, Ill.
Nov. 17, 1920	Black, Nellis C., Superintendent Statistical Division, Maryland Casualty Co., Baltimore, Md.
*Nov. 23, 1928	Bower, Perry S., Great West Life Assurance Company, Winnipeg, Manitoba, Canada.
Nov. 15, 1918	Brooks, LeRoy, Statistician, U. S. Fidelity & Guaranty Co., Baltimore, Md.
Nov. 20, 1924	Broughton, Thomas W., General Superintendent, Zurich General Accident and Liability Insurance Co., Eastern Department, 80 John Street, New York.
*Nov. 15, 1918	Brunnquell, Helmuth G., Actuary, Wisconsin Insurance Department, Madison, Wis.
*Oct. 22, 1915	Bufler, Louis, District Manager, Utica Mutual Insurance Co., 225 West 34th St., New York.
*Nov. 20, 1924	Bugbee, James M., Maryland Casualty Co., Baltimore, Md.
March 31, 1920	Burt, Margaret A., Office of George B. Buck, Consulting Actuary, 25 Spruce St., New York.
*Nov. 19, 1929	Carlson, Thomas O., National Bureau of Casualty and Surety Underwriters, 1 Park Ave., New York.

ASSOCIATES

Date Enrolled	
Nov. 17, 1922	Cavanaugh, Leo D., Vice-President and Actuary, Federal Life Insurance Co., 166 N. Michigan Blvd., Chicago, Ill.
*Nov. 18, 1927	Chen, S. T., Actuarial Department, China United Assurance Society, 34 Bubbling Road, Shanghai, China.
*Nov. 18, 1927	Conrod, Stuart F., Office of Woodward, Fondiller & Ryan, Consulting Actuaries, 75 Fulton St., New York.
*Nov. 18, 1921	Constable, William J., Lumbermens Mutual Casualty Co., 260 Tremont St., Boston, Mass.
May 23, 1929	Cowee, George A., Vice-President, Liberty Mutual Insurance Co., Park Square Building, Boston, Mass.
(1)*Nov.19,1926	Davies, E. Alfred, Budget Supervisor, Liberty Mutual Insurance Co., Park Square Building, Boston, Mass.
*Nov. 18, 1925	Davis, Malvin E., Metropolitan Life Insurance Co., 1 Madison Ave., New York.
May 25, 1923	Economidy, Harilaus E., Treasurer, American Indemnity Co., Texas Indemnity Insurance Co., American Fire & Marine Insurance Co., Galveston, Texas.
June 5, 1925	Eger, Frank A., Comptroller, Insurance Company of North America and Affiliated Companies, 1600 Arch St., Philadelphia, Pa.
Nov. 15, 1918	Egli, Wilfred H., Assistant Manager, Zurich General Accident & Liability Insurance Co., Ltd., 175 West Jackson Blvd., Chicago, Ill.
*Nov. 23, 1928	Faith, Edward L., Missouri State Life Insurance Co., 1501 Locust St., St. Louis, Mo.
*Nov. 16, 1923	Fitz, L. Leroy, Actuary, Joseph Froggatt & Co., 74 Trinity Place, New York.
(1)*Nov.18,1927	Fitzgerald, A. H., Assistant Actuary, The Prudential Insurance Company of America, Newark, N. J.
*Nov. 16, 1923	Fleming, Frank A., Actuary, American Mutual Alliance, 730 5th Ave., New York.
May 23, 1919	Fletcher, Nicholas, Assistant to Commissioner and Secretary, Workmen's Compensation Board, Winnipeg, Manitoba, Canada.
Nov. 20, 1924	Froberg, John, Superintendent, California Inspection Rating Bureau, San Francisco, Calif.
(1)*Nov.19,1926	Fuller, Gardner V., Assistant Secretary, National Council on Compensation Insurance, 151 Fifth Ave., New York.
(1)*Nov.19,1929	Furnivall, Maurice L., Accident Actuarial Department, The Travelers Insurance Co., 700 Main St., Hartford, Conn.
*Nov. 17, 1922	Gibson, Joseph P., Jr., General Manager, Excess Underwriters, Inc., 75 Fulton St., New York.
*Nov. 16, 1923	Gildea, James F., The Travelers Insurance Co., 700 Main Street, Hartford, Conn.
(1)*Nov.23,1928	Glenn, J. Bryan, The Travelers Insurance Co., 700 Main St., Hartford, Conn.
Nov. 19, 1929	Gordon, Harold R., Executive Secretary, Health & Accident Underwriters Conference, 330 South Wells St., Chicago, Ill.
*Nov. 18, 1927	Green, Walter C., Office of Coates and Herfurth, Consulting Actuaries, 14 Sansome St., San Francisco, Calif.

ASSOCIATES

Date Enrolled	
*Nov. 18, 1921	Haggard, Robert E., Superintendent, Permanent Disability Rating Department, Industrial Accident Commission, State Building, Civic Center, San Francisco, Calif.
*Nov. 17, 1922	Hall, Hartwell L., Assistant Actuary, Connecticut Insurance Department, Hartford, Conn.
Nov. 20, 1924	Hall, Leslie L., Secretary-Treasurer, National Bureau of Casualty & Surety Underwriters, 1 Park Ave., New York.
(2)*Nov.18,1925	Hall, William D., Motor City Agency, United Artists Building, 154 Bagley Ave., Detroit, Mich.
(1)*Mar.25,1924	Hart, Ward Van Buren, Assistant Actuary, Connecticut General Life Insurance Co., Hartford, Conn.
Nov. 21, 1919	Haydon, George F., General Manager, Wisconsin Compensation Rating & Inspection Bureau, 110 East Wisconsin Ave., Milwaukee, Wis.
Nov. 17, 1927	Hipp, Grady H., Actuary, New York State Insurance Fund, 432 Fourth Ave., New York.
*Oct. 31, 1917	Jackson, Edward T., Statistician, General Accident Fire & Life Assurance Corporation, 421 Walnut St., Philadelphia, Pa.
Nov. 19, 1929	Jacobs, Carl N., Vice-President and General Manager, Hardware Mutual Casualty Co., Stevens Point, Wis.
(1)*Nov.18,1927	Jamison, Dorothy M., Assistant Actuary, George Washington Life Insurance Co., 1014 Kanawha St., Charleston, W. Va.
(2)*Nov.18,1921	Jensen, Edward S., Actuary, Great Republic Life Insurance Co., 8th and Spring Sts., Los Angeles, Calif.
*Nov. 21, 1919	Jones, Loring D., Assistant Manager, State Insurance Fund, 432 Fourth Ave., New York.
*Nov. 17, 1922	Kirk, Carl L., Actuary, Zurich General Accident & Liability Insurance Co., 431 Insurance Exchange, Chicago, Ill.
*Nov. 19, 1926	Kormes, Mark, National Bureau of Casualty and Surety Underwriters, 1 Park Ave., New York.
*Nov. 23, 1928	Lipkind, S. S., Reliance Life Insurance Company, Pittsburgh, Pa.
*Nov. 18, 1925	Malmuth, Jacob, Examiner, New York Insurance Department, 111 John St., New York.
Mar. 24, 1927	Marsh, Charles V. R., Comptroller and Assistant Treasurer, Fidelity & Deposit Co. and American Bonding Co., Baltimore, Md.
(1)*Oct. 27, 1916	McClure, Laurence H., Assistant Sales Manager, Electrical Division, Colt's Patent Fire Arms Manufacturing Co., Hartford, Conn.
*Nov. 17, 1922	McIver, Roswell A., Actuary, Washington Fidelity National Insurance Co., 1607 Howard St., Chicago, Ill.
*Nov. 19, 1926	Merkle, Mrs. Grace G., The Maccabees, 5057 Woodward Ave., Detroit, Mich.
(1)*Nov.17,1922	Michener, Samuel M., Assistant Actuary, Columbus Mutual Life Insurance Co., 580 East Broad St., Columbus, Ohio.
*Nov. 19, 1926	Milne, John L., Actuary, Presbyterian Ministers' Fund for Life Insurance, 1805-7 Walnut St., Philadelphia, Pa.
Nov. 17, 1922	Montgomery, John C., Secretary and Assistant Treasurer, Bankers Indemnity Insurance Co., 31 Clinton St., Newark, N. J.

ASSOCIATES

Date Enrolled	
May 25, 1923	Moore, Joseph P., President, North American Accident Insurance Co., 455 Craig St., W., Montreal, Canada.
(2)*Nov.21,1919	Mothersill, Roland V., Secretary, Anchor Casualty Co., Anchor Insurance Building, St. Paul, Minn.
*Nov. 19, 1929	Muller, Fritz, Prokurist, "Agrippina" Lebensversicherungsbank Aktiengesellschaft, Berlin, Germany.
(1)*Oct. 27,1916	Newell, William, Assistant Secretary, Sun Indemnity Co., 55 Fifth Ave., New York.
*Nov. 23, 1928	Newhall, Karl, Group Department, The Travelers Insurance Co., 700 Main St., Hartford, Conn.
*Nov. 18, 1925	Nicholson, Earl H., Assistant to Executive Vice-President, Inter-Southern Life Insurance Co., Louisville, Ky.
May 23, 1919	Otto, Walter E., Secretary and Treasurer, Michigan Mutual Liability Co., 1209 Washington Blvd., Detroit, Mich.
*Nov. 19, 1926	Overholser, Donald M., Clokey & Miller, Brokers, 52 Broadway, New York.
Nov. 20, 1924	Pennock, Richard M., Actuary, Pennsylvania Manufacturers Association Casualty Insurance Co., Finance Building, Philadelphia, Pa.
Nov. 22, 1928	Perryman, F. S., Actuary and Assistant Secretary, Royal Indemnity Co., 150 William St., New York.
Nov. 19, 1929	Phillips, J. H., Secretary-Actuary, Minnesota Compensation Insurance Board, State Capitol, St. Paul, Minn.
*Nov. 17, 1920	Pike, Morris, Actuary, Unity Life & Accident Insurance Association, Syracuse, N. Y.
Mar. 24, 1927	Piper, John W., Superintendent of Statistical Department, Hartford Accident & Indemnity Co., 690 Asylum Ave., Hartford, Conn.
(1)*Nov.23,1928	Piper, Kenneth B., Associate Actuary, Woodward, Fondiller & Ryan, Consulting Actuaries, 75 Fulton Street, New York.
*Nov. 18, 1927	Poissant, William A., The Travelers Insurance Co., 700 Main Street, Hartford, Conn.
(1)*Nov.17,1922	Poorman, William F., Actuary, Central Life Assurance Society, Fifth and Grand Aves., Des Moines, Iowa.
(1)Nov. 17, 1922	Powell, John M., Actuary, Columbian National Life Insurance Co., 77 Franklin St., Boston, Mass.
*Nov. 18, 1925	Prenner, Myron R., Actuary, Department of Insurance, Bismarck, N. D.
*Nov. 23, 1928	Pruitt, Dudley M., Actuary, Pennsylvania Indemnity Corporation, Atlantic Building, Philadelphia, Pa.
*Nov. 15, 1918	Raywid, Joseph, President, Joseph Raywid & Co., Inc., 90 William St., New York.
Nov. 19, 1929	Richardson, Harry F., Secretary-Treasurer, National Council on Compensation Insurance, 151 Fifth Ave., New York.
*Nov. 21, 1919	Robbins, Rainard B., Vice-President-Actuary, Union Labor Life Insurance Co., Machinists Building, Mount Vernon Place, Washington, D. C.
*Nov. 18, 1927	Sarason, Harry M., Missouri State Life Insurance Co., St. Louis, Mo.
Nov. 16, 1923	Sawyer, Arthur, Globe Indemnity Co., Washington Park, Newark, N. J.
(1)*Nov.20,1924	Sheppard, Norris E., University of Toronto, Toronto, Canada.

ASSOCIATES

Date Enrolled	
Nov. 15, 1918	Sibley, John L., Assistant Secretary, United States Casualty Co., 80 Maiden Lane, New York.
*Nov. 18, 1921	Smith, Arthur G., Treasurer and Actuary, Compensation Inspection Rating Board, 370 Seventh Ave., New York.
*Nov. 19, 1929	Silverman, David, Office of Woodward, Fondiller & Ryan, Consulting Actuaries, 75 Fulton St., New York.
(1)*Nov.19,1926	Somerville, William F., Actuary and Underwriter, Anchor Casualty Co., Anchor Insurance Building, St. Paul, Minn.
*Nov. 18, 1925	Sommer, Armand, Manager, Accident and Health Department, Southern Surety Company of New York, 111 John St., New York.
*Nov. 18, 1927	Speers, Alexander A., Actuary, Toledo Travelers Life Insurance Co., Toledo, Ohio.
*Nov. 15, 1918	Spencer, Harold S., Aetna Life Insurance Co., Hartford, Conn.
Nov. 20, 1924	Stellwagen, Herbert P., Assistant Vice-President, Indemnity Insurance Company of North America, 1600 Arch Street, Philadelphia, Pa.
*Nov. 16, 1923	Stoke, Kendrick, Michigan Mutual Liability Ins. Co., 1209 Washington Blvd., Detroit, Mich.
(1)*Nov.19,1929	Taheny, John J., Attorney, Compensation Insurance Expert, Arizona Industrial Commission, Phoenix, Ariz.
Mar. 23,1921	Thompson, Arthur E., Chief Statistician, Globe Indemnity Co., Washington Park, Newark, N. J.
(1)*Nov.21,1919	Trench, Frederick H., Manager, Underwriting Department, Utica Mutual Insurance Co., 185 Genesee St., Utica, N. Y.
(1)*Nov.20,1924	Uhl, M. Elizabeth, National Bureau of Casualty & Surety Underwriters, 1 Park Ave., New York.
*Nov. 21, 1919	Voogt, Walter G., Comptroller and Assistant Treasurer, Associated Indemnity Corporation, 332 Pine St., San Francisco, Calif.
(1)*Oct. 27, 1916	Waite, Harry V., Statistician, The Travelers Fire Insurance Co., 700 Main St., Hartford, Conn.
May 23, 1919	Warren, Charles S., Comptroller, Lloyds Casualty Co., 75 Maiden Lane, New York.
Nov. 18, 1925	Washburn, James H., Consulting Actuary, 2004 West End Avenue, Nashville, Tenn.
(1)*Nov.18,1921	Waters, Leland L., Secretary-Treasurer, National Accident Insurance Co., Lincoln, Neb.
Nov. 17, 1920	Watson, J. J., 5818 Palo Pinto Avenue, Dallas, Texas.
*Nov. 18, 1921	Welch, Eugene R., Associated Indemnity Corporation, Associated Insurance Building, 332 Pine St., San Francisco, Calif.
*Nov. 19, 1926	Welch, George P., Vice-President, J. Murray Walker & Co., Inc., Shawmut National Bank Building, Boston, Mass.
*Nov. 16, 1923	Wetherald, Dorothy, 4631 Sansome St., Philadelphia, Pa.
*Nov. 18, 1927	Whitbread, Frank G., Great West Life Assurance Co., Winnipeg, Manitoba, Canada.
*Nov. 18, 1925	Wellman, Alexander C., Actuary, Protective Life Insurance Co., Birmingham, Ala.

ASSOCIATES

Date Enrolled	
Mar. 21, 1929	Wheeler, Charles A., Chief Examiner of Casualty Companies, New York Insurance Department, 111 John St., New York.
Nov. 15, 1918	Wilkinson, A. Edward, Actuary, Standard Accident Insurance Co., 640 Temple Ave., Detroit, Mich.
Sept. 17, 1919	Williams, John F., Vice-President, Illinois Life Insurance Co., 1212 Lake Shore Drive, Chicago, Ill.
*Oct. 22, 1915	Williamson, William R., Assistant Actuary, Life Department, The Travelers Insurance Co., 700 Main St., Hartford, Conn.
*Nov. 19, 1929	Wittick, Herbert E., Standard Accident Insurance Co., 640 Temple Ave., Detroit, Mich.
*Oct. 22, 1915	Wood, Donald M., Childs & Wood, General Agents, Independence Indemnity Co., 175 W. Jackson Blvd., Chicago, Ill.
*Nov. 18, 1927	Wood, Milton J., The Travelers Insurance Co., 700 Main St., Hartford, Conn.
*Oct. 22, 1915	Woodman, Charles E., Assistant Manager, Ocean Accident & Guarantee Corporation, 1 Park Ave., New York.
*Nov. 18, 1925	Woolery, James M., Assistant Actuary, Inter-Southern Life Insurance Co., Louisville, Ky.
*Nov. 17, 1922	Young, Floyd E., Assistant Secretary and Actuary, National Fidelity Life Insurance Co., National Fidelity Life Building, Kansas City, Mo.

SCHEDULE OF MEMBERSHIP, NOVEMBER 19, 1929

	Fellows	Associates	Total
Membership, November 23, 1928.....	170	117	287
Additions:			
By election.....	3	6	9
By examination.....	4	5	9
By reinstatement.....	..	1	1
	177	129	306
Deductions:			
By death.....	1	..	1
By withdrawal.....	1	..	1
By transfers from Associate to Fellow.	..	5	5
Membership, November 19, 1929.....	175	124	299

EX-PRESIDENTS AND EX-VICE-PRESIDENTS

EX-PRESIDENTS

	Term
I. M. RUBINOW.....	1914-1916
JAMES D. CRAIG.....	1916-1918
*JOSEPH H. WOODWARD.....	1918-1919
BENEDICT D. FLYNN.....	1919-1920
ALBERT H. MOWBRAY.....	1920-1922
HARWOOD E. RYAN.....	1922-1923
WILLIAM LESLIE.....	1923-1924
G. F. MICHELbacher.....	1924-1926
SANFORD B. PERKINS	1926-1928

EX-VICE-PRESIDENTS

	Term
LEON S. SENIOR.....	1920-1922
EDMUND E. CAMMACK	1922-1924
RALPH H. BLANCHARD.....	1924-1926
THOMAS F. TARBELL.....	1926-1928

*Deceased

DECEASED MEMBERS

All of the following were Fellows with the exception of those marked * who were Associates.

Date of Death	
Feb. 10, 1920	*Baxter, Don. A., Deputy Insurance Commissioner, Michigan Insurance Department, Lansing, Mich.
Feb. 4, 1920	Case, Gordon, Office of F. J. Haight, Consulting Actuary, Indianapolis, Ind.
July 23, 1921	Conway, Charles T., Vice-President, Liberty Mutual Insurance Co., Boston, Mass.
Jan. 20, 1922	Craig, James McIntosh, Actuary, Metropolitan Life Insurance Co., New York.
Sept. 2, 1921	Crum, Frederick S., Assistant Statistician, Prudential Insurance Co., Newark, N. J.
July 9, 1922	Downey, Ezekiel Hinton, Compensation Actuary, Pennsylvania Insurance Department, Harrisburg, Pa.
Oct. 30, 1924	Fackler, David Parks, Consulting Actuary, New York.
Aug. 22, 1925	Gaty, Theodore E., Vice-President and Secretary, Fidelity & Casualty Co., New York.
Mar. 10, 1924	Hookstadt, Carl, Expert, U. S. Bureau of Labor Statistics, Washington, D. C.
Feb. 11, 1928	Kearney, Thomas P., Manager, State Compensation Insurance Fund, Denver, Col.
Oct. 15, 1918	Kime, Virgil Morrison, Actuary, Casualty Departments, Travelers Insurance Co., Hartford, Conn.
Dec. 9, 1927	Landis, Abb, Consulting Actuary, Nashville, Tenn.
Dec. 20, 1920	*Lubin, Harry, Assistant Actuary, State Industrial Commission, New York.
Aug. 20, 1915	Montgomery, William J., State Actuary, Boston, Mass.
July 24, 1915	Phelps, Edward B., Editor, The American Underwriter, New York.
July 30, 1921	Reiter, Charles Grant, Assistant Actuary, Metropolitan Life Insurance Co., New York.
Feb. 26, 1921	Saxton, Arthur F., Chief Examiner of Casualty Companies, New York Insurance Department, New York.
May 9, 1920	Stone, John T., President, Maryland Casualty Co., Baltimore, Md.
Dec. 31, 1927	Wolfe, S. Herbert, Consulting Actuary, New York.
May 15, 1928	Woodward, Joseph H., Consulting Actuary, New York.
Oct. 23, 1927	Young, William, Actuary, New York Life Insurance Co., New York.

STUDENTS

Part I and Part II Passed

The following candidates have been successful in completing the examinations for Associate but have not yet been enrolled as Associates of the Society by reason of the terms of examination rule 4 which reads: "Upon the candidate having passed both Parts I and II he will be enrolled as an Associate, provided he presents evidence of at least one year experience in actuarial, accounting or statistical work in casualty insurance offices or in the teaching of casualty insurance science at a recognized college or university, or other evidence of his knowledge of actuarial, accounting or statistical work as is satisfactory to the Council." Upon the completion of the requirements of the Council in respect to each of these candidates they will be enrolled as Associates:

- BATHO, BRUCE, The Franklin Life Insurance Company, Springfield, Ill.
 CHODORCOFF, WILLIAM, 324 Church Ave., Winnipeg, Manitoba, Canada.
 FELDMAN, ISRAEL, 686 Albert St., Ottawa, Ontario, Canada.
 LAIRD, W. DARRELL, 345 Waterloo St., Winnipeg, Manitoba, Canada.
 LEHANE, LEO J., Hardware Mutual Casualty Company, Stevens Point, Wis.
 MUTH, A. F., Actuarial Department, London Life Insurance Company, London, Canada.
 ORLOFF, CONRAD, Assistant Actuary, Pyramid Life Insurance Company, Security Bldg., Kansas City, Mo.
 PRASOW, ROSE, Actuarial Department, Confederation Life Association, Toronto, Ontario, Canada.
 SHEPPELLER, S. I., 791 Selkirk Ave., Winnipeg, Manitoba, Canada.
 SMICK, J. J., National Council on Compensation Insurance, 151 Fifth Ave., New York.
 YATES, J. ARNOLD, The Travelers Insurance Company, 700 Main St., Hartford, Conn.

The following candidates for the grade of Associate have passed one of the two parts of the examination, during the last three years:

Part I only

- ARTHUR, CHARLES R., University of Manitoba, Winnipeg, Manitoba, Canada.
 BURHANS, C. H., Standard Accident Insurance Company, 640 Temple Ave., Detroit, Mich.
 DAVIS, MARJORIE, Constitution Indemnity Company, Philadelphia, Pa.
 WOODWARD, BARBARA H., National Bureau of Casualty and Surety Underwriters, 1 Park Ave., New York.

Part II only

- CAMERON, F. R., Woodward, Fondiller & Ryan, 75 Fulton St., New York.
 GUTHRIE, JOHN A., University of Manitoba, Winnipeg, Manitoba, Canada.
 HUNTON, T. F., Assistant Actuary, Canadian Automobile and Casualty Underwriters Associations, 330 Bay St., Toronto, Canada.
 MACKEEN, HAROLD E., The Travelers Insurance Company, 700 Main St., Hartford, Conn.
 MESSINGER, L. W., Missouri State Life Insurance Co., St. Louis, Mo.
 SINNOTT, R. V., Hartford Accident & Indemnity Company, 690 Asylum Ave., Hartford, Conn.
 SUTHERLAND, HENRY M., University of Manitoba, Winnipeg, Manitoba, Canada.
 THOMPSON, EMERSON W., 188 Sargeant St., Hartford, Conn.

CONSTITUTION

(AS AMENDED NOVEMBER 23, 1928)

ARTICLE I.—*Name.*

This organization shall be called the CASUALTY ACTUARIAL SOCIETY.

ARTICLE II.—*Object.*

The object of the Society shall be the promotion of actuarial and statistical science as applied to the problems of casualty and social insurance by means of personal intercourse, the presentation and discussion of appropriate papers, the collection of a library and such other means as may be found desirable.

The Society shall take no partisan attitude, by resolution or otherwise, upon any question relating to casualty or social insurance.

ARTICLE III.—*Membership.*

The membership of the Society shall be composed of two classes, Fellows and Associates. Fellows only shall be eligible to office or have the right to vote.

The Fellows of the Society shall be the present members and those who may be duly admitted to Fellowship as hereinafter provided. Any Associate of the Society may apply to the Council for admission to Fellowship. If the application shall be approved by the Council with not more than three negative votes the Associate shall become a Fellow on passing such final examination as the Council may prescribe. Otherwise no one shall be admitted as a Fellow unless recommended by a duly called meeting of the Council with not more than three negative votes followed by a three-fourths ballot of the Fellows present and voting at a meeting of the Society.

Any person may, upon nomination to the Council by two Fellows of the Society and approval by the Council of such nomination with not more than one negative vote, become enrolled as an Associate of the Society, provided that he shall pass such examination as the Council may prescribe. Such examination may be waived in the case of a candidate who for a period of not less than two years has been in responsible charge of the statistical or actuarial department of a casualty insurance organization or has had such other practical experience in casualty or social insurance as in the opinion of the Council renders him qualified for Associateship.

ARTICLE IV.—*Officers and Council.*

The officers of the Society shall be a President, two Vice-Presidents, a Secretary-Treasurer, an Editor, and a Librarian. The Council shall be composed of the active officers, nine other Fellows and, during the four years following the expiration of their terms of office, the ex-Presidents and ex-Vice-Presidents. The Council shall fill vacancies occasioned by death or resignation of any officer or other member of the Council, such appointees to serve until the next annual meeting of the Society.

CONSTITUTION

ARTICLE V.—*Election of Officers and Council.*

The President, Vice-Presidents, and the Secretary-Treasurer shall be elected by a majority ballot at the annual meeting for the term of one year and three members of the Council shall, in a similar manner, be annually elected to serve for three years. The Editor and the Librarian shall be elected annually by the Council at the Council meeting preceding the annual meeting of the Society. They shall be subject to confirmation by majority ballot of the Society at the annual meeting.

The terms of the officers shall begin at the close of the meeting at which they are elected except that the retiring Editor shall retain the powers and duties of office so long as may be necessary to complete the then current issue of *Proceedings*.

ARTICLE VI.—*Duties of Officers and Council.*

The duties of the officers shall be such as usually appertain to their respective offices or may be specified in the by-laws. The duties of the Council shall be to pass upon candidates for membership, to decide upon papers offered for reading at the meetings, to supervise the examination of candidates and prescribe fees therefor, to call meetings, and, in general, through the appointment of committees and otherwise, to manage the affairs of the Society.

ARTICLE VII.—*Meetings.*

There shall be an annual meeting of the Society on such date in the month of November as may be fixed by the Council in each year, but other meetings may be called by the Council from time to time and shall be called by the President at any time upon the written request of ten Fellows. At least two weeks' notice of all meetings shall be given by the Secretary.

ARTICLE VIII.—*Quorum.*

Seven members of the Council shall constitute a quorum. Twenty Fellows of the Society shall constitute a quorum.

ARTICLE IX.—*Expulsion or Suspension of Members.*

Except for non-payment of dues no member of the Society shall be expelled or suspended save upon action by the Council with not more than three negative votes followed by a three-fourths ballot of the Fellows present and voting at a meeting of the Society.

ARTICLE X.—*Amendments.*

This constitution may be amended by an affirmative vote of two-thirds of the Fellows present at any meeting held at least one month after notice of such proposed amendment shall have been sent to each Fellow by the Secretary.

BY-LAWS

(AS AMENDED MAY 21, 1926)

ARTICLE I.—*Order of Business.*

At a meeting of the Society the following order of business shall be observed unless the Society votes otherwise for the time being:

1. Calling of the roll.
2. Address or remarks by the President.
3. Minutes of the last meeting.
4. Report by the Council on business transacted by it since the last meeting of the Society.
5. New membership.
6. Reports of officers and committees.
7. Election of officers and Council (at annual meetings only.)
8. Unfinished business.
9. New business.
10. Reading of papers.
11. Discussion of papers.

ARTICLE II.—*Council Meetings.*

Meetings of the Council shall be called whenever the President or three members of the Council so request, but not without sending notice to each member of the Council seven or more days before the time appointed. Such notice shall state the objects intended to be brought before the meeting, and should other matter be passed upon, any member of the Council shall have the right to re-open the question at the next meeting.

ARTICLE III.—*Duties of Officers.*

The President, or, in his absence, one of the Vice-Presidents, shall preside at meetings of the Society and of the Council. At the Society meetings the presiding officer shall vote only in case of a tie, but at the Council meetings he may vote in all cases.

The Secretary-Treasurer shall keep a full and accurate record of the proceedings at the meetings of the Society and of the Council, send out calls for the said meetings, and, with the approval of the President and Council, carry on the correspondence of the Society. Subject to the direction of the Council, he shall have immediate charge of the office and archives of the Society.

BY-LAWS

The Secretary-Treasurer shall also send out calls for annual dues and acknowledge receipt of same; pay all bills approved by the President for expenditures authorized by the Council of the Society; keep a detailed account of all receipts and expenditures, and present an abstract of the same at the annual meetings, after it has been audited by a committee of the Council.

The Editor shall, under the general supervision of the Council, have charge of all matters connected with editing and printing the Society's publications. The *Proceedings* shall contain only the proceedings of the meetings, original papers or reviews written by members, discussions on said papers and other matter expressly authorized by the Council.

The Librarian shall, under the general supervision of the Council, have charge of the books, pamphlets, manuscripts and other literary or scientific material collected by the Society.

ARTICLE IV.—*Dues.*

The dues shall be ten dollars for Fellows payable upon entrance and at each annual meeting thereafter, except in the case of Fellows not residing in the United States, Canada, or Mexico, who shall pay five dollars at the time stated. The dues shall be five dollars for Associates payable upon entrance and each annual meeting thereafter until five such payments in all shall have been made; beginning with the sixth annual meeting after the admission of an Associate as such the dues of any Associate heretofore or hereafter admitted shall be the same as those of a Fellow. The payment of dues will be waived in the case of Fellows or Associates who have attained the age of seventy years.

It shall be the duty of the Secretary-Treasurer to notify by mail any Fellow or Associate whose dues may be six months in arrears, and to accompany such notice by a copy of this article. If such Fellow or Associate shall fail to pay his dues within three months from the date of mailing such notice, his name shall be stricken from the rolls, and he shall thereupon cease to be a Fellow or Associate of the Society. He may, however, be reinstated by vote of the Council, and upon payment of arrears of dues.

ARTICLE V.—*Designation by Initials.*

Fellows of the Society are authorized to append to their names the initials F. C. A. S.; and Associates are authorized to append to their names the initials A. C. A. S.

ARTICLE VI.—*Amendments.*

These by-laws may be amended by an affirmative vote of two-thirds of the Fellows present at any meeting held at least one month after notice of the proposed amendment shall have been sent to each Fellow by the Secretary.

EXAMINATION REQUIREMENTS

SYLLABUS OF EXAMINATIONS

 SUBJECTS

ASSOCIATESHIP: (*Part I: Sections 1 to 4; Part II: Sections 5 to 8*)

Section 1. Advanced algebra

Section 2. Compound interest and annuities certain

Section 3. Descriptive and analytical statistics

Section 4. Elements of accounting, including double-entry bookkeeping

Section 5. Finite differences

Section 6. Differential and integral calculus

Section 7. Probabilities

Section 8. Elements of the theory of life contingencies; life annuities; life assurances

FELLOWSHIP: (*Part I: Sections 9 to 12; Part II: Sections 13 to 16*)

Section 9. Policy forms and underwriting practice in casualty insurance

Section 10. Investments of insurance companies

Section 11. Insurance law and legislation

Section 12. Economics of insurance

Section 13. Calculation of premiums and reserves for casualty (including social) insurance

Section 14. Advanced practical problems in casualty (including social) insurance statistics

Section 15. Advanced problems and practical methods of casualty insurance accounting

Section 16. Advanced problems in underwriting, administrative and service elements of casualty (including social) insurance

To assist students in preparation for the examinations, Recommendations for Study have been prepared. This lists the texts, readings and technical material which must be mastered by the candidates. Text books are loaned to candidates by the Society.

EXAMINATION REQUIREMENTS

RULES REGARDING EXAMINATIONS FOR
ADMISSION TO THE SOCIETY

(AS AMENDED MAY 23, 1929)

The Council adopted the following rules providing for the examination system of the Society:

1. Examinations will be held on the last Wednesday and Thursday during the month of May in each year in such cities as will be convenient for three or more candidates.

2. Application for admission to examination should be made on the Society's blank form, which may be obtained from the Secretary-Treasurer. No applications will be considered unless received before the fifteenth day of March preceding the dates of examination.

3. A fee of \$5.00 will be charged for admission to examination. This fee is the same whether the candidate sits for one or two parts and is payable for each year in which the candidate presents himself. Examination fees are payable to the Secretary-Treasurer and must be in his hands before the fifteenth day of March preceding the dates of examination.

4. The examination for Associateship consists of two parts. No candidate will be permitted to present himself for Part II unless he has previously passed in Part I or takes Parts I and II in the same year. If a candidate takes both parts in the same year and passes in one and fails in the other, he will be given credit for the part passed. Upon the candidate having passed both Parts I and II he will be enrolled as an Associate, provided he presents evidence of at least one year experience in actuarial, accounting or statistical work in casualty insurance offices or in the teaching of casualty insurance science at a recognized college or university, or other evidence of his knowledge of actuarial, accounting or statistical work as is satisfactory to the Council.

5. In the case of applicants in the following classes, the Council may, upon receipt of satisfactory evidence that applicants are within the terms of this rule, waive the passing of both Parts I and II of the Associateship Examination. Such applicants may become Associates upon passing Part I of the

EXAMINATION REQUIREMENTS

Fellowship Examination, and may be admitted as Fellows by examination, provided they subsequently pass Part II of the Fellowship Examination.

- (a) Casualty insurance men not less than thirty years of age who have been in the business a number of years and who have attained responsible actuarial, statistical, accounting or semi-executive positions.*
- (b) Fellows and Associates by examination of the Actuarial Society of America or of the American Institute of Actuaries.

6. The examination for Fellowship is divided into two parts. No candidate will be permitted to present himself for Part II unless he has previously passed in Part I or takes Parts I and II in the same year. If a candidate takes both parts in the same year and passes in one and fails in the other, he will be given credit for the part passed.

7. As an alternative to the passing of Part II of the Fellowship examination, a candidate may elect to present an original thesis on an approved subject relating to casualty or social insurance. Candidates electing this alternative should communicate with the Secretary-Treasurer as to the approval of the subject chosen. All theses must be in the hands of the Secretary-Treasurer before the last Thursday in May of the year in which they are to be considered. Where Part I of the Fellowship examination is not taken during the same year, no examination fee will be required in connection with the presentation of a thesis. All theses submitted are, if accepted, to be the property of the Society and may, with the approval of the Council, be printed in the *Proceedings*.

*In support of the candidate's claim that he is within the terms of this rule, he should attach to his application a letter from each of the nominators signing his application. These letters should state the facts of the candidate's experience which appear to entitle the candidate to the benefit of this rule.

1929 EXAMINATIONS OF THE SOCIETY

EXAMINATION COMMITTEE
JOSEPH LINDER - - CHAIRMAN

IN CHARGE OF
ASSOCIATESHIP EXAMINATIONS
F. STUART BROWN, CHAIRMAN
HOWARD G. CRANE
NORTON E. MASTERSON

IN CHARGE OF
FELLOWSHIP EXAMINATIONS
CHARLES J. HAUGH, CHAIRMAN
HAROLD J. GINSBURGH
EVELYN M. DAVIS

EXAMINATION FOR ADMISSION AS ASSOCIATE

PART I

1. (a) Find the term involving y^{12} in $(x^{1/2} - 2y^2)^{11}$. What is the ninth term?
(b) Solve $12x^4 - 56x^3 + 89x^2 - 56x + 12 = 0$
2. There are three towns A , B , and C ; a person by walking from A to B , driving from B to C , and riding from C to A makes the journey in $15\frac{1}{2}$ hours; by driving from A to B , riding from B to C , and walking from C to A , he could make the journey in 12 hours. On foot he could make the journey in 22 hours, on horseback in $8\frac{1}{4}$ hours and driving in 11 hours. To walk a mile, ride a mile, and drive a mile, he takes altogether half an hour: find the rates at which he travels, and the distances between the towns.
3. (a) Find two numbers such that their sum is 9 and the sum of their cubes is 351.
(b) Out of a group of twenty people what is the largest number of sub-groups possible, each containing the same number of persons. What would be the size of each sub-group?
4. (a) Find the number of permutations which can be made from the letters of the word "Mississippi."
(b) Given $\log 3 = .4771$, find $\log \{(2.7)^3 \times (.81)^{4/5} \div (90)^{5/4}\}$
5. (a) What is the meaning of the term "error" in statistics? Distinguish between cumulative and compensating errors.

1929 EXAMINATIONS OF THE SOCIETY

- (b) State the advantages and disadvantages of the "Mode" as a type; compare the advantages and disadvantages of the "Median" with those of the "Mode."
6. (a) Define the term "probable error." Express the probable error as a function of the standard deviation.
- (b) Compute the standard deviation for the following data which give the number of workmen in each of the respective weekly wage groups:

<u>Wages</u>	<u>Frequency</u>
\$15-20	10
20-25	19
25-30	20
30-35	21
35-40	18
40-45	0
45-50	15

7. You are directed to prepare some statistical reports on the lost time, through all causes and with particular reference to various kinds of illness, of a company employing about 1,000 persons, male and female, and working in a number of different departments. The company has a full-time doctor and nurse. State what system you would institute and what data you would require; how you would arrange to secure it, how tabulate it; and in what forms you would present the results to the management. What data would you prepare to assist the doctor in reaching and correcting the causes of ill health in the plant?
8. Determine the Pearsonian coefficient of correlation for the following data:

<u>Department</u>	<u>Payroll (hundreds of dollars)</u>	<u>Work Units of Production</u>
A	2	3
B	23	47
C	24	59
D	36	96
E	50	119

Discuss the degree of correlation of the result.

1929 EXAMINATIONS OF THE SOCIETY

9. (a) Define the following: annuity certain, nominal and effective rates of interest, deferred annuity, perpetual annuity, continuous annuity, and contingent annuity.
- (b) Find the present value of \$1,500.00 with interest payable annually at 6%, and due two years hence, when money is worth 4% nominal, payable quarterly.
10. (a) In how many years will a sum of money double itself at 8% compound interest?
- (b) In how many years will \$108 amount to \$1,050 at 5% compound interest?

Given for problem 10:

$$\log 3 = .477121$$

$$\log 5 = .698970$$

$$\log 7 = .845098$$

11. A 5% bond, par value \$1,000., with semi-annual coupons, matures in fourteen years and was bought for \$949.22 just after payment of semi-annual coupon.
- (a) Find approximate yield convertible semi-annually, using the formula

$$i = \frac{g - \frac{k}{n}}{1 + \frac{n+1}{2n} k}$$

- (b) Derive formula in (a)
12. What price should be paid for a \$1000 bond, interest at 5% per annum payable annually, repayable in five years with a 10% bonus in order to realize 6% on the investment?
- (v^5 at 6% = .7473)

13. If a \$150,000 issue of bonds is to be redeemed in 20 years and money can be accumulated at 4% compound interest, what sum must be raised annually to meet the cost?

$$\text{Given } (1.04)^{20} = 2.1911231$$

14. (a) Explain the meaning of these terms: "journal," "ledger," "trial balance," "balance sheet," "cashbook."

1929 EXAMINATIONS OF THE SOCIETY

- (b) Show the entries to be made on the books of a new organization for these transactions:
- (1) \$50,000 (par value) of the organization's stock is sold for \$60,000. Of this amount \$52,000 was received in cash and \$8,000 in notes.
 - (2) Salaries of \$150 are paid.
 - (3) \$1,500 is paid for merchandise.
 - (4) Merchandise is sold to Smith for \$500 on credit.
 - (5) Smith pays his bill in cash with 3 per cent. discount for prompt payment.
15. On January 2, 1923, a company buys \$10,000 par value of 6 per cent. bonds due January 2, 1925, paying \$101.88, a price which gives a yield of 5 per cent. Interest is payable on January 2nd and July 2nd.
- (a) Give entries to be made on the books of the company on the date of purchase, on each interest date thereafter, and on maturity, assuming that bonds are promptly paid when due, and that the company uses the amortization method of valuation.
 - (b) As of December 31, 1923, what asset items will arise from this transaction?
16. From the following Trial Balance make up a Profit and Loss Statement and a Balance Sheet:

TRIAL BALANCE	
December 31, 1925	
Cash.....	\$ 1,000
Notes Receivable.....	2,000
Accounts Receivable.....	3,500
Merchandise Inventory.....	5,000
Furniture and Fixtures.....	1,000
Notes Payable.....	\$ 1,000
Accounts Payable.....	1,000
Capital.....	10,000
Sales.....	19,000
Purchases.....	15,000
Expenses.....	4,000
Interest and Discount.....	500
	\$31,500
	\$31,500

The adjustment data as of December 31, 1925 is: Merchandise Inventory, \$7,000; Expenses paid in advance, \$100.; Accrued Expenses, \$500.; Interest Receivable, \$200.; Depreciation of Furniture and Fixtures, \$100.; Bad Debts estimated at \$200.

1929 EXAMINATIONS OF THE SOCIETY

PART II

- Sum by a method of finite differences the first 15 terms of the series whose general term is $n^3 - 3n + 5$.
- Supply the missing term in the following table using a method of finite differences:

$$\begin{aligned} u_0 &= 72795 \\ u_1 &= 71651 \\ u_2 &= 70458 \\ u_4 &= 67919 \\ u_6 &= 66566 \\ u_8 &= 65152 \end{aligned}$$

- A person goes on throwing a single die until it turns up ace. What is the chance
 - that he will have to make at least ten throws;
 - that he will have to make exactly ten throws?
- Two persons, whose probabilities of speaking the truth are $\frac{2}{3}$ and $\frac{5}{6}$ respectively, assert that a specified ticket has been drawn out of a bag containing 15 tickets: what is the probability of the truth of the assertion?
- The odds against a certain event are 5 to 2 and the odds in favor of another event independent of the former are 6 to 5; find the chance that one at least of the events will happen.
- A* bets \$16 against *B*'s \$20 contingent upon each throwing with one die. *A* throws with a regulation die but *B* uses a die with faces marked from 3 to 8. What is the value of *B*'s chance if equal throws divide and the higher throw takes the entire stake?
- A* and *B* and fifteen other men take their seats at a round table. What is the chance that they will sit together?

8. (a) Find $\int \frac{4 dx}{x^3 + 4x}$

(b) Find $\int \frac{(x^3 + x^2 + 2) dx}{(x^2 + 2)^2}$

1929 EXAMINATIONS OF THE SOCIETY

9. (a) Differentiate y with respect to x in the equation

$$y = (3x^2 + 2)\sqrt{1 + 5x^2}$$
 (b) Examine the function $3axy - x^3 - y^3$ for maximum and minimum values.
10. Derive the formula for integration by parts, and apply it to integrate

$$\frac{\log(x-1)}{(x+1)^2}$$

11. Find the probability that a person now aged 49 will die in his 52nd year, given

$$\begin{aligned} p_{49} &= .9854 \\ p_{50} &= .9843 \\ p_{51} &= .9832 \\ p_{52} &= .9821 \end{aligned}$$

12. In a certain population which is not affected by immigration or emigration, the death and birth rates are constant and the latter exceeds the former by 5 per thousand. In 1927, the number of births was 1200, and in 1926, the deaths were 80. What was the population at the beginning of 1926?
13. Given the below data, construct commutation columns and derive therefrom the following:

- (a) The value of a_{90}
 (b) The value of $a_{90:\overline{2}|}$
 (c) The value of $a_{93:93}$

x	l_x	v_x
90	847	.045
91	462	.044
92	216	.042
93	79	.041
94	21	.039
95	3	.038

14. A man aged thirty-five marries a woman aged thirty. Assuming that neither will remarry should the other die, express in terms of l_x and d_x the probabilities of the following events:
- (a) He is a widower at the end of five years.
 (b) She becomes a widow within five years.
 (c) The wife dies in the tenth year.
 (d) The man survives his wife, and himself dies within one year after attaining the age of sixty.

1929 EXAMINATIONS OF THE SOCIETY

15. Express in single probability symbols the probability that out of three lives, (x) , (y) , and (z)
- (a) One at least will fail in the n th year
 - (b) Not more than two will fail in the n th year.
16. (a) What is meant by "prospective" and "retrospective" methods in obtaining policy values?
- (b) Define the Force of Mortality and give a mathematical expression for its value.

EXAMINATION FOR ADMISSION AS FELLOW**PART I**

1. What is the object of coinsurance as applied to burglary coverage? Illustrate by examples. What limitations are placed on its application, and why?
2. (a) What information is required in order to determine the premium for
- (1) Automobile Public Liability
 - (2) Automobile Property Damage Liability
 - (3) Automobile Collision
- (b) Name five exclusions as to coverage in an automobile liability policy.
3. (a) If the wages of an injured employee have been intentionally withheld by the employer from the submitted premium payroll for a standard workmen's compensation and employers' liability policy, will that fact prevent the employee from collecting compensation from the carrier? If the carrier is compelled to pay an award under such a situation, can the carrier compel the employer to reimburse it? Give reasons for your answers.
- (b) A liability policy provides standard limits. As a result of an accident which involves a man, his wife, and another party, the husband and wife start separate actions on account of the wife's injuries and receive verdicts of \$4,000 and \$2,000 respectively. The other party sues and receives a verdict for \$2,000. What is the total liability of the carrier? Give reasons for your answer.

1929 EXAMINATIONS OF THE SOCIETY

4. Distinguish clearly between
 - (a) Burglary and robbery
 - (b) Corporate suretyship and insurance
 - (c) "Stop loss" and "excess" coverage as applied to workmen's compensation insurance
 - (d) Fidelity and surety

5. Outline briefly the coverage granted under the lines enumerated below and state the basis of premium for each.
 - (a) Plate Glass
 - (b) Contractors' Protective Public Liability
 - (c) Fraud Bonds
 - (d) Bank Robbery

6.
 - (a) Define "non-cancellable" as applied to an accident and health policy.
 - (b) Name five factors that an underwriter should consider in passing upon an application for such a policy.
 - (c) When does a health policy become effective?

7. In workmen's compensation insurance, how is the final premium computed if the policy is cancelled—
 - (1) By the Assured
 - (2) By the Carrier

In your answer give consideration to policies written for a minimum premium as well as to other policies.

8.
 - (a) In considering the renewal of a compensation policy, what information should the underwriter require?
 - (b) In passing upon new compensation business what factors should the underwriter consider and how can he obtain the desired information?

9. Discuss the advisability of a casualty company setting up a reserve for depreciation in the market value of their securities.

1929 EXAMINATIONS OF THE SOCIETY

10. Express your opinion of the comparative merits for the investments of a casualty company of the following classes of securities—

Bonds:

Municipal
Foreign Government
Railroad
Industrial
Public Utility

Stocks:

Preferred
Common

11. What factors should be considered in determining whether a casualty company should invest in any specified security?
12. If you were asked to value the stock of a casualty company, what factors would you consider?
13. Discuss the relative merits of anti-compact laws and rate regulatory laws.
14. Within the last year action has been taken against "ambulance chasers." Explain how this evil affects:
- (1) The insurance companies
 - (2) Honest claimants
 - (3) The bar
15. Discuss the statement that "self-insurance is not insurance."
16. Discuss a proposal to enact legislation which will require automobile owners to carry insurance to provide indemnity to individuals injured as a result of the operation of such automobiles regardless of fault.

1929 EXAMINATIONS OF THE SOCIETY

PART II

1. What is the purpose of a compensation indeterminate reserve table? In constructing such a table what statistics would you require and how would you use them?
2. In computing the premium subject to experience rating—
 - (a) Should the present manual rates or the manual rates in effect on the various policies entering into the experience be used? Why?
 - (b) In the cases of excess limits policies, should the limits on the new policy be used or the limits in effect on the various policies entering into the experience? Why?
3. Outline the procedure you would follow in making rates for excess compensation insurance.
4. Explain how you would determine rates for plate glass insurance assuming the only experience available was net premium written and net losses paid by territories for all classifications combined on a calendar-year basis.
5. Describe the investigation you would make in order to determine the effect upon a company's plate glass business, of writing that business upon the so-called 50-50 form of coverage, whereby the assured pays only 50% of the full manual premium and agrees to reimburse the carrier for all losses up to a total amount of 50% of the full manual premium.
6. Describe the unit system of reporting compensation experience adopted by either the New York Compensation Inspection Rating Board or the Massachusetts Inspection Rating Board. What are the advantages and disadvantages of this system over the system previously in effect?
7. If the accident frequency of the automobile liability business of your company were increasing what investigation would you make to determine the cause?

1929 EXAMINATIONS OF THE SOCIETY

8. Sketch designs for punch cards to be used for reporting automobile experience currently to a central rate-making organization.

9. (a) Explain the reasons for the differences between the liability loss reserves as shown in the annual statement and as shown in the Casualty Experience Exhibit.
(b) What purpose does Schedule O serve?

10. A company having a capital of \$4,000,000 shows the following transactions for calendar year 1928:
Net premiums written amounted to \$26,000,000; interest received on stocks and bonds, including \$25,000 accrued interest on bonds acquired during the year, amounted to \$1,325,000 and interest on bank deposits amounted to \$28,000; rents from company's property, including \$245,000 for occupancy of its own building, amounted to \$252,000; \$60,000 was collected on agents' balances charged off in previous years; and a gross profit of \$131,000 was realized from the sale of stocks.
At the close of the year the book value of real estate was \$1,300,000; of stocks and bonds was \$29,700,000; and bank deposits amounted to \$1,600,000. Gross premiums in course of collection amounted to \$5,000,000, of which \$4,400,000 was on policies effective on or after October 1, 1928. Interest due and accrued on bonds amounted to \$284,000 and the market value of stocks and bonds was \$31,700,000. The ledger assets exceed those at the close of the previous year by \$1,600,000.
Make up a statement of Income and Assets as of December 31, 1928, following in general the form prescribed by the National Convention of Insurance Commissioners.

11. How would you determine how much reserve to set up in the annual statement for unreported losses? What information would you request from the claim or statistical department to aid in the calculation?

1929 EXAMINATIONS OF THE SOCIETY

12. Bearing in mind that expense loadings for casualty insurance are based upon the New York Casualty Experience Exhibit what would be your reply to a question as to whether rates included a provision for investment expenses?
13. What form of reinsurance would you effect for automobile public liability, and why? For burglary and theft?
14. In considering an application for public liability insurance on an interurban bus line what information would you deem to be essential?
15. (a) Why is it particularly important that there be coordination between the claim department and the statistical department?
(b) If the statistical records for claims are not closed promptly what are some of the serious results?
16. Discuss a proposal that the standard limits for public liability policies be changed from 5/10 to 10/20.

CASUALTY ACTUARIAL SOCIETY

Recommendations for Study

EDUCATIONAL COMMITTEE

EDWIN W. KOPF, *Chairman*

THOMAS F. TARBELL

EMMA C. MAYCRINK

PAUL DORWEILER

C. A. KULP

A. H. MOWBRAY

ROBERT RIEGEL

JAMES W. GLOVER

H. O. VAN TUYL

FIFTH EDITION, 1929

CASUALTY ACTUARIAL SOCIETY
SYLLABUS OF EXAMINATIONS

SUBJECTS

ASSOCIATESHIP: (*Part I: Sections 1 to 4*)

- Section 1. Advanced algebra*
- Section 2. Compound interest and annuities certain*
- Section 3. Descriptive and analytical statistics*
- Section 4. Elements of accounting, including double-entry bookkeeping*

(*Part II: Sections 5 to 8*)

- Section 5. Differential and integral calculus*
- Section 6. Finite differences*
- Section 7. Probabilities*
- Section 8. Elements of the theory of life contingencies; life annuities; life assurances*

FELLOWSHIP: (*Part I: Sections 9 to 12*)

- Section 9. Policy forms and underwriting practice in casualty insurance*
- Section 10. Investments of insurance companies*
- Section 11. Insurance law and legislation*
- Section 12. Economics of insurance*

(*Part II: Sections 13 to 16*)

- Section 13. Calculation of premiums and reserves for casualty (including social) insurance*
- Section 14. Advanced practical problems in casualty (including social) insurance statistics*
- Section 15. Advanced problems and practical methods of casualty insurance accounting*
- Section 16. Advanced problems in underwriting, administrative and service elements of casualty (including social) insurance*

EXAMINATION REQUIREMENTS
RULES REGARDING EXAMINATIONS FOR ADMISSION
TO THE SOCIETY
(As Amended May 23, 1929)

The Council adopted the following rules providing for the examination system of the Society:

1. Examinations will be held on the last Wednesday and Thursday during the month of May in each year in such cities as will be convenient for three or more candidates.*

2. Application for admission to examination should be made on the Society's blank form, which may be obtained from the Secretary-Treasurer. No applications will be considered unless received before the fifteenth day of March preceding the dates of examination.

3. A fee of \$5.00 will be charged for admission to examination. This fee is the same whether the candidate sits for one or two parts and is payable for each year in which the candidate presents himself. Examination fees are payable to the Secretary-Treasurer and must be in his hands before the fifteenth day of March preceding the dates of examination.

4. The examination for Associateship consists of two parts. No candidate will be permitted to present himself for Part II unless he has previously passed in Part I or takes Parts I and II in the same year. If a candidate takes both parts in the same year and passes in one and fails in the other, he will be given credit for the part passed. Upon the candidate having passed both Parts I and II he will be enrolled as an Associate, provided he presents evidence of at least one year experience in actuarial, accounting or statistical work in casualty insurance offices or in the teaching of casualty insurance science at a recognized college or university, or other evidence of his knowledge of actuarial, accounting or statistical work as is satisfactory to the Council.

5. In the case of applicants in the following classes, the Council may, upon receipt of satisfactory evidence that applicants are within the terms of this rule, waive the passing of both Parts I and II of the Associateship Examination. Such applicants may become Associates upon passing Part I of the Fellowship Examination, and may be admitted as Fellows by examination, provided they subsequently pass Part II of the Fellowship Examination.

*Arrangements can generally be made even if there is only one candidate in a city.

- (a) Casualty insurance men not less than thirty years of age who have been in the business a number of years and who have attained responsible actuarial, statistical, accounting or semi-executive positions.†
- (b) Fellows and Associates by examination of the Actuarial Society of America or of the American Institute of Actuaries.

6. The examination for Fellowship is divided into two parts. No candidate will be permitted to present himself for Part II unless he has previously passed in Part I or takes Parts I and II in the same year. If a candidate takes both parts in the same year and passes in one and fails in the other, he will be given credit for the part passed.

7. As an alternative to the passing of Part II of the Fellowship examination, a candidate may elect to present an original thesis on an approved subject relating to casualty or social insurance. Candidates electing this alternative should communicate with the Secretary-Treasurer as to the approval of the subject chosen. All theses must be in the hands of the Secretary-Treasurer before the last Thursday in May of the year in which they are to be considered. Where Part I of the Fellowship examination is not taken during the same year, no examination fee will be required in connection with the presentation of a thesis. All theses submitted are, if accepted, to be the property of the Society and may, with the approval of the Council, be printed in the *Proceedings*.

Communications should be addressed to

RICHARD FONDILLER,
Secretary-Treasurer,
CASUALTY ACTUARIAL SOCIETY,
75 FULTON STREET, NEW YORK

Text books are loaned to candidates by the Society to assist in preparation for the examinations. Communications regarding the loan of books should be addressed to the Librarian, Insurance Society of New York, 100 William Street, New York City.

†In support of the candidate's claim that he is within the terms of this rule, he should attach to his application a letter from each of the nominators signing his application. These letters should state the facts of the candidate's experience which appear to entitle the candidate to the benefit of this rule.

RECOMMENDATIONS FOR STUDY

In effect commencing with examinations held in 1930

NOTE: The number in parentheses after the title refers to the more complete description of the book in the *Index* at the end of these *Recommendations*. The texts shown in large Roman type are recommended as master or principal readings; auxiliary readings are shown in smaller type under each section. For readings in periodical literature, only the name of the author, the name of the journal and the volume and page are shown. The subject of the article pertains to that of the Section under which it is shown.

ASSOCIATESHIP (Sections 1 to 8)

(PART I, SECTIONS 1 to 4; PART II, SECTIONS 5 to 8)

PART I

Section 1. Advanced algebra.

This subject includes the matter in the ordinary college algebra, except determinants, continued fractions, and the theory and solution of equations higher than the quadratic. Special emphasis should be placed upon permutations and combinations. Thorough preparation in elementary and intermediate high school algebra and in practical business arithmetic is presupposed.

Text:

Hall and Knight. Higher algebra. (24). First 16 chapters, except Chapters VI, VII and XV.

Auxiliary Texts:

Rietz, H. L. and A. R. Crathorne. College algebra. (52). *Wilson, N. R. and L. A. H. Warren.* College algebra. (74).

Section 2. Compound interest and annuities certain.

Text:

Rietz, Crathorne and Rietz. Mathematics of finance. (53). Chapters I to IV.

Auxiliary texts:

Skinner, E. B. Mathematical theory of investment. (60). Chapters V to X, (1924 edition); *Hart, W. L.* Mathematics of investment. (27). Facility with problems in the elementary mathematics of finance will be obtained by working as many as possible of the 100 exercises given at the close of Part I of Hart's text.

NOTE ON SECTION 2: In addition to a reasonable mastery of the elementary principles of financial mathematics, the student should show acquaintance with the more useful aids to computation. See: *Moore,*

Justin H. Handbook of financial mathematics (43), especially Chapters XV-XX; *Glover, J. W.* Tables of applied mathematics in finance, insurance and statistics (21); or *Van Dyke, J. E.* Complete bond tables (71).

The articles on "annuities" in *Encyclopedia Britannica*, *Encyclopedia Americana*, *Encyclopedia of the Social Sciences*, or in Walford's *Insurance Cyclopedia* should be read to afford acquaintance with the historical, legal and descriptive aspects of the annuity not found in strictly mathematical texts. See also: *Kopf, E. W.* Early history of the annuity. *Proceedings*, Casualty Actuarial Society, Volume XIII, Pt. II, 225; *Avery, John M.* The nature of an annuity. Association of Life Insurance Counsel. *Proceedings*, Vol. IV, 65, May 26, 1928.

Section 3. Descriptive and analytical statistics.

This subject covers the commonly accepted elementary and intermediate methods of statistical compilation and analysis, but excludes advanced applications of mathematics to statistics.

Texts:

Gavett, G. Irving. First course in statistical method. (20); or *Burgess, Robert W.* Introduction to the mathematics of statistics. (7).

Auxiliary texts:

Yule, G. Udny. Introduction to the theory of statistics (75) is an excellent text for intermediate study leading to the more advanced methods. For practical application of elementary methods to economic or business data, see: *Mills, F. C.* Statistical methods applied to economics and business. (41); or *Riegel, Robert.* Elements of business statistics. (50); or *Day, E. E.* Statistical analysis. (13). *Schnackel, H. G. and H. C. Lang.* Accounting by machine methods. (58).

Section 4. Elements of accounting, including double-entry bookkeeping.

The student should have an understanding of the basic principles of double-entry bookkeeping and their application to the following: theory of debit and credit and its application to the presentation of simple accounting facts; the uses and relations of the basic accounting books,—ledger; journal, cash-book and voucher register, with simple columnar development; the technique of periodic adjustments affecting accruals, use of subsidiary ledgers and of controlling accounts; meaning and relation of the balance sheet, loss and gain account and the technique of their preparation as applied to simple problems. The student will be expected to be familiar only with *principles* of accounting applicable chiefly to mercantile and manufacturing accounts (inventory, manufacturing and cost accounts, partnership, consignments, discounts, valuation of assets and good will and issuance of capital stock, and corporate organizations.)

Text:

Kester, R. B. Accounting theory and practice. (33). Volume I, Chapters I to XXX. This subject covers the scope of courses in elementary accounting theory and elementary accounting practice given in university schools of business.

PART II

Section 5. Differential and integral calculus.

Text:

Granville, William Anthony. Elements of the differential and integral calculus. (22). Revised edition. All theory and problems involving trigonometry may be omitted.

Section 6. Finite differences.

Texts:

Forsyth, C. H. Introduction to the mathematical analysis of statistics. Chapters II and III, except Sections 20 and 21. (18); *Henry, Alfred.* Calculus and probability for actuarial students. Chapters II to IX (28); *Institute of Actuaries, Great Britain.* Textbook, Vol. II, Second Edition, Chapters XXII to XXIV, Section 20. (31). See also: Chapter III, by J. W. Glover, in *Rietz, H. L.* "Handbook of mathematical statistics." Boston. Houghton Mifflin. 1924.

Section 7. Probabilities.

This subject covers the algebraic treatment of probabilities.

Text:

Hall and Knight. Higher algebra. (24). Chapter XXXII (except geometrical methods).

Auxiliary texts:

Pearl, R. Medical biometry and statistics. Chapter XI. (49); *Rietz, H. L. and A. R. Crathorne.* College algebra. (52). Chapters on permutations, combinations and probabilities; *Rietz, Crathorne and Rietz.* Mathematics of finance. Chapter VII. (53).

Section 8. Elements of the theory of life contingencies; life annuities; life assurances.

Text:

Dowling, L. Wayland. Mathematics of life insurance. (14). Chapters 1 to 6 and 9.

Auxiliary texts:

Moir, H. Life assurance primer. Chapters I to VIII and Chapter X. (42); *Forsyth, C. H.* Mathematical theory of life insurance (except sections 19 to 23). (19).

The following may be read as introductions to the preceding texts.

Rietz, Crathorne and Rietz. Mathematics of finance. Chapters VIII and IX. (53); *Skinner, E. B.* Mathematical theory of investment. (60). Chapter XII. For an elementary discussion of life insurance, *See: Maclean, J. B.* Life insurance. (37).

NOTE ON SECTION 8: The student is urged to pay particular attention to the mathematics of life annuities.

FELLOWSHIP (Sections 9 to 16)

(PART I, SECTIONS 9 to 12; PART II, SECTIONS 13 to 16)

PART I

Section 9. Policy forms and underwriting practice in casualty insurance.

The student should be generally familiar with the policy forms and rate manuals in use in the several divisions of casualty insurance. Analysis of the policy contract and the study of the descriptive matter and rate tables of the manuals should give the student a sound understanding of the chief characteristics of the various lines of insurance:

- A. The Insuring Clauses of the Contract:* (a) subject matter of the insurance; (b) the contingency insured against; (c) service in investigations and settlements; (d) defense of suits; (e) payment of expenses; (f) exceptions as to coverage; (g) period of insurance; (h) conditions relieving insurer of liability. *B. The Premium:* (a) Unit on which computed; (b) when payable; (c) methods of adjustment when policy is cancelled by insurer or assured. *C. General Provisions:* (a) inspection of premises or subject of the insurance by the insurer; (b) inspection of the assured's books; (c) notice of loss; (d) subrogation.

Texts:

Bates, W. H. Casualty and surety coverages. (3); *Kulp, C. A.* Casualty insurance. (35); *Lunt, E. C.* Surety bonds. (36); *Mackell, L. E.* Principles of surety underwriting. 3rd edn. N. Y. Spectator Co.; *Michelbacher, G. F. and T. M. Nial.* Workmen's compensation insurance. (40); *Michelbacher, G. F. and*

Associates. Casualty insurance principles. N. Y. McGraw-Hill. (late 1929); *Riegel, R. and H. J. Loman*. Insurance principles and practices. (51); *Rough Notes Company*, Indianapolis. Policy and form analysis, 1929. (54); *Ryder, Ambrose*. Automobile insurance. Spectator Co., N.Y. 1924; *Spectator Company*, New York. Accident insurance manual. (61).

Optional readings :

Manes, Alfred. Versicherungswesen, Vol. II.(39) for German point of view; *Welson, J. B.* Dictionary of accident insurance (72), for British point of view.

Section 10. Investments of insurance companies, with special emphasis upon law, principles and practices of investing capital, surplus and reserve funds of casualty and allied lines of insurance.

General readings:

Preparation is presupposed in (a) the principles of economics as in *Taussig, F. W.* Principles of economics. (65); (b) in the principles of investment, *Badger, R. E.* Investment principles and practices. (1); *Chamberlain, L. and G. W. Edwards*. Principles of bond investment (9); *Benson, P. A. and N. L. North*. Real estate: principles and practices. (4); *Bishop, A. L.* The financing of business enterprises. (5); and (c) in the broad outlines of the law of real property: *Kirchwey, Geo. W.* Readings in the law of real property. (34).

Texts:

Moulton, H. G. Financial organization of society. (44); *Zartman, L. F.* Investments of life insurance companies. (76); *Sun Life Assurance Company* (Montreal). The President's Book, Chapter X. (64); *Baldwin, W. E. and Miriam Keeler*. New York Insurance Law, 1929. (2). Sections 12 to 21, with special emphasis upon Section 16; Sections 36, 39 to 47; Sections 71-a, 76 to 82, 86, 100 and 176. (See especially the annotations to these sections of the N. Y. Law in Baldwin-Keeler, 1928 edition). The student should read also the papers on investment subjects contained in the Proceedings or Journals of the following associations and societies since 1925: Investment Bankers Association of America (Committee Reports); Association of Life Insurance Presidents; Actuarial Society of America; Institute of Actuaries, Great Britain; National Convention of Insurance Commissioners, (September, 1929 meeting, Toronto, especially).

Section 11. Insurance law and legislation, including supervision, regulation and taxation of casualty and allied branches of insurance, the principles of the law of insurance, and the provisions of the more important statutes of the United States (and Canada, for Canadian candidates) relating to casualty insurance.

A. Introduction to the law; business law.

Stone, H. F. Law and its administration. (63); *or, Gray, J. C.* Nature and sources of the law. (23); *Conyngton, T. H.* Business law. (10).

B. Supervision, regulation and taxation of insurance business.

Patterson, E. W. Insurance commissioner in the United States. (48); *Couch, George J.* Cyclopedia of insurance law. (11). Vol. I, sections: 244-249; 72-72b; 136; 158; 1109-1112; 1117. Vol. III, sections 583-586.

C. Principles of the law of insurance.

The student should secure a grasp of the *major principles* of insurance supervisory, contract and administrative law.

Hammon, Louis Lougee. Title, "Insurance," in *Corpus Juris*, (25) Volume 32, p. 950 *et seq*: Sections 1 to 31; 39 to 42; 44 to 125; 175 to 323; 324 to 354; 403, 404 and 407; 424; 482 to 491; 492 to 527; 528, 530, 531, 534, 537, 541, 542, 550, 551, 561, 565, 581, 583, 587, 595, 596, 600, 640, 642, 647. This text is exceptionally well written and may be read with profit by insurance students reasonably prepared in (A) and (B) above. The insurance titles in *Corpus Juris* will be found in the law libraries of most insurance companies.

See also the definitions and *general* sections in the following: *Cyclopedia of law and procedure* (12), denoted "Cyc;" and in *Corpus Juris*, denoted "C. J."

Accident insurance, Vol. I, C. J., p. 397; *automobile insurance*, Vol. 6, C. J., p. 867; *burglary, robbery and theft insurance*, Vol. 9, C. J., p. 1095; *casualty insurance in general*, Vol. 11, C. J., p. 30; *credit insurance*, Vol. 15, C. J., p. 1354; *fidelity insurance*, Vol. 25, C. J., 1088; *health insurance*, Vol. 29, C. J., p. 278; *indemnity, in general*, Vol. 31, C. J., p. 417; *liability insurance*, Vol. 25, Cyc., p. 224-b; *livestock insurance*, Vol. 25, Cyc., p. 1516; *Lloyd's*, Vol. 25, Cyc., p. 1523; *plate glass insurance*, Vol. 30, Cyc., p. 1641; *steam boiler insurance*, Vol. 8, C. J., p. 1140; *title insurance*, Vol. 38, Cyc., p. 344.

In event that *Corpus Juris* or *Cyc.* may not be available, the following may be used:

Couch, George J. Cyclopedia of insurance law. (11). Vol. I, Chapter I; Chapter II, parts I, II, III, sections 84-94, 97-103, 134 (riders, manuals, schedules), 166-167, 169-188b, 189, 219-233, 241-249, 292-304.

Vol. II, sections 210-216, 486-501, 502 *et seq.* (powers and authority of agents.)

Vol. III, sections 556-573, 579-586, 703-741.

Vol. IV, sections 817-823.

Vol. V, sections 1038-1065, 1163-1164.

Vol. VI, Chapter 17, Parts I and II; Chapters 18, 19, 20, 23, 24, 28, 29, 33, 34, 36, 37, 39, 40, 41-45, 46.

(These readings in *Couch* were selected for our students by the author.)

D. *Current decisions.*

See Legal Notes in the *Proceedings of the Casualty Actuarial Society* also in the *Transactions of the Actuarial Society of America* for the past three years. *Bulletin 161*, Department of Labor, New York State, Sept. 1928-July 1929, contains recent court decisions on the New York Compensation Law. See also *Digest of Workmen's Compensation Laws*, 11th edition, 1929, published by Workmen's Compensation Publicity Bureau, One Park Avenue, New York City.

E. *Statute law governing insurance companies.*

Baldwin, W. E. and Miriam Keeler. New York Insurance Law, 1929, containing the New York Insurance Law and Miscellaneous Laws relating to Insurance. (2). Articles I, II, V-a, X-b, and Workmen's Compensation Law of New York State, page 407. The annotations at the end of the respective sections should be read carefully. The 1928 edition of Baldwin-Keeler contains many important notes on departmental rulings, and opinions of Attorneys General, not found in the 1929 issue.

Brosmith, William, et al. Draft of statutory provisions relating to the business of insurance. Approved by the American Bar Association, Sept. 2, 1927. Published by American Bar Association, 209 So. LaSalle St., Chicago, Ill. (Copies deposited in the New York and Hartford libraries of the Society by the American Bar Association.)

Section 12. Economics of insurance.

This subject includes (A) the theory of risk and (B) the theory and practice of social insurance. Preparation in the principles of economics is presupposed, as in *Section 10*.

A. *Theory of risk:*

Texts:

Willett, A. H. Economic theory of risk and insurance. (73). Chapters 1 and 7; *Hardy, C. O.* Risk and risk-bearing. (26); *Fisher, Irving.* Nature of capital and income. (17). Chapter XVI.

B. Social insurance:

Texts:

Brucker, Ludwig and associates. Die Sozialversicherung. 3 Vols. (6); *Carroll, Mollie Ray*. Unemployment insurance in Germany. (8); *International Congress of Actuaries*, London, 1927. Papers on social insurance and allied topics in *Transactions*; *International Labour Office*,* Geneva, Studies and reports, Series M, social insurance. (32); *International Labour Review*. International Labour Office,* Geneva, Recent articles; *Manes, Alfred*. Sozialversicherung. (38); *National Bureau of Casualty and Surety Underwriters*. Library bulletin, second annual index, 1929 (45), for bibliography of recent works on social insurance; *Rubinow, I. M.* Social insurance (55), and standards of health insurance. (56); *Seager, H. R.* Social insurance. (59). *United States Bureau of Labor Statistics*. Monthly Labor Review. Issues 1926 to date for summaries of recent developments in social insurance.

PART II

Section 13. Calculation of premiums and reserves, including basis for reserves for accident, sickness, workmen's compensation, pension, unemployment and other branches of casualty (and social) insurance.

Includes: (A) *Workmen's compensation manual rates*; (B) *Merit rating*; (C) *Loss reserves for workmen's compensation*; (D) *Premiums and reserves on other casualty lines*; (E) *Pensions*.

A. *Workmen's Compensation Manual Rates.*

The student should be familiar with (a) the National Council on Compensation Insurance rate making method; (b) the modifications of this method followed in New York and Massachusetts and (c) the Pennsylvania system of rate making. In this and following divisions of Section 13, "Proceedings" means Proceedings of the Casualty Actuarial Society.

References:

Greene, W. W. and Roeber, W. F. The permanent rate making method adopted by the National Council on Compensation Insurance. *Proceedings*, XII, 253; *Roeber, W. F.* Recent developments in workmen's

*Information regarding International Labour Office publications may be obtained from: Washington Branch, I. L. O., 701 Lenox Bldg., Washington, D. C. Prices nominal.

compensation rate making. *Proceedings*, XV, 223; *Smith, A. G.* Compensation rate making procedure in New York. *Proceedings*, XIV, 181; *Kulp, C. A.* Casualty insurance, (35) Chapter XIII; *Hobbs, C. W.* A series of reports to the National Convention of Insurance Commissioners, *Proceedings of the National Convention of Insurance Commissioners, 1925*—Pages 201-211; 1926—Pages 13-18; Pages 253-271; 1928—Pages 87-103.

The *Proceedings* of the Casualty Actuarial Society contain many other papers of interest on Compensation rate making. The following papers are noted as having a bearing on current problems but the student would do well not to confine his study to these references only:

Volume	Page	Author	Subject Matter: Short Title
I	24	Mowbray	Dependability of Experience
III	195	Michelbacher	Law Differentials
VIII	77	Mowbray	Classification of Risks
IX	208	Mowbray	Weekly Limits
XII	268	Dorweiler	Experience Differentials
XIII	154	Dorweiler	Excess Insurance
XIV	262	Haugh	Recent Developments

B. Merit Rating, Workmens' Compensation.

The student should secure access to copies of the Industrial Compensation Rating Schedule—1923*—and the Workmen's Compensation Experience Rating Plan—1928*—and the forms actually used in applying these plans in the rating of individual Compensation risks. These should be studied in conjunction with the following references:

Whitney, A. W. Theory of experience rating. *Proceedings*, IV, 274; *Perkins, S. B. and Wheeler, R. A.* The 1922 revision of the Industrial Compensation Rating Schedule. *Proceedings*, IX, 11; *Richardson, H. F.* Recent developments in schedule rating. *Proceedings*, XIII, 29; *Hobbs, C. W.* Experience rating in compensation insurance. *Proceedings of the National Convention of Insurance Commissioners—1924*, 272-282; *The Travelers Insurance Company.* Pamphlet explaining the logic of the rating procedure of the 1928 Experience Rating Plan. (Apply to Secretary, Casualty Actuarial Society). See also: *Michelbacher, G. F. and Associates.* Chapters 7 and 8, Rates and ratemaking, in "Casualty Insurance Principles," McGraw-Hill, 1929.

*Published by the National Council on Workmen's Compensation Insurance, 151 Fifth Avenue, New York City.

It would be well for the student also to study the Pennsylvania plans of schedule and experience rating and to compare them with the National Council plans. The Pennsylvania experience rating plan is published as a part of the Pennsylvania Compensation Manual. The Pennsylvania Industrial Rating Schedule is published as a separate booklet.

The *Proceedings* of the Casualty Actuarial Society (notably Volume I) contain many papers on merit rating which are of value in tracing the evolution of the present plans.

C. *Loss Reserves for Workmen's Compensation Insurance.*

The standard liability and compensation loss reserve law is contained in Section 86 of the Insurance Law of New York. The convention form of annual statement blank for casualty companies sets forth in schedule form the statutory loss reserve requirements of this law in Schedule P. This schedule should be studied and its principles mastered by the student.

References:

- Matthews, A. N.* A system of preparing reserves on workmen's compensation claims. *Proceedings*, XIV, 244;
Davies, E. A. Compensation reserves. *Proceedings*, XV, 28.

The student should also be familiar with the use of interest tables and commutation columns in figuring, for individual claims, the commuted value of lump sum settlements, suspension of payments and decreased durations by reason of lump sum advances and other variations from the prescribed method of claim payment.

References:

- Spurgeon, E. F.* Life contingencies. (62). Chapters I to IV, VII, IX, XI, XII, XIII and XV. *New York Department of Labor. Workmen's compensation tables*, Bulletin 120, September, 1923.

D. *Premiums and Reserves on Other Casualty Lines.*

- Fallow, E. S.* Accident statistics and reserves. Accident and health lectures. Insurance Institute of Hartford. (16); *King, W. I.* Accident and health insurance from an actuarial viewpoint. *Proceedings*, II, 49; *Tarbell, T. F.* Some observations on accident and health insurance. *Proceedings*, XIII, 47; *Stellwagen, H. P.* Automobile rate making. *Proceedings*, XI, 276; *Barber, H. T.* A suggested method for developing automobile rates. *Proceedings*, XV, 191; *Constable, W. J.* Compulsory automobile insurance. *Proceedings*,

XIII, 188; Massachusetts compulsory automobile liability insurance. *Proceedings*, XV, 171; *New York Insurance Report*, 1928. Volume III, 481-568. Report of examination as to methods and manner of operating of the National Bureau of Casualty and Surety Underwriters. (A critical but extensive summary of the methods of rate making for various casualty insurance lines.); *Black, N. C.* Method for setting up reserves to cover incurred but not reported loss liability. *Proceedings*, XIV, 9.

E. Pensions.

Buck, G. B. Valuation of pension funds. *Proceedings*, II, 370; *Woodward, J. H.* Industrial retirement systems based on the money purchase principle. *Proceedings*, VIII, 13; *Cogswell, E. S.* The statistical survey of the Massachusetts Commission Investigating the Question of Old Age Pensions. *Proceedings*, XII, 97; *Robbins, R. B.* Retirement systems for public employees in New York State. *Proceedings*, XII, 238; *Edwards, H. H. and Murrell, R.* Staff pension schemes in theory and practice. (15).

Section 14. Advanced problems in casualty (including social insurance statistics.

This subject includes: (A) the planning and use of statistical manuals and systems, for the compilation and presentation of casualty insurance statistics, for rate making and administrative purposes; (B) the chief characteristics, sources and uses, of external statistics auxiliary to rate making and administrative procedures in casualty (and social) insurance.

A. Internal statistics of the casualty and allied lines.

Study of the statistical plans in use in connection with the several casualty lines is essential. The "Workmen's Compensation Statistical Plan" and "Instructions for Filing Schedule Z" may be obtained from the National Council on Compensation Insurance, 151 Fifth Avenue, New York City. The "Workmen's Compensation Statistical Plan" for the State of Massachusetts may be obtained from the Massachusetts Rating and Inspection Bureau, 80 Broad Street, Boston, Mass. This latter plan in general is similar to the plans in use in the States of New York and Virginia. Statistical plans for the following lines of casualty insurance are published by the National Bureau of Casualty and Surety Underwriters, 1 Park Avenue, New York;

1. Burglary, theft and robbery
2. Automobile public and property damage liability and collision
3. Glass
4. Miscellaneous public and property damage liability

The Personal Accident and Health Statistical Plan (including the non-cancellable accident and health statistical plan) may be obtained from the Bureau of Personal Accident and Health Underwriters, 1 Park Avenue, New York. A copy of the combined health experience on commercial policies may be obtained from the same organization (\$5 for non-member companies or for additional copy to member companies). *See also: Michelbacher, G. F. and Associates: Chapter 10, in "Casualty Insurance Principles," N. Y., McGraw-Hill, 1929.*

B. External statistics. Statistical methods and sources of value in rate making and administrative procedure in casualty (and social) insurance.

Texts:

Department of Commerce, Washington, D. C. Statistical Abstract of the United States (68), Commerce yearbook (67), and Survey of current business (69); *Federal Reserve Board, Washington, D. C.,* Federal reserve bulletin (70); *Hurlin, R. G. and W. A. Berridge.* Employment statistics for the United States. (30). *International Labour Office, Geneva,* Studies and reports, Series N (statistics), especially reports of the International Conferences of Labour Statisticians. (32); *Kopf, E. W.* Statistics in the service of insurance administration. *Proceedings, XI, 102;* *Newsholme, Arthur.* Elements of vital statistics. (46); *Schmeckebier, L. F.* Statistical work of the National Government. (57); *United States Bureau of Labor Statistics.* Bulletin 326, methods of procuring and computing statistical information; *Whitney, A. W. and O. E. Outwater.* The past and future of workmen's compensation ratemaking. *Proceedings, X, 148.*

The student should have access to the *Industrial Bulletin* of the New York (State) Industrial Commission (Albany); *Labor and Industry,* Pennsylvania Department of Labor and Industry (Harrisburg); *Wisconsin Labor Market,* Wisconsin Industrial Commission (Madison).

Section 15. Advanced problems and practical methods of casualty insurance accounting, including the preparation of schedules, exhibits and annual statements.

This subject includes the treatment of advanced practical problems of modern insurance operating accounts. The purpose and the technique of the preparation of the annual statement, with accompanying schedules, including schedule W and the New York Casualty Experience Exhibit, should be thoroughly understood.

Texts:

Hull, Robert S. Casualty insurance accounting. (29).

Periodical readings:

Craig, J. D. Allocation of expenses. *Proceedings*, X, 9; *Hull, R. S.* Allocation of administrative expense by lines for casualty insurance companies. *Proceedings*, IX, 38; *Tarbell, T. F.* Determination of acquisition and field supervision cost. *Proceedings*, X, 107; Accounting methods for casualty companies by use of the Hollerith system. *Proceedings*, XII, 215; Casualty insurance accounting and the annual statement blank. *Proceedings*, XV, 141; *Bailey, W. B.* The allocation of adjusting expense to line of insurance. *Proceedings*, XIV, 233; *Van Tuyl, H. O.* New experience exhibit for casualty insurance companies. *Proceedings*, X, 17; *Linder, J.* The function and place of the statistical department in a multiple line casualty company. *Proceedings*, XIV, 27.

The accounting provisions of the liability and compensation loss reserve laws in force in New York, Massachusetts, Illinois and other States should be carefully examined. The student should endeavor to obtain from practical discussion and close observation, critical reading and original thinking, a facility for the solution of the accounting problems which come to the supervising actuary of a casualty and miscellaneous line office.

Section 16. Advanced problems in underwriting, administrative and service elements of casualty (including social) insurance.

Technical proficiency in these subjects can be developed only by direct discussion with competent executives, underwriters, engineers and adjusters and through extensive reading of the professional papers read before the several organizations of supervisory and administrative officials. It is strongly recommended

that students seek instruction through these means. Insurance periodicals, proceedings of conferences and conventions, technical papers in journals devoted to applied economics featuring the insurance sciences, afford sidelights on major problems of the casualty insurance business, its administration, history and relation to the public interest. The systematic reading of one insurance journal for the Pacific Coast, one for the Middle West, one for the East, and one British* and German† journal will keep the student in touch with current developments in the insurance business. Foreign experience and practice should not be ignored.

**Post Magazine and Insurance Monitor, or Insurance Record*, London; *The Policyholder*, Manchester.

†Neumann's *Zeitschrift für Versicherungswesen*, Berlin. The *Zeitschrift für die gesamte Versicherungs Wissenschaft* (quarterly), Landshuter Strasse, 26, Berlin, W. 30, Germany, contains international reviews of exceptional interest and value.

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Investment principles and practices. New York. Prentice-Hall. 1928, 915 p. \$6.00.
- (2) Baldwin, W. E. and M. Keeler (ed.)
New York insurance law, containing all amendments to January 1930, with an appendix containing miscellaneous laws affecting insurance. New York. Banks Law Publishing Co. 1929, 700 p. \$6.00.
- (3) Bates, William H.
Casualty and surety coverages. Indianapolis. Rough Notes Co. 1927, 137 p. \$1.50.
- (4) Benson, Philip A. and N. L. North
Real estate; principles and practices. New York. Prentice-Hall. 1927, 342 p. \$4.00.
- (5) Bishop, Avard L.
The financing of business enterprises. New York. Harper. 1929, 616 p. \$5.00.
- (6) Brucker, Ludwig et al.
Die Sozialversicherung. 3 vols. Berlin. Reimar Hobbing. 1929.
- (7) Burgess, Robert W.
Introduction to the mathematics of statistics. New York. Houghton-Mifflin. 1927, 304 p. \$2.50.
- (8) Carroll, Mollie Ray
Unemployment insurance in Germany. Washington. Brookings Institution. 1929, 137 p. \$2.00.
- (9) Chamberlain, L. and G. W. Edwards
Principles of bond investment. rev. and enl. ed. New York. Holt. 1927, 699 p. \$7.50.
- (10) Conyngton, Thomas
Business law. New ed. rev. New York. Ronald Press. 1926, 509 p. \$3.50.
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Cyclopedia of insurance law. 8 vol. Rochester. Lawyers' Cooperative Publishing Co. 1929, set \$75.00.
- (12) Cyclopedia of law and procedure. Brooklyn. American Law Book Co.
- (13) Day, Edmund E.
Statistical analysis. New York. Macmillan. 1925, 459 p. \$4.00.
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Mathematics of life insurance. 1st ed. (Mod. Mathematical Texts). New York. McGraw-Hill. 1925, 121 p. \$1.75.

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Staff pension schemes in theory and practice. London.
Layton. 1927, 135 p.
- (16) Fallow, E. S.
Accident and health insurance lectures. Insurance Institute of
Hartford. Spectator Co. 1915, 155 p.
- (17) Fisher, Irving
Nature of capital and income. New York. Macmillan.
1923, 427 p. \$3.75.
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Introduction to the mathematical analysis of statistics. New
York. John Wiley & Sons. 1924, 241 p. \$2.25.
- (19) _____
Mathematical theory of life insurance. New York. John
Wiley & Sons. 1924, 74 p. \$1.25.
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First course in statistical method. New York. McGraw-Hill.
1925, 358 p. \$3.50.
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Tables of applied mathematics in finance, insurance and
statistics. Ann Arbor. Geo. Wahr. 1923, 676 p. \$4.50.
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Elements of the differential and integral calculus. rev. ed.
Boston. Ginn. 1929, 516 p. \$3.20.
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Nature and sources of the law. 2nd ed. New York. Mac-
millan. 1927, 348 p. \$4.00.
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Higher algebra. 5th ed. New York. Macmillan. 1923,
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Mathematics of investment. New York. Heath. 1923,
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Actuaries). London. C. & E. Layton. 1922, 152 p.
(N. Y. Spectator Co.) \$5.50.
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Casualty insurance accounting. (in preparation), auspices of
Casualty Actuarial Society.

- (30) Hurlin, R. G. and W. A. Berridge (ed.)
Employment statistics for the United States. New York.
Russell Sage Foundation. 1926, 215 p. \$2.50.
- (31) Institute of Actuaries, Great Britain
Textbook Vol. II. 2nd ed. N. Y. Spectator Co.
- (32) International Labor Office
Series N. (Statistics) and Series M. (Social Insurance).
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ington branch, Washington, D. C. \$.50 a copy.
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Accounting theory and practice. Vol. 1. 2nd ed. rev. New
York. Ronald Press. 1922, 625 p. \$3.50.
- (34) Kirchwey, George W.
Readings in the law of real property. New York. Baker,
Voorhis & Co. 1900, 555 p. \$3.50.
- (35) Kulp, Clarence A.
Casualty insurance. New York. Ronald Press. 1928, 610 p.
\$6.00.
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Surety bonds; nature, function, underwriting requirements.
New York. Ronald Press. 1922, 370 p. \$2.50.
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Life insurance (McGraw-Hill Insurance Series). 2nd ed.
New York. McGraw-Hill. 1929, 544 p. \$4.00.
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Sozialversicherung. 7th ed. Berlin. de Gruyter. 1928, 139 p.
- (39) ————Versicherungswesen. Vol. II. 4th ed. Leipzig. Teubner
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Workmen's compensation insurance, including employers
liability insurance. New York. McGraw-Hill. 1925,
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Statistical methods applied to economics and business. (Am.
Business Series). New York. Holt. 1924, 604 p. \$3.60.
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Introduction to medical biometry and statistics. Philadelphia.
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Policy and form analysis. Indianapolis. Rough Notes Co. 1929.
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Social insurance, with special reference to American conditions.
New York. Holt. 1913, 525 p. \$3.00.
- (56) ———Standards of health insurance. New York. Holt.
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Accounting by machine methods. New York. Ronald Press.
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