THE PLACE OF CONSERVATION IN INSURANCE

BY

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Insurance is primarily distributive: it creates a fund made up of the contributions of those who are exposed to a risk and distributes it to those who have experienced the misfortune. It does not prevent the misfortune; it prevents only the bad effects of the misfortune. Conservation, the prevention of the misfortune itself, is a by-product. By-products, however, have often turned out to be more important in the end than the primary products themselves. Conservation has proved to be more important than distribution in several lines of insurance and this may turn out to be eventually the case in other lines. In all lines conservation is coming to be relatively more and more important. The purpose of this paper is first, to explain how this by-product, conservation, should have found a place in insurance, and second, to establish a basis for a judgment with regard to the importance of conservation in the future development of insurance.

Insurance as distribution consists, in its essentials, first, in the determination of the amount, the premium, that must be charged to one who is exposed to a risk in order to create a fund sufficient to make payments to those who will have suffered the misfortune; this is the work of the actuarial department; second, in the getting together of a group of suitable persons, the assured, who desire to enter into such an arrangement, and the collection from them of the proper premiums; this is the work of the production department and the underwriting department; third, in the distribution of the funds so collected to those who have suffered the misfortune; this is the work of the claim department.

It will be observed that the two types of payment, first, the payments to the insurance company by those who are exposed to the risk, and second, the payments by the company to those who have experienced the misfortune, differ radically in one respect, namely, the payments by the assured are payments-certain, the payments to the assured are payments contingent upon whether the misfortune has or has not occurred. The assured exchanges the possibility of a contingent loss for a smaller payment-certain to the company. The company on its

part secures the certainty that is necessary for the conduct of its business through the combining of a large number of risks and the working out of the law of averages.

Now how is it and where is it, in the working out of this system of distribution which does no more than spread the incidence of the misfortune, that conservation creeps in? Why should not insurance confine itself to the primary task of distribution? This in fact is what happens in the early stages of insurance. It is only comparatively recently that conservation has come to play any important part in either fire insurance or life insurance. The typical fire underwriter of fifty or sixty years ago not only quite definitely looked at his job solely as one of collection and distribution, but when he thought of fire prevention it was with the feeling that it was something that would tend to make insurance unnecessary. Today, however, the fire insurance companies are the leaders in the intelligent and effective conservational activities of the country in the field of the fire hazard. It is similarly only very recently that the saving of life has entered into the consciousness of life insurance underwriters as part of their job.

Casualty insurance is a much newer form of insurance and from the first it has been more hospitable to the idea of prevention, and preventive activities have always had some considerable place in it. At least two lines of casualty insurance have, however, been developed in such a way that prevention has assumed the major place. The most notable of these is steam boiler insurance. A steam boiler explosion is such a frightful catastrophe and an explosion is so clearly not an "act of God" but an act of man and subject to control that from the first the preventive aspects of steam boiler insurance have been of importance. In fact, today the part of the premium that goes into prevention is three or four times as large as the part of the premium that goes to pay the losses. The same thing, to a less degree, holds for machinery insurance and for elevator insurance, where the cost of inspection is also greater than the losses.

Fire insurance, workmen's compensation insurance and life insurance are the best forms of insurance in which to study the economic aspects of conservation. Consider the case of an ordinary life insurance policy for instance. The examination has

been made, the risk has been accepted, the premium has been fixed,—the stage has been completely set and the only element of uncertainty in the situation is how long the assured will live. If he lives out his "insurance expectancy*" the company will break even, if he lives beyond this point the company will make money so far as this risk is concerned, both because of the interest on the reserve during this extended period and through continued payment of the premiums. If he fails to reach this point the loss will have to be made good by the accumulations on the policies of those that have lived longer. Now, while through the working out of the law of averages the business can be conducted satisfactorily on such a basis, if the company by its efforts can make a given assured live longer than he otherwise would or if the company can raise the expectancy of its assureds in general, such results are clearly a benefit to the company and the sole question from an economic point of view is whether or not this benefit to the company has been secured at too great a cost to make it profitable.

The situation is practically the same in the case of fire insurance. A building has been insured. If the building burns during the year, the company will have to pay under its policy; if it does not burn, the company will not have to pay. It is clearly to the benefit of the company to prevent the building from burning, provided this can be done at not too large an expense, and it is clearly to the benefit of the company to reduce the burning-ratio in general of the risks that it insures.

The fire insurance situation differs from the life insurance situation first, in the fact that destruction may be postponed indefi-

* If I may be allowed to coin a phrase. "Insurance expectancy," as I am using it, is defined as that period, measured from the time of issuance of the policy, for which death-certain is equivalent actuarially to death distributed according to the mortality table. Its value is evidently

$$\frac{\log (i v + P) - \log P}{\log (1 + i)},$$

obtained by equating the present value of the payments by the assured to the company, $P (1 + v + v^2 + \cdots + v^{x-1})$ to the present value of the payment by the company to the assured, v^x, and solving for x. It is easily shown mathematically that the addition of one or more years to the life of the assured will make the present value of the payments by the assured greater than the present value of the payment by the company, while the subtraction of one or more years from the life of the assured will make the present value of the payments by the assured less than the present value of the payment by the company.

nitely as over against the certainty of death and second, in the fact that the fire insurance contract runs only for a year, or a few years, as over against a contract in life insurance that runs in general during the life of the assured. The former distinction is of no importance either actuarially or socially but the latter has significance and introduces a new consideration that has an important bearing upon conservation.

Rates in insurance are made upon experience but the making of rates upon experience involves first, the completion and maturing of the experience over the period in question, second, the compiling of the experience, and third, the making of rates thereupon. All these things take time and further time is required for getting the rates into effect. Therefore a period must elapse before a change in experience shows in the cost to the assured. In other words, there is always a time-lag between the experience and the rates. If there were no time-lag on the one hand and if on the other hand the contract were such that the rates were adjusted immediately as the experience changed, there would be no economic inducement for the exercise of preventive activity, for a change in experience would immediately show in the rates and there would therefore be no opportunity to capitalize the effects of prevention.

The extended duration of the contract and the time-lag are therefore exactly the elements that make preventive activities profitable. This is not all, however. When there is a time-lag a decreasing loss-cost results in a profit but by exactly the same reasoning an increasing loss-cost results in a loss. And just as preventive activities *may* be entered into in order to produce a profit so preventive activities *must* be entered into, if there is danger of an increasing loss-cost, in order to avoid a loss. The time-lag therefore not only makes it possible for the companies to reap the benefit of preventive activity but makes it necessary for them to institute such activity in order not to slip backward.

Casualty insurance is like fire insurance in the short duration of the contract, but because of the slow maturing of the experience there is a still greater lag between the experience and the rates, and consequently an even greater chance to capitalize preventive activity and correspondingly a still greater compulsion to institute such activity.

In the case of some hazards, for instance steam boiler hazards and elevator hazards, the need for preventive activity is imperative. In both of these cases it is evident that a high-grade inspection service is required and insurance protection and inspection service are given together apparently largely as a matter of convenience and economy. Certainly if the insurance company did not furnish the inspection service it would be quite necessary for the owner of a steam boiler or an elevator to secure such service from some other source.

In the case of some other hazards the need for preventive activity has not been so compelling. The safety movement in the workmen's compensation field, for instance, did not develop entirely out of the sheer human necessities of the case, as in steam boiler insurance. A very considerable factor in setting it into motion was the economic advantage to the insurance companies of preventive activity. The insurance companies were at the same time able to arouse the active interest of the assured in such work on a similar basis, first because of the fact that the results of safety activity would be passed on to the assured in the form of lower premiums and, second, because of the fact that the interest of the assured was sharpened through the introduction of merit-rating, a system which made it possible for him to reap the benefits of his own preventive activities, instead of merely getting his share of the benefits that came from the activity of the group.

As a matter of fact workmen's compensation insurance is exactly one of those fields where preventive activity is not merely desirable in order that a profit may be made but imperative in order that a loss may be averted. The mechanization of industry and other factors in modern industrial life are having the effect of making industry intrinsically more hazardous. Industry if left to itself, that is, without the instituting of safety activities, would unquestionably register a steadily increasing loss-cost. The safety movement is therefore a necessity to the insurance companies if they are to escape heavy and steady losses.

The existence of an economic advantage in conservation quite definitely depends on what such conservation will cost. It may easily be that the cost of preventive activities in a given case may exceed the value of the savings that are to be had. This is

a question that can be settled in each individual case only on a basis of fact. An example may be given that involves a calculation of this type. The National Bureau of Casualty and Surety Underwriters supports an undertaking, at an expense of less than $20,000 a year, that has for its object the promotion of campaigns for the inspection of automobiles, known as "Save-A-Life Campaigns." These were conducted last year in ten states. Of these ten states six keep records of automobile fatalities. These six states showed for the month of the campaign and the succeeding month a reduction of 132 in the number of automobile fatalities from those that occurred in the same months of the previous year. It seems reasonable to believe that this saving was due to the Save-A-Life campaigns, since in the country as a whole there was a 5 per cent. increase in fatalities for 1930 over 1929.

In order to find out what a saving of 132 lives would mean to National Bureau companies the following further facts were developed. In a given year, 1928 in fact, the amount paid out by National Bureau companies on automobile claims and for claim costs was approximately 82 million dollars. The automobile deaths in this year were 24,911. A proportion can then be formed as follows: if an 82 million dollar cost has arisen out of 24,911 automobile fatalities and the accompanying non-fatalities, how large a cost will arise out of 132 deaths and the accompanying non-fatalities? The solution of the equation that comes from this proportion gives a result of more than 400 thousand dollars which while obviously only an approximation must be somewhere near the truth. An expenditure therefore of less than $20,000 has apparently resulted in a saving that is more than twenty times as large. This is a case where conservation has paid.

While such a saving as this goes for a few years to the insurance company, the benefit of the saving is thereafter passed on to the assured in the form of the lowered rates that are based upon the improved experience. Since, however, the law of diminishing returns will operate in the conservation field as elsewhere, a point will eventually be reached where the cost of conservation efforts will equal the further return in the form of savings. It will not pay to increase conservation efforts beyond this point, unless conditions should change. On the other hand, they must be maintained at this level in order to prevent the company from

slipping backward and making a loss. Rates will soon adjust themselves, however, to the situation and when they do there will be no margin in the adjusted rates to pay even for this amount of preventive work and much less for any increase. The only way of taking care of the situation will be to charge up the cost of this preventive activity to the assured. The assured has been gradually given all the benefit that has resulted from preventive activities and when the point has been reached where the savings equal the cost of additional activities he must from this point on also carry the whole of this cost.

As a matter of fact the transfer of the cost of preventive activities to the assured will not be made suddenly. As the amount of preventive activity increases, the expenses and therefore the loading upon the rates increases. So that the assured at the same time that he comes into the enjoyment of a decrease in rates due to a decrease in the loss cost also experiences an increase in the expense factor. The decrease in the rates due to more favorable experience, however, more than balances the increase in the expense.

To recapitulate, the natural history of conservational activity in insurance is as follows: the cost is paid for at first by the insurance company and the company makes a profit because of the fact that the savings are larger than the cost. These savings through rate adjustment are passed on to the assured, and at the same time the expense is gradually passed on to the assured. Eventually there comes a time through the operation of the law of diminishing returns when further conservational activity will not pay for itself and further activity can therefore not be undertaken except for reasons other than economic. When the adjustment to this situation has been had, it will be found that the assured is enjoying all the benefits that have come from conservational activity but he is also paying all the expense.

The insurance company at first plays the part of the entrepreneur and reaps the customary advantage that comes from the exercise of enterprise. Finally, however, a comparatively static condition is reached where a service covering both conservation and distribution is given on what amounts to a fee basis. This is the normal evaluation of an insurance undertaking. It involves principles that are as fundamental as those by which a table-

land is brought down to base level or a lake eventually becomes a meadow.

It is important that these forces should be allowed to operate with as little outside interference as possible. In some states state officials have the power to limit, and do limit, the amount of expense in the case of workmen's compensation insurance that a company can put into the rates. This makes it impossible for the company to pass the cost of preventive activity on to the assured. Since the savings due to the exercise of preventive activity have gone automatically to the assured through rate adjustment the company is left in the position of having to carry the cost of this preventive activity without enjoying any benefit from it. The effect is that the company under these circumstances will not be able to carry on such activities. How devastating in its effect upon sound development would have been a limitation of the amount that an insurance company could pay for expense in the case for instance of steam boiler insurance! It would have killed the development of the tremendously important service that the insurance companies give in keeping steam boilers in proper condition.

In most lines of insurance not only has this static condition not been reached but the field of conservational activity has been only slightly cultivated. The reason for this is that insurance for the most part has not yet emerged from its primitive period. The primitive period in any business is characterized by an absorption in production with very little attention paid to outgo. This period is illustrated by the early days of farming in the middle-west when crops were had by merely scratching the soil and sowing the seed with neither intensive cultivation nor the use of fertilizer. The primitive period in industry was that period when, particularly under a protective tariff, industry could afford to concentrate on the production of the main product with little attention given to the development of by-products.

But just as the primitive period has passed in agriculture and in industry, so the primitive period is passing in insurance. Competition is making the writing of a large volume of business increasingly difficult. Restrictive legislation is making the getting of adequate rates more and more difficult. Our hectic, mechanized civilization is making life continually more danger-

ous. It is necessary for insurance companies to turn their attention more and more strongly to conservation of outgo both because of the difficulty of increasing income and in order to counteract a rising loss-cost.

Conservation is a necessary development in insurance on economic grounds, and these grounds are in the last analysis social. There are, however, also more immediately social considerations that must be taken into account. While the main and preponderating effect of insurance is beneficial, there is a secondary effect in the case of most insurance that is adverse to the public good; insurance tends to weaken the sense of individual responsibility. If all the fire insurance in the city of New York were cancelled, calamitous as that would be, it would undoubtedly have the effect of greatly stiffening individual responsibility. With no insurance on the city we would not do some of the careless things that we do now. In a certain sense then insurance owes a duty to society to replace what it has removed with an equivalent. This it is in a position to do by carrying on conservational activity on a far larger and more effective scale than could be attempted by the separate units that are insured.

The public is vaguely conscious that the insurance companies have such an obligation. Insurance in its primary aspect of distribution seems to most people more like a necessary evil than a positive good. This is probably because the payments have some of the disagreeable features of a tax and there is no return payment except in the infrequent cases when a misfortune occurs. Conservational activity on the other hand is direct and universal. The public is generous in recognizing conservational activity and favoring insurance companies that have taken pains to develop this side of the field. People have a vague sense that such companies are giving better value for the money and are more fully living up to their social responsibility.

There is coming to be a more intimate and understanding relationship between business and the public than has existed in the past. The antagonism of the public toward business has largely disappeared and there is instead a very general disposition to feel that business is not only not antagonistic to the public good but that the best way to attain the public good is through the wise development of all the good possibilities that lie in business

itself. In this era of good will and better understanding business should capitalize every opportunity that it has to make itself understood and appreciated.

Few businesses have such a remarkable opportunity to put themselves on good terms with the public as has insurance through the development of conservational activity. Conservation not only pays the insurance company large and immediate returns; it is not only a necessity for a well-conducted business under the conditions that exist today; but it is exactly that part of the insurance business that can be understood and appreciated by the public generally. An institution that can prevent not only the effects of misfortune but misfortune itself is not only carrying the burdens of humanity but carrying them in a way that appeals both to the head and to the heart.