AIRCRAFT INSURANCE

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Nine years ago Mr. W. G. Cowles of the Travelers Insurance Co. addressed this Society on the subject of aircraft insurance. His paper was such a complete outline of the field and indicated such a sound view of the future that I am tempted to confine my remarks to bringing it up to date.

In 1919 his statement was correct that the field for aviation insurance was yet to be developed. That is not true today. Even the most conservative in our midst believe that we are past the threshold of the aerial age. The yearly increase since 1925 in airplane production, airway mileage, safe airports and landing fields and mileage flown has been marked. For every airplane produced then there are now four produced; for every mile of airway there are now two; for every airport there are now five; where there was one landing field there are two; and for every mile flown there are now five miles. Still more to the point is the fact that many things indicate a continuance and even a rapid acceleration of this development.

Aeronautical transportation is identical with other forms of transportation in that its development is dependent upon the forces of supply and demand. I have given you some indications of the rapidly growing supply phases of the problem. These supply features are themselves an indication of sound demand. After a certain amount of available speculative funds have been used up, the increasing flow of capital to the various branches of an industry is a sign that that industry is already a part of our economic order. This is the case with air transportation.

In addition to this somewhat theoretical consideration we have unmistakable signs of increased demand. It is more difficult to get a promise of early delivery of one of the twelve passenger three-motored Fokker airplanes than it is to get immediate delivery of a new model Ford automobile. Despite the fact that these airplanes cost $60,000 and must be well-filled pretty consist-

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ently to be paying propositions, the Fokker Aircraft Company is being forced onto a production basis as rapidly as it can safely go.

The Pratt and Whitney Engine Company has just proudly announced its promise to deliver thirty engines monthly to the Ford airplane factory instead of the customary fifteen monthly. These so-called Wasp and Hornet engines cost in the neighborhood of $7,000 each and go into all-metal airplanes that cost over $60,000.

There are now a number of strictly aeronautical engineering concerns in this country. Their time is fully employed in remunerative consulting and guiding work.

Last August the new five-cents per ounce air mail rate went into effect. The result was that practically all of the air mail operators had to refuse the small number of passengers they had been prevailed upon to carry and were compelled to devote their entire equipment to the handling of the greatly increased mail. The Carribbean countries visited by Lindbergh will soon receive *all* first-class mail from the United States by air. The Pan-American Airways was awarded this post office contract and is already receiving delivery on some twenty-five or thirty three-motored airplanes.

I believe that you will agree with me that there is some careful reasoning behind the present bullish stock market attitude toward aeronautical stocks. Much of this is speculative, it is true; but a good part of it is based on sound logic.

The field for aviation insurance is a fact, not a dream. The progressive underwriting element has recognized this. The disastrous underwriting years of 1919, 1920 and 1921 have been forgotten. Those years saw the organization of the National Aircraft Underwriters Association by the Home Insurance Company, the Fireman's Fund, the Aetna Life, the New York Fire, the North British and Mercantile Insurance Company, and others. Those years also witnessed its practical disbandment because of lack of interest. Lack of interest was caused by discouraging loss ratios, in some cases as high as two hundred percent.

The Travelers Insurance Company alone persevered through the "lean years" of aviation, confining its activity to the liability lines. In 1926 the Independence Companies of Philadelphia entered the deserted property field and provided complete coverage, property and personal as well as liability. It is rumored that

from eighty percent to ninety percent of each risk accepted by these companies is reinsured at Lloyds of London.

These companies enjoyed a practical monopoly of the business because they followed more or less consistently the common marine practice of "all of the business or none." The Travelers' underwritings were confined to those aircraft operators who were content to insure only against the liability hazards or to those operators dealing through the one or two brokers influential enough to persuade certain fire and marine companies to write fire and tornado coverage on airplanes as pure ground risks.

Last spring the Travelers extended their activities to cover passenger liability. A new underwriting group, The Transportation Insurance Companies, entered the field at the same time and was welcomed most heartily. Brokers now enjoyed the advantage of having two sources for "all-coverage" rates. Rates were materially reduced. The operators began to feel that possibly they were not "working only for the insurance people," as a number of them expressed it.

In the summer another group began active underwriting. The United States Aviation Insurance Group was organized and appointed the United States Aviation Underwriters as agents. Four old casualty companies and four old fire companies compose this group and share each risk in a predetermined proportion.

The few aviation brokers were soon kept busy protecting their old accounts from the onslaughts of general brokers suddenly awakened to the insurance possibilities of this newest form of transportation. Before 1928 the brokers specializing in aviation insurance had considered their most difficult problem to be that of getting insurance markets. During the present year this situation has changed somewhat. It has now become a real problem to prove to the newer operators that years of experience in aviation brokerage is of real value to them. This situation has eased up for them somewhat because the new underwriters have leaned more or less heavily on the brokers familiar with the business.

As you doubtless know, practically all aviation rates are the results of pure judgment. Workmen's compensation rates are a possible exception. Where judgment is so important a factor, experience is at a premium. There are comparatively few individuals combining broad contacts, aviation knowledge and thorough grounding in insurance. The value of this unusual

combination is enabling the aviation insurance specialist to hold his own against the local broker, sometimes over a distance of three thousand miles.

There are a number of features of aviation underwriting that seem to point to the continued importance of the specialist. First, the risks themselves are very unstandardized. Second, the underwriter must depend to a great extent on hearsay and second-hand knowledge. Third, the coverages, while more or less standardized, are very flexible. This makes it most difficult for the smaller, inexperienced broker to compete on the large accounts where flexibility can be demanded.

Let us consider, briefly, the policy conditions which are peculiar to this form of insurance. In addition, probably you will be interested in some of the underwriting problems involved in the various coverages.

There are certain general considerations in the case of all coverages. I think we might list these as the pilot, the plane itself, the engine, and the territory of operations. There have been attempts made to analyze these to determine their relative importance. Probably it is the consensus that the pilot is the most important element from the standpoint of the underwriter.

Various groups of statistics have been presented; some of which show the pilot responsible for thirty percent of the accidents, others for forty percent, and others for even as high as sixty percent. It is probably safe to say that the pilot is responsible for about half of the accidents.

When we get into a discussion of the responsibility for accidents, though, we get into an involved problem. An accident is seldom due to one cause. A pilot's engine goes dead two or three thousand feet in the air. Probably his gliding area is about twenty thousand feet. That pilot should be able, unless he is over the congested part of a city, to find a safe landing place in twenty thousand feet. He comes down and crashes. What is the cause of the accident—the engine going dead or the inefficiency of the pilot?

I am reminded of Clarence Chamberlain's wonderful feat of landing in the drillyard of the Eastern Penitentiary. And I believe he even "took off" there. If you have ever visited penitentiaries (as students of sociology, I hope) you know that those drillyards are not very large.

I should like to take up these general rating considerations one by one. Formerly the pilot was considered individually by the underwriter. Some underwriters set up standards of forty hours of solo flying, always, however, wanting to know the name of the pilot and his experience. Now we have an Aeronautics Branch in the Department of Commerce which tests the pilots and licenses and classifies them.

They are classified as private pilots, industrial pilots, limited commercial pilots and transport pilots. Private pilots must have ten hours of solo flying before they can take the tests; industrial pilots, fifty hours of flying; and limited commercial and transport pilots, two hundred hours of flying.

That gives us something of a basis. But even with these requirements and the strict examinations that are given to the pilots by the Aeronautics Branch of the Department of Commerce, the underwriters are not yet willing to take any transport pilot. They probably are justified in this, especially when you consider the different types of planes that are flown today. One pilot may be a good risk on a single-engine plane and be a very poor risk on a tri-motored plane. Underwriters even go so far as to consider pilots possibly good risks on tri-motored Fokkers and poor risks on tri-motored Fords until they have had some experience with the Ford planes.

Next we consider the planes themselves. Formerly it was a question of "What sort of a plane is it? What has been its particular maintenance history?" and a number of similar considerations. Now we have all planes which are engaged in interstate commerce examined and licensed by the Department of Commerce.

I am afraid that much of this will be repetition for you men who have been reading the newspapers, although possibly summing it up in this way will be of help.

That doesn't mean that every plane that you can fly at the various landing fields has been examined and licensed by the Department of Commerce. A plane might even have an official looking number painted on it and still not have been examined. Planes not engaged in interstate commerce must have identification numbers, that is all. If the state within which this plane is going to operate does not have strict regulation and strict inspection of planes, possibly that plane that holds itself out more

or less as a common carrier is not a very safe plane in which to ride.

Let us briefly consider the engines. We have, of course, different types of engines. Back as early as 1920 and '21 the National Aircraft Underwriters Association attempted to classify engines according to their susceptibility to fire or according to their importance in causing fires. But the spread of available data was not great enough then, and the spread probably is not great enough now.

The underwriters are now mainly interested in engines to see whether they are water-cooled or air-cooled. Usually they consider the air-cooled engine a far better risk because of the fact that there is relatively little plumbing. Plumbing getting out of order is one of the main causes of engine failure. We do not have that problem to such a great extent with the air-cooled engine. We have a number of different air-cooled engines; and some underwriters, of course, are prejudiced for one over against the other.

We are also interested in engines from the standpoint of depreciation when we get into some of the property coverages. There must be separate depreciation on engines as over against the planes. You are particularly concerned with casualty insurance, but possibly you will be interested to know that water-cooled engines are considered to depreciate about twice as rapidly as air-cooled engines. Some underwriters now depreciate water-cooled engines over seven or eight hundred hours of flying and give air-cooled engines as high as fifteen hundred hours of life before they consider them entirely used up.

We can all recall that Lindbergh's plane flew close to four hundred hours before it was overhauled. When it was taken down there were practically no repairs necessary. As a matter of fact, we do not know the life of an airplane engine. It was very interesting to go to the Philadelphia Navy Yard and go through the airplane factory there. They have a number of compartments along a corridor, in each one of which is an engine being run until it refuses to run any longer. They are attempting to test the life of an engine and, also, to find out what causes the engine to give way.

The territory of operations of a plane was originally considered rather important. I think it is becoming of less importance in

the underwriter's thoughts. Most coverages are restricted to the United States, sometimes within fifty miles of the international border. We can hardly restrict the territory of operations of an airplane. In 1919, '20 and '21 there were many policies written requiring the planes to keep within gliding distance of the field. Of course, that is not feasible now with the cross-country flying so common.

Now, I should like to consider the various coverages individually and just indicate some of the more or less interesting features of the coverages themselves and some of the things which the underwriters take into consideration.

Fire insurance. We have two types, on the plane and on the hangar. There are at least two types of fire insurance on the plane itself: Fire under all circumstances, and fire on the ground only. Until last Spring there was some question as to whether fire losses following crash were covered by "fire under all circumstances" coverage. Now the underwriters specifically exclude fire that can be traced at all to crash. This involves the old insurance problem of proximate cause, and it certainly seems warranted that any fires that can be traced to crash, be excluded from the fire coverage.

However, "fire under all circumstances" coverage still gives rise to some difficult problems. Not very long ago one of the pilots flying the Pitcairn mail route had a forced landing. Incidentally, it was his third forced landing without serious injury in three months. He certainly maintained the reputation of the Pitcairn planes of being able to make forced landings without killing the pilot. This forced landing did not do much damage to the plane. The pilot took the mail out of the plane and walked quite a distance. I think that he claimed that it took him about four or five minutes to get to the house in the distance. Going into the house he asked directions to the nearest postoffice. Someone said, "Your plane is burning out there." He turned around, and, sure enough, the plane was in flames. When he got back, there wasn't much left of the plane. Now, what sort of a loss was that? Was it a fire loss or was it a crash loss?

The rate on fire insurance for all circumstances varies from as low as two and a half percent to four and four and a half percent, largely determined by the type of plane, and the housekeeping of the operator, and partly by the contents rate of the hangar in

which the plane is stored. Of course, you know that the contents rate is set by the local fire underwriters.

One underwriter said just the other day that he did not think that any plane should be underwritten at less than three percent of the value of the plane. He was asked, "Does that apply to all-metal planes?" That question was answered just two days ago. On Monday night a new twenty-passenger plane of the Keystone Aircraft Company was insured at five o'clock. On Tuesday, at four o'clock, it burned—an eighty thousand dollar risk. The underwriters wished that that insurance had been delayed for twenty-four hours. When they went out to inspect the plane, the wings had been covered with the ordinary cotton duck and painted with dope, but the entering edge of the wing, back to the main beam, was made of dural, or duraluminum. The inspector just yesterday showed me a piece of that dural which had been through the fire. You can take it like this, and it crumples in your hand just like a piece of charred paper.

The hangar is more or less of a local fire insurance problem, so we will not consider that.

One of the other property coverages is tornado insurance. This is not so important in this part of the country, but when you get down to risks such as the Pan-American Airways with planes flying to Cuba, to Porto Rico and down to Central America and Mexico, the tornado coverage is very important. The underwriters were prone to refuse it at first. But the brokers have control of the other more acceptable coverages and *they* now say, "All or none, including the tornado coverage." And if the business is good, they even get the tornado coverage for as low as one-half percent.

Crash insurance is probably the most interesting property coverage. The deductible is usually very high, in some cases as high as ten percent. That results in quite some self-insurance in the case of large, costly transport planes.

The other day a plane was to be christened by Mrs. Coolidge. The ship was not ready for delivery. Another had to be borrowed. The operator lending the other plane demanded crash insurance. It was placed with a six thousand dollar deductible. In the test flight, just before the plane was to be handed over to the operators arranging the christening ceremony, the plane nosed over and crashed the propeller, wing, and damaged some

of the tail. The damage in that case was only four thousand dollars. The borrowers were wishing that the deductible had been somewhat lower.

Constructive total loss is a more or less common marine form of coverage and is not uncommon in aviation but is often unsatisfactory. The usual percentage is eighty-five which means that the underwriter pays the claim if the loss gets up to eighty-five percent. In other words, it must be practically a total loss. The average operator doesn't know much about insurance. He thinks it is rather unfair to have paid eight percent in premiums and not collect anything if the loss only equals about eighty-two percent of the value of the plane. Probably the constructive total loss-principle should be confined to the field of marine insurance.

Then we have cargo and registered mail—forms of property insurance—which are handled more or less as regular marine risks.

I should like to treat briefly the lines that you are most interested in, those in the liability field. First, let us consider public liability. One deviation of the aviation public liability coverage from its parent, the automobile public liability policy, is the exclusion of liability for passengers' injuries. A separate coverage must be written for passenger liability. This is partly because the underwriters usually insist that the passenger risk is an unknown quantity.

Public liability insurance is most often written for 5/10 limits but sometimes operators demand 50/100 coverage. We do not have the experience of the automobile insurance business where judgments range from sixteen to twenty thousand dollars over the amounts insured. But the sound broker usually advocates that the limits be at least 20/40 and often believes 40/80 coverage is wise. There are some policies written with million dollar limits covering public liability, property damage and passenger liability. These policies, as you imagine, are written at Lloyds and they are what we call "in all" policies. That is, all claims are added together, and the coverage ceases when one million dollars has been paid. Some underwriters in this country at the present time have "in all" policies. That is, they consider the premium fully earned on a 5/10 policy as soon as judgments of $10,000 have been met. Other underwriters follow the ordinary

automobile insurance practice and pay all claims, even though their sum (in different accidents) exceeds the top limit.

Public liability insurance is written at more or less standard rates. You might be interested in the ordinary 5/10 rate. It is something better than one hundred dollars. As indicated previously the rates have taken a number of drops during the last six or eight months. Any premium quotations cannot be depended upon. This 5/10 premium is usually stepped up according to Table I of the Automobile Manual.

Property damage coverage is usually limited to one thousand dollars. The larger operators, however, are easily convinced that they need five or ten thousand dollars coverage which they get at a premium ranging upward from seventy-five dollars.

Passenger liability insurance is probably the most unchartered field of all of the aviation coverages. We do not know the legal liability of the operator. As far as we know, there have been no cases actually tried in court on this question. I believe that there is one case now against the Curtis Aeroplane Company, where a father is suing for the death of his son. Probably the aircraft operators will be looked upon as common carriers. Some fear that possibly they will be looked upon as "the keeper of a wild animal." Many feel that the longer we keep the cases out of court and the more air-minded the people become, the less the likelihood that the courts will look upon the aircraft operators in that light.

The rating of passenger liability coverage started at about three percent of the top liability. That is for 10/100 limits, the premium was three thousand dollars with an increasing credit sometimes allowed according to the number of passengers carried. Recently that rate has been considerably reduced in a good many cases and actually cut in half occasionally by the keen competition among the underwriters in this field.

Workmen's compensation! Someone smiled back in the rear of the room when I mentioned that the workmen's compensation premium is the one exception to judgment rating in aviation insurance. We are fully aware of the way the workmen's compensation rates were worked out, and greatly respect Mr. Perkins' efforts and his co-workers of the Travelers in that work. Much judgment was exercised in making up the rates, it is true. They were originally made up back in 1919 and there hasn't

been a great deal of experience, that is enough indicative experience to make it worthwhile to change these rates. We probably should not consider that they are anything more than pretty good judgment rates.

I do not know whether I should say "pretty good judgment rates," because even the underwriters that made up the rates claim they have been losing money consistently on the workmen's compensation end of the business. That feeling seems to be pretty general throughout the workmen's compensation field anyway, and we cannot quarrel if it is the case in aviation insurance as well as in many other lines.

Aviation workmen's compensation insurance is not written by the underwriters unless the other more lucrative lines go in with it. There is not a case of "all or none,"—rather a case of some good business necessary to "sweeten" the bad. Most underwriters say, "Public liability and property damage at least before we will write workmen's compensation." This brief discussion must conclude our survey of the liability coverages.

Let us now consider the personal coverages, which you are interested in as individuals and not as actuaries. I think that we are all interested in knowing what is the status of our life insurance when we take a flight in a plane. If your life insurance is old enough, it certainly is not affected. That is if it was written before the underwriters began to get cautious about the aviation hazard. If it is of recent writing, possibly it has an aeronautics exclusion clause in it. You do not have to worry about that aeronautics exclusion clause so far as I know, if your contemplated flight is to be over a regular airway with licensed pilots and licensed planes operated by a regularly incorporated company, on a regular schedule, and if you are a fare-paying passenger. If you take a joy hop, possibly some of your life insurance will be invalidated unless the incontestable clause is in operation.

Pilot's life insurance has been a difficult nut for the brokers to crack. The John Hancock Insurance Company along with a number of other insurance companies conducted a rather extensive investigation. As a result of that investigation, they started writing pilots at a ten dollar extra premium. They did not write them very long at that extra premium. It was claimed that they were so flooded with applications, and also so flooded with quick

claims resulting from crashes, that it was necessary stop underwriting abruptly. At the present time pilots can get insurance at an extra premium of twelve dollars and a half up to twenty-five dollars per thousand.

The life underwriters like to restrict these writings to air-mail pilots. Sometimes their attitude is rather inconsistent. In one particular case that has come to my attention the broker was asked to place insurance for practically all of the pilots of an airway operation as well as for the pilots at the various flying fields. One pilot was very anxious to get the maximum amount for which his company would pay the extra loading, ten thousand dollars worth of insurance. The application went in. It seems that a retail credit man went to the field and asked about this pilot's activities. He happened to meet a couple of persons who were very friendly toward this pilot and thought he was a very good pilot. So they told him what dangerous flying their friend was always used on. Whenever the owners had a plane to be severely tested, they always sent up So-and-So, and he could take that plane and put it through all the loops and test necessary. He even went up once and shook a wing off and came down with his parachute. Well, it happened that one of the pilots had gone up and knocked a wing off to prove to the field manager that the wing was no good and came down in his parachute; but it did not happen to be the pilot in question. The life insurance company said, "No, we can't take that pilot now." "Well," the broker replied, "he is going on the air-mail line in a very short time." "You get a statement from the operators that that pilot is going with the air-mail line, and we will insure him. Not until he goes on the air-mail, will we guarantee to insure him." The statement was gotten, and the pilot went on the air-mail line and got his insurance.

As a matter of fact, the pilot was just an ordinary pilot of the kind taking people up for joy-hops. Now he is engaged in all-night flying and probably is just as hazardous a risk as the risk outlined to the retail credit man that the underwriters refused.

Ticket accident insurance is another phase of personal aviation insurance. At one time one of the companies did write this coverage rather extensively. Negotiations for renewing the writing of that insurance are now being carried on as a result of the recently announced air-rail combination. It was written at the

rate of a dollar per thousand for one day—rather high—five dollars for five thousand dollars worth of insurance. This seems especially high in view of the statements made at a convention down in Philadelphia last week, when the actuaries of a number of life insurance companies more or less agreed that if all the accidents were pooled together—in other words, if the experience over a number of years was taken—the personal accident companies could probably write all flights at ten cents to twenty cents per flight per thousand. That is a rather low rate, I know, and we have the possibility of adverse selection against the company. Still the brokers and the airway operators feel that a dollar per thousand is rather high.

This is of particular interest at the present time, because the airway operators seem to be attempting to classify themselves as being outside of the field of purely common carriers. Some of them are printing tickets and leaving a space for the passenger's signature, in which the passenger waives all rights of suit against the airway company. Of course, we pseudo-lawyers say right away that that will not "hold water" in the United States for one minute. We can sign away our own rights to sue, but we can not sign away the rights of our heirs to sue. Some of the best legal minds seem to feel, however, that there is a possibility of such waivers being held valid if the operator has given the passenger opportunity to purchase reasonable amounts of personal accident insurance.

This makes ticket accident insurance most important. If the operators can give the passenger the possibility of purchasing ticket accident insurance and also indicate that reasonable limits of passenger liability insurance have been arranged, there may be some grounds for the feeling that there can be a limitation of liability. For that reason, the operators are very anxious that adequate ticket accident insurance be made available immediately.

Those three fields of coverage—property, liability and personal —more or less conclude the survey.

In closing, I should like to indicate some of the general progress in hazard reduction. There are a number of optimistic signs pointing towards hazard reduction. First, the Guggenheim Fund is now carrying on experiments in the dissipation of fog. They have hired Lieutenant Doolittle and have just purchased

two airplanes. Doolittle is carrying on extensive investigation work, not only in dissipation of fog, but in the using of neon lights for the penetration of fog.

Parachutes are possibly one other reason for optimism for the future in aviation, from the standpoint of passenger-carrying. The individual parachute is very impractical. If you give twelve passengers parachutes to strap on their backs and tell them to take their place in the plane, probably six of them will decide that they do not want to take the flight. When you get into a large passenger plane, everything is done to make you feel secure. You do not even see a parachute anywhere.

The army is now conducting experiments out in McCook Field under the direction of Major Hoffman with parachutes which will take the weight of the entire plane, even a twelve-passenger plane, and rest it gently to earth in case of engine failure or in case something happens to the pilot or both pilots. You might be interested to know that practically all of the large transport planes carry two pilots.

Some enthusiasts even contend that these parachutes probably will be effective on large planes if the plane goes into a side-slip at one hundred or two hundred feet from the earth. That is the greatest hazard, of course—when the plane is taking off and banks over so perilously near to a right angle with the earth.

There is at least one other reason for optimism. The National Advisory Committee for Aeronautics has conducted during the last year quite an investigation of ice forming on the wings of planes. We believe that ice explains the loss of many of the trans-Atlantic flyers. As you know, moisture condenses and the ice forms on the wings, even collects on the propeller, and gradually brings down the plane. The pilot does not realize it immediately; and before he does realize it, the plane becomes unmanageable and a crash results. They hope very soon to have some way of coping with that hazard.

Probably the most important thing that is being developed at the present time is the use of the radio in airway operation. The Pan-American Airways, in flying from Miami to Havana,—the regular flights on the Miami to Porto Rico run will start in January,—will have every plane equipped with radio apparatus. There will be a station in Miami and a station over in Cuba. The pilot of a plane will have a chart in front of him. His

course will be laid out on the chart. The chart will be divided into squares, and the squares will be red and white. He will get signals all the way across that will tell him which square he is in. Right in front of him he will always see just how far off his course he is and thus he will always be able to get back on his course.

Radio marker beacons are being placed at short intervals on the regular airways, and radio apparatus is being installed on many of the air-mail planes. The pilot will be able, every ten or twenty miles, to know whether he is on his course by hearing this radio signal from the marker beacon.

As actuaries, you will probably be dissatisfied for some time to come with the aviation data available for rate making purposes. The Department of Commerce and the National Advisory Committee for Aeronautics are doing good work in accident classification and interpretation. This data will serve to guide the individual's judgment. Let us remember the history of automobile rating and not be too exacting in our attitude toward aeronautics.

Last week a life insurance official at an aviation hazard conference in Philadelphia aptly said, "We must look at aviation with prophetic vision." For the good of the institution of insurance and for the future of aeronautical transportation, coverages must be liberalized carefully and soundly but "with prophetic vision." By this, I mean that the nature and needs of the enterprise must often be good cause for deviations from standard provisions. This should only be done, however, when all parties concerned are fully satisfied with the moral hazard involved. Poor housekeeping, incomplete inspection routine, unsound financing, superficial experience in the case of those in charge of operations, undue pressure on pilots to take great chances—these are some of the things that must be watched for and guarded against most zealously by the underwriter who would survive.

Competition for a powerful broker's business will occasionally require that they be disregarded. The normal limitation on inspection costs, in the case of small risks, will often tempt, or even require the underwriter to depend on spread instead of selection.

Prediction must always be taken with a grain of salt, but it seems that it will be a long time before any broker's good business will sufficiently "sweeten" the whole to warrant "accommodat-

ing" him extensively. It also appears that the time is a long way off for general dependence on spread instead of extra careful selection.

In keeping before themselves these two warnings, the underwriters will find themselves in full accord with the two soundest influences in commercial aeronautics today—the Guggenheim Fund for the Promotion of Aeronautics and the Aeronautical Branch of the Department of Commerce. Safety is their watchword; it must be the underwriter's also, but let us not forget "with prophetic vision."