

1931

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### Recommended Citation

Walter C. Crowdus, *Aviation Insurance*, 2 J. AIR L. & COM. 176 (1931)  
<https://scholar.smu.edu/jalc/vol2/iss2/3>

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# AVIATION INSURANCE\*

WALTER C. CROWDUS†

## INTRODUCTION

Over three and a half centuries ago, in opening Queen Elizabeth's first parliament, Sir Nicholas Bacon remarked, "Wise merchants, in every adventure of danger, pay part of the value of their cargo to have the rest insured." Since that time, insurance has become almost a universal necessity, and the foundation upon which industry of all kinds is built. The entrance of insurance into the field of aeronautics was, therefore, to be logically expected.

As pioneer underwriters of unusual and hazardous risks (or, rather, gambles) Lloyds London were the first to make possible and to offer insurance for aviation. This was just prior to the opening of the World War in 1914. It had been ten years since man had first flown in a heavier-than-air machine, but in those few years the growth and development of aviation had made it necessary that the protection afforded by insurance become available. There were only a few policies written on aircraft at this time and, it is believed, all of them covered English aircraft. The credit for drawing up the first aviation insurance contract and for having it accepted by Lloyds London goes to Horatio Barber, one of the first Englishmen to fly.

The war saw all European aircraft taken over for military operations and the scene of aviation insurance may be said to have shifted to the United States. During 1917 and 1918, millions were spent in the development of aviation—both of plane and motors. Innumerable contracts were let and factories built for the production of Curtiss "Jennies," Standards, Thomas Morse', DH's, Wright-Martins, Liberty motors, and other planes and engines. These planes were built for the government and under government supervision. The government did not insure its property, but the manufacturers of this equipment found it necessary to insure both the planes and motors before they were accepted by the war department. American insurance companies and foreign insurance companies

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\*This article, with its clear discussion of the history and principles of aviation insurance, will be followed in the July issue with two articles dealing with the legal phases of aircraft insurance by George B. Logan and Howard Wikoff.

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represented in this country had fire insurance offered them on planes and motors and, during that fervent period, accepted the business without question.

The end of the war saw airplane orders and aircraft engine orders cancelled, saw airplane and engine manufacturers selling their undelivered products wherever possible, and saw army and navy services disposing of many of their planes and motors. This equipment found its way into private and commercial use, and a few of the insurance companies went so far as to undertake to insure the planes and to cover the owners and operators with various forms of liability insurance. The several American insurance companies which entered the field and undertook to write the business believed that there would be a considerable demand for aviation insurance, and these companies were of national reputation. Lloyds London, considering the American field a good one, sent over a representative. But not one of the companies who had looked for a rosy future in aviation insurance found the business to its liking.

Losses exceeded the premium income, to say nothing of the underwriting and acquisition expense. A year or so of disastrous experience resulted in all but two or three of the companies discontinuing aviation underwriting. It was not difficult to see the trouble—to realize what was responsible for the tremendous loss ratio. It had been a more or less simple matter to secure insurance on any "ship"—it being necessary only to give a description of the plane, with manufacturer's and motor numbers, and to accompany the application with a pilot's statement. It was realized that the skill and the experience of a pilot was a most important factor in determining the rate for accidental damage or "crash" insurance. There was practically no way, however, in which real information might be obtained on the pilot's ability as a flier, outside of his own statement.

It can thus be readily seen that in every case excepting that of new equipment, the insurance companies had very little exact knowledge as to the condition of the ship they were insuring. They did not know the condition of the plane structure, fabric, or motor—whether or not it was a flying "crate," likely to fall apart or catch fire at any time. In the event of a loss on this type of plane, the evidence having been destroyed, it was difficult to ascertain the true condition and value before the crash or fire. The lack of inspection of planes and the testing of pilots was regrettable. Insurance companies were hard hit. Practically all of them, as above, discontinued aviation underwriting—premium rates went up, and coverage was

restricted. The blame for these conditions must be placed largely on the federal authorities. The government, which should have been the leader in aeronautical activities, had made little or no attempt to regulate civilian and commercial flying. It did not inspect planes, and all kinds of heavier-than-air craft, regardless of condition, no matter how incorrect or radical in design, attempted flights. Any individual, no matter how unskilled or inexperienced, could attempt to operate a flying machine. There was absolutely no licensing or regulation of pilots. During the summer of 1919, inspection of aircraft and examination of pilots were suggested to the companies writing aviation insurance—same to be compulsory before the placing of insurance was considered. For some unknown reason, this logical policy, proposed by a firm of inspection engineers, was disregarded and side-tracked.

In 1921, however, came action that had beneficial and far-reaching results and that helped establish commercial aviation on a sounder basis. Insurance companies, underwriting aircraft risks, finally seeming to realize the situation, started to use correct underwriting principles. They organized what was known as the National Aircraft Underwriters Association. The Underwriters Laboratories, in cooperation, opened a new department for aircraft. This department was conducted under the guidance of an internationally known flier, Major R. W. Schroeder, at one time holder of the world's altitude record. The work of Schroeder's department of the Underwriter's Laboratories was to inspect and to regulate all planes on which insurance was desired, also, to examine and test the pilots who were to fly the insured planes. Unless the planes had been inspected and registered by the aircraft department of the Underwriter's Laboratories, and unless the pilot or pilots had been tested and approved, member insurance companies of the National Aircraft Underwriters Association agreed not to grant insurance.

This policy of inspection and registration undoubtedly reduced insurance losses. Premium rates were reduced. The National Aircraft Underwriters Association functioned for about two years, and then for unknown reasons apparently "let down the bars," and accepted risks in which the planes had not been registered or given an Underwriter's Laboratories "Certificate of Air-Worthiness"—risks in which the pilot had not been tested and passed as acceptable. Regulation, in a private way, for the benefit of private organizations, had been attempted, and found to be of great value. Not being incorporated into legislation, and not being assisted by

laws for enforcement, private efforts, in part, to regulate aviation were a failure.

Thus far we have discussed regulation—private regulation—insofar as private interests were concerned. The first attempt at statutory regulation dates back to 1911, when Governor Baldwin of Connecticut advocated the enactment of federal legislation for air navigation. Governor Baldwin, at that time, also endeavored to arouse the interest of the American Bar Association on the same subject, but was unsuccessful there also. But, not discouraged by federal apathy and lack of interest of the Bar Association, Gov. Baldwin next directed his attention to the legislature of his state. Here he was successful, and the first aeronautical legislation of any of the states was passed by Connecticut. A short time later the adjoining state of Massachusetts enacted similar legislation. A few other states displayed interest in legislation for aeronautics, but took no concrete action prior to the World War. As soon as the war was over, and an increase in aviation activity anticipated, there was a great amount of thought given to the legal phases of aviation. In Congress, many types of legislation dealing with aviation were introduced but apathy still gripped our law-makers and none of this proposed legislation was reported out of committee.

In 1920 there was a joint effort by the Conference of Commissioners on Uniform State Laws and the American Bar Association to obtain legislation covering air transportation. Their efforts were successful in that the Uniform State Law was approved, together with a positive attitude as regards legislation. The matters of ownership of air space, liability for damages, police regulations, and the like were to be controlled by the states. The regulation of air transportation, the airworthiness of aircraft, the testing of pilots, and the enforcement of regulations were left to the federal authorities. The need of regulation had been recognized for a long time, but American aviation was to wait until 1926 before regulatory powers were actually given to the federal government and laws passed to regulate and develop aeronautical activities.

In 1926 the federal Air Commerce Act was passed by the government. The act created an Aeronautics Branch of the Department of Commerce, with the position of Assistant Secretary of Commerce for Aeronautics. William P. MacCracken, Jr., of Chicago, was given the office. He faced a real man-sized job and the Air Commerce Regulations compiled under his direction were very comprehensive and became effective December 31, 1926.

The Air Commerce Regulations did not require a federal li-

cense for all aircraft and all pilots—only licenses for aircraft and pilots engaged in interstate or foreign air commerce. Airplanes and pilots not engaged in interstate or foreign air commerce were permitted, however, to secure these licenses. The Air Traffic Rules provided by the Air Commerce Act were, however, applicable to all flying interstate and intrastate, private and commercial. These rules were based upon the theory that uniformity in air traffic regulation was essential adequately to protect interstate commerce. With regulations and legislation in force and with the Department of Commerce and government officials taking an interest, commercial aviation started on a boom early in 1927. In this year the United States Government ceased flying air mail and placed contracts for the carriage with private concerns. Increased flying operations resulted in an increase in the demand for aviation insurance of all classes. Having brought this discussion up to recent years we will now devote ourselves to a discussion of the various forms of coverage available.

#### AIRCRAFT INSURANCE

Airplanes, seaplanes, amphibians and flying boats may be insured against loss or damage under four general forms—fire, theft, windstorm, and accidental damage (including mooring perils in the cases of seaplanes, amphibians, and flying boats). These are:

I. *Fire*: This form of insurance may be divided into two classes—

- 1.—Fire on the ground only.
- 2.—Fire under all circumstances.
  - a.—excluding fire following crash.
  - b.—including fire following crash.

1.—Fire on the ground only: Fire, arising from any cause whatsoever (including self-ignition and explosion of gasoline) and lightning; excluding fire during flight or any attempt thereat, descent, or while the engine is running immediately subsequent thereto; and also excluding fire in consequence of or directly subsequent to crash and/or collision with any other object and/or the ground.

2.—Fire, lightning, and transportation:

a.—Fire, arising from any cause whatsoever (including self-ignition and explosion of gasoline), and lightning, under all circumstances, excepting fire in consequence of, or directly subsequent to crash and/or collision with any other object and/or the ground. The stranding, sinking, burning, collision, derailment and/or overturn of the conveyance in or upon which

the insured property is being transported on land or water, including general average and salvage charges for which the assured is legally liable.

b.—This coverage is the same as 2.a. above, except that in the event a plane crashes and is totally destroyed by the ensuing fire, claim can be made on that part of the plane which was undamaged by the crash, but later destroyed by fire.

In our opinion, fire under all circumstances, including fire following crash, is a most unsatisfactory coverage, inasmuch as it is evident, even to a layman, that if a plane crashes and immediately catches fire, it is impossible to determine, even approximately, to what extent the plane was destroyed by crash, and what was the value of the undamaged part destroyed by fire. When a choice is to be made for fire insurance, we would recommend fire under all circumstances, excluding fire following crash. The premium rate is slightly higher than fire covering on ground only, and lower than fire coverage, including fire following crash.

II. *Theft, robbery, and pilferage*: Theft, robbery and/or pilferage, including damage done by thieves to property insured hereunder, excluding, however, theft, robbery, and/or pilferage and damage done by person or persons in the assured's household or in the assured's service or employ, whether or not occurring during the hours of such service or employment, embezzlement or secretion by a mortgagee, vendee, lessee or bailee (for hire or gratuitously) in possession of the insured property under a mortgage, conditional sale, lease or other contract or agreement, and excluding also loss suffered by the assured from voluntary parting with title and/or possession of the aircraft insured hereunder or parts thereof, whether or not induced so to do by any fraudulent scheme, trick, device, or false pretense, or otherwise.

Theft coverage, as above, is practically identical with that written on automobiles. Policy contract contains deductible clause of \$25.00 from each and every claim made for loss by theft to eliminate small pilferage claims.

III. *Windstorm, tornado, and cyclone*—Excluding loss and damage caused by hail, rain, sleet, snow, earthquake, flood, or water. Some contracts exclude any loss or damage by fire caused by windstorm, tornado, or cyclone, such as a fire that would start when a hangar would be blown down, crossed electrical wires, or a mishap to the heating plant. Other policies, however, include loss or damage by fire that would follow and be caused by windstorm damage to a hangar building. Because of the possibility of unattended planes

in front of hangars being damaged by a quick-rising wind or a change in the direction of wind, this form of coverage is usually written with a deduction on each claim of 5% of the plane's value. This deduction percentage may be decreased in cases where the plane is of high valuation—with a slight increase in rate.

IV. *Accidental damage* (crash)—Accidents of an external and visible nature arising during flight or any attempt thereat and/or during taxiing immediately prior and immediately subsequent to flight; excluding loss and damage by lightning and excluding also loss and damage by fire unless such fire be in consequence of or immediately subsequent to crash and/or collision with any other object and/or the ground.

It can be seen, from the above insuring clause, that aircraft would not be covered against damage while on the ground or in the hangar excepting during taxiing, immediately prior and immediately subsequent to flight. This gap is filled by a form of coverage known as Land Damage, reading substantially as follows:

Loss or damage to aircraft, while not in flight, but while in the hangar, taxiing, or elsewhere on the ground, by hail, striking by other aircraft, vehicle, or other object (excluding aircraft, vehicle, or other object owned or operated by the assured, or any of the assured's employees), or the striking of any stationary object, whether or not such stationary object is owned by the assured or any of his employees, but excluding any loss or damage occasioned by or during taxiing into, within, or out from a hangar.

This Land Damage form of protection generally contains a deductible clause of  $2\frac{1}{2}\%$  of the plane's value.

Accidental damage insurance is usually written with a deduction of 10% from each accident. In special cases, the deductible percentage may be decreased to 5% of the airplane's value—when this is done, the premium rate is naturally higher. Likewise, if the deductible percentage from each claim is increased to 20%, the premium rates will be lower than in the event of the standard 10% deductible policy. In the case of amphibians, seaplanes, and flying boats, policy is endorsed to provide coverage while moored in the water. A slight additional premium is charged for protection against this increase in hazards. In the event that the operator does not desire to pay additional premium for insurance against mooring perils, policy is endorsed to exclude coverage while aircraft is moored.

Accidental damage, or crash insurance, gives to the companies writing aviation insurance their highest losses. In 1928 the amount

of flying was more than double the hours and mileage flown in 1927. During 1928 and the first part of 1929 there was a tremendous influx of new capital into the aviation industry. The growth of the industry was forced to such an extent that the outstanding weakness of aviation—danger to life and limb—became quite apparent. There were numerous crashes, people were killed and injured, and the insurance companies were asked to pay large claims. These crashes were caused to a large extent by operators in the industry who had been supplied with more capital than perhaps they should have been, and they were forced as a result to put in many hours in the air to produce revenue when flying should not have been attempted. The year 1929 saw many accidents entirely due to operators endeavoring to keep flying schedules on time. There were other instances, where, owing to pressure from executives and boards of directors, the operating personnel was forced to fly unairworthy equipment.

The statistics of the Aeronautics Branch of the Department of Commerce disclose the fact that errors by pilots (judgment, poor technique, disobedience, carelessness, or negligence) are responsible for in excess of fifty per cent of accidents to aircraft in the United States. Actual figures are as follows:

Percentage of accidents caused by pilot's errors:

<u>1927</u>	<u>1928</u>	<u>1929</u>	<u>1930 (six months)</u>
51.96	49.54	54.94	55.83

From the foregoing, it does not have to be pointed out that when an operator applies for accidental damage insurance, the companies are keenly interested in the pilot's ability and experience, and his past record as regards accidents. This information is requested in detail in the application form submitted. The insurance companies can obtain a check on the information as to class of license, number of license, date of license, age, flying time and record of accidents from the Aeronautics Branch of the Department of Commerce. Again we wish to stress the tremendous assistance that is thus afforded to the insurance business by legislation and regulation.

The Aeronautics Branch of the Department of Commerce, in their statistics, further disclose the fact that next to errors by pilots, the greatest cause of accidents is attributed to structural and material failures (control systems and surfaces, wing structures, struts and bracings, wheels, tires, brakes, fuel systems, ignition systems,

etc.). The percentage of accidents caused by structural and material failures is as follows:

1927	1928	1929	1930 (six months)
23.36	21.40	28.54	23.80

Under the Air Commerce Regulations promulgated by the Aeronautics Branch of the Department of Commerce, particular attention is given to the airworthiness requirements of aircraft (structural strength of all surfaces, including engine mounts, control systems, landing gear, etc.). Airplanes whose design, structural strength as determined by tests, performance, and flying qualities, show them to be airworthy, are eligible for the Department's Approved Type Certificate. Aircraft not acceptable for an Approved Type Certificate cannot, as a rule, be licensed or given an identification number. Here, again, governmental legislation and regulation have been of inestimable value to insurance companies underwriting the hazards of aviation. As may be expected, unlicensed and/or unidentified aircraft are not considered good risks by the insurance companies, and are, therefore, not, as a rule, acceptable for insurance.

The foregoing touches upon the form of aviation insurance applicable to the various types of aircraft. We will now take up the forms of protection available for owners and/or operators to cover them in the event of claims being made against them.

#### AIRCRAFT OWNERSHIP AND OPERATION INSURANCE

Aviation insurance for owners and/or operators is covered under the following forms: public liability, passenger liability, property damage, workmen's compensation, airport liability and property damage, cargo liability, and life and accident insurance (which could be listed under a separate heading).

I. *Public Liability*—the insuring clause of most aviation public liability contracts reads substantially as follows:

Bodily injuries (or death resulting therefrom) to persons other than passengers in the aircraft covered under this policy, or while boarding or alighting therefrom. The company's liability hereunder for damages in respect to any one accident or disaster involving bodily injury (or death resulting therefrom) shall not exceed ..... dollars (amount of liability desired) subject to a limit of ..... dollars (amount of liability desired) for any one person.

Aviation operators clearly recognize the importance of public liability protection. Capital cannot be secured for development with-

out the assurance of protection supplied by public liability insurance. When there is a possibility of huge damage suits—greater than the total capital invested, the risk of going without liability insurance is readily seen. Should a plane fall or come down in a forced landing, say at the intersection of State and Madison Streets, Chicago, the public liability claims resulting therefrom would be disastrous for the capital of any company. Twenty-one of the states have adopted the Uniform State Law for Aeronautics. Of these, seventeen states have also adopted Section 5, which provides for absolute liability, and which reads as follows:

“Section 5. (Damage on Land)—The owner of every aircraft which is operated over the lands or waters of this State is absolutely liable for injuries to persons or property on the land or water beneath, caused by the ascent, descent, or flight of the aircraft, or the dropping or falling of any object therefrom, whether such owner was negligent or not, unless the injury is caused in whole or in part by the negligence of the person injured, or of the owner or bailee of the property injured. If the aircraft is leased at the time of the injury to person or property, both owner and lessee shall be liable, and they may be sued jointly, or either or both of them may be sued separately. An aeronaut who is not the owner or lessee shall be liable only for the consequences of his own negligence. The injured person or owner or bailee of the injured property, shall have a lien on the aircraft causing the injury to the extent of the damage caused by the aircraft or objects falling from it.”

It can be easily seen that there is a fertile field for public liability insurance in these seventeen states.

In addition to assuming liability for the limits stated in the policy, the insurance company, as a rule, further agrees to defend all claims and suits for injuries and/or damages for which the assured is, or is alleged to be liable—

—to pay all costs and expenses incurred with the insurance company's consent.

—to pay all court costs taxed against the assured in any suit, including premiums on the attachment or appeal bonds required on such proceedings.

—to pay all interest accruing on any judgment in any suit of the amount for which the insurance company is liable.

—to pay expenses incurred in providing immediate surgical relief at the time of the accident.

Exclusions, generally incorporated under aviation public liability contracts, are as follows:

Workmen's compensation cases, students, passengers, whether farepaying or otherwise, racing, acrobatics, stunting, flying between one hour after

sunset and one hour before sunrise, war, insurrections, hostilities, strikes, riots, running engine in a hangar, use of aircraft for unlawful purposes, attempted flight in violation of government or state regulations, use of the aircraft for purposes other than those specified in the policy.

II. *Passenger Liability*—the insuring clause of most aviation passenger liability contracts reads substantially as follows:

Bodily injuries (or death resulting therefrom) to passengers in the aircraft described in the policy, or while boarding or alighting therefrom. The company's liability hereunder for damages in respect to any one accident or disaster involving bodily injury (or death resulting therefrom) shall not exceed (amount of liability desired) subject to a limit of (amount of liability desired) for any one person.

The maximum limit of indemnity for passenger liability insurance is a multiple of the amount of indemnity desired per passenger. For example, assuming that the aircraft on which insurance is desired is a five-place (pilot and four passengers) machine, and that the limit of indemnity desired per passenger is \$5,000.00—policy would be written to cover \$5,000.00 for injury or death to one passenger and \$20,000.00 for injury or death to four passengers. Passenger liability insurance provides coverage for an aircraft operator against his liability at law to other people for injuries they may sustain while in his aircraft. Of all the various suits and liabilities to which an aircraft operator exposes himself, in the course of his business, the most serious, is that of his liability to passengers. An insurance policy is simply a promise to pay, provided it is not voided by certain definite and printed exclusions. The question of common carrier, private carrier, negligence, and other factors does not enter into the settlement of claims. The specific operations of an aircraft operator, whether or not he might be considered a common carrier, distance of flights, the organization maintained, care and upkeep of equipment, skill and experience of personnel, are carefully considered by the insurance companies when computing the premium before the policy is written. There is no doubt that the many lawsuits pending at the present time, involving passengers injured or killed in airline operations, are causing aviation insurance men to exercise extreme care in their underwriting. The indeterminate state of the statutes regarding the degree of responsibility of an operator who does not carry passengers for hire—who carries passengers for hire on charter trips—or who carries passengers on so-called aerial taxi-hops—makes proper rating of passenger liability insurance a great uncertainty.

In addition to assuming liability for the limits stated in the

policy the insurance company as a rule, under passenger liability contracts, agrees to cover the additional expenses previously described under Public Liability. The exclusions under passenger liability contracts are the same as those applying to Public Liability.

The Uniform State Law for Aeronautics contains no provision relative to liability to passengers and/or property carried in the aircraft. Four states have laws covering this subject, Arizona, Connecticut, Louisiana, and Virginia. The last two named make it compulsory that any operator carrying passengers for hire secure insurance.

The actual chances of a fatal accident (in which one or more passengers or pilots are killed or fatally injured) are shown in the following figures furnished by the Aeronautics Branch of the United States Department of Commerce:

Mileage flown per fatal accident—

1928 .....	1,781,042
1929 .....	1,042,524
1930 (first six months) .....	2,817,121

Based upon these official figures, is the following, taken from a recent issue of "Time": "If a man were to fly 10,000 miles annually in the United States, in regularly scheduled licensed transport planes, he might suffer a crackup in the 39th year, and might be killed in the 282nd year."

III. *Property Damage*—The insuring clause of most property damage insurance contracts reads substantially as follows:

Damage to or destruction of property of every description; excluding property belonging to and/or in the custody of the assured, property belonging to and/or in the control of the assured's employees and/or passengers and/or pupils, property rented and/or leased and for which the assured is legally responsible, and property carried in or upon any aircraft belonging to and/or in the custody of the assured.

Due to improvement in the structure, design, and performance of aircraft and motors, the number of forced landings in relation to the mileage flown and hours in the air is steadily declining, but in the event of a forced landing or crash over built-up property, there is always a property damage claim to be settled. Claims have been made for damage to or destruction of buildings of all kinds (one of the most serious being the devastation wrought by a small dirigible which crashed through the roof of a LaSalle Street Bank in Chicago in 1919)—hangars, gas storage tanks, automobiles, fences, high tension wires, telephone and telegraph poles, cattle of

all classes, crops of all varieties, vessels of several classes, and as might be expected, other aircraft—in the air and on the ground and water, moving and stationary.

The Uniform State Law for Aeronautics (Section 5, *supra*) makes operators absolutely liable for damage to or destruction of property of any description. As previously mentioned, seventeen states have adopted Section 5. In addition to assuming liability for the limits stated in the policy, the insurance company, as a rule, under property damage contracts, agrees to cover the additional expenses previously described under Public Liability. The exclusions under property damage contracts are the same as those applying to Public Liability. We have just discussed the public liability, passenger liability, and property damage portions of an aviation insurance contract. There has been no attempt made to quote the many cases that have been tried under each of these forms of insurance. There are also many cases now in litigation.

IV. *Workmen's Compensation*: This form of insurance is designed to provide financial compensation to an injured employee, and in the event of his death, to his dependents if such injury or death occurs during, or as a result, of his occupation.

Forty-four states have adopted and passed Workmen's Compensation Acts for the benefit of employees. In each state the benefits and legislations, imposing this legal obligation on the employer, vary considerably. Some states grant and stipulate high indemnities or benefits in the event of death, dismemberment, loss of sight, and totally disabling injuries. Other states have acts or laws providing lesser benefits.

Employees for aviation firms may, and usually do, move from one state to another in the course of their employment. Inasmuch as the requirements and benefits of the Workmen's Compensation Acts of each state are different, it can be readily seen that an operator must be alert properly to protect himself. In some states the Workmen's Compensation Law or Act is administered by a state body and insurance companies are not permitted to write workmen's compensation in those states. An employee killed or injured in such a state has the right to collect workmen's compensation benefits from his employer under three different statutes—under the act or law of the state in which he is killed or injured, under the act or law of the state in which he is employed, or under the act or law of the state in which he is living.

The complexities of the situation as just outlined should be corrected by law. The situation may arise in any industry, as well

as aviation. The federal government recognized a similarly involved situation when they passed the Longshoremen's Workmen's Compensation Act—making standard the compensations payable to all employees working on navigable waters (other than the captain or crew of vessels). Legislation of like character would be of material benefit to aviation.

We will list briefly the principal classifications of the standard workmen's compensation manual applicable to aviation:

Aircraft Operation—commercial or private, excluding demonstration, testing, instruction, public exhibition, trick and stunt flying.

Aircraft Operation—demonstration, testing, instruction, public exhibition, trick and stunt flying.

Aircraft Operation—non-flying mechanics, hangar and field employees.

Clerical Office Help.

Airplane Manufacturing—excluding operation and demonstration.

Photographers—aerial mapping and landscape work aboard aircraft during flight.

Ground School Instructors.

Salesmen.

The premium rates per \$100.00 remuneration for these classes, of course, differ in each state due to the difference in benefits of the Workmen's Compensation Act of each state.

V. *Airport Liability and Property Damage*: There is an ever-increasing demand for this form of insurance protection. Policy insures against loss by reason of the liability imposed by law upon the assured for damages on account of bodily injury, whether fatal or otherwise, actually suffered or alleged to have been suffered by any person or persons, not employed by the assured, while within or upon, over or about, the premises described in the policy. Contract also insures against damage to property of others, excepting property of the assured in his custody or for which he is responsible.

In addition to the foregoing, insurance policy provides defense of all claims and suits and agrees to pay all costs and expenses of defense, interest on accrued judgment, within the limits of the policy, and to pay all first aid surgical expense.

The standard exclusions of an average airport liability and property damage policy are—claims occurring under workmen's compensation acts, claims brought by aviation students on the premises, accidents occurring during specially advertised aviation meets

or races, flights in which government regulations are not complied with, motorcycle or automobile races and claims arising under similar unusual operations.

The classes of litigation which might arise in consequence of the operation of an airport can be classified as follows:

A. Claims as a result of accidents occurring on the field or airports—

- (1) Claims brought by the general public.
- (2) Claims brought by the tenants of the airport.
- (3) Claims brought by the employees of the tenants.
- (4) Claims brought by passengers and prospective passengers of operators using the field.

B. Claims as a result of accidents occurring away from the field or airport—

- (1) Claims and suits for nuisance brought by nearby landowners or residents.
- (2) Claims for trespass over nearby property.
- (3) Claims for injury or death to persons.
- (4) Claims for damage to property.

The owners and/or operators of an airport or flying field may obtain insurance protecting them against all of the claims that might be brought for the classes of accidents which occur on the field. The facts which were brought out at the trial might establish the accident as a result of negligence on the part of the airport owner or operator and/or some of his tenants. The owner and/or operator is liable for injuries to the general public and also to the employees of his tenants, if negligence and unsafe upkeep and condition can be proved. In this connection it would, of course, be difficult for one of the tenants of an airport to sustain action against the airport proprietor for an injury by reason of unsafe condition or defect in hangar or other structure in the possession of said tenant.

As regards accidents or claims occurring away from the field, claims for nuisances, and claims for trespass—insurance cannot be obtained to cover all of these—nuisances and trespass are first alleged, then must be proved, and then the amount of claim or loss established. All three of these are more or less intangible. We have in mind a case wherein a farmer, living about six miles from an airport, claimed that the inter-city planes which flew over his farm at an altitude of one thousand feet en route to the airport caused his chickens to stop laying. Claims of this type are numerous, and while the insurance companies writing aviation insurance

coverages attempt to provide insurance against all the commonest causes of loss and litigation, claims for nuisance and trespass are usually excluded from airport public liability and property damage insurance contracts.

Claims for accidents involving the public for damages to property occurring away from the airport, are, as a rule, excluded, due to the fact that the owners or operators of the aircraft itself carry aircraft public liability and aircraft property damage insurance. The owner or lessor of property leased for airport purposes should protect himself with a contingent airport liability and property damage policy.

Claims arising out of actual operations at an airport would result in action being brought first against the airport operator or lessee, but the property owner should protect himself with a contingent airport liability policy in the event action is brought against him as owner of the land used for the airport.

There are two classes of airport owners, the private owner, whether individual or corporation, and the owner which is a public corporation—municipality, county, or other form of government. This latter class is just as liable for acts of negligence in the operation of an airport as is the individual or private corporation. Aviation is seeing a tremendous growth in the number of airports, both privately owned and publicly owned, and the need for proper insurance protection is self-evident.

VI. *Cargo.* There is an ever-increasing amount of merchandise being shipped by air. The excellent records maintained by the transport companies carrying mail and express make it a simple matter to secure standard cargo insurance policies on practically all classes of merchandise and freight shipped by airplane, seaplane, flying boat, or dirigible. Straight cargo insurance is obtained by the shipper usually under the shipper's own cargo and transportation insurance policy. The aircraft operator may obtain cargo liability insurance covering his legal liability in the event of loss or damage to goods shipped in his plane.

VII. *Life and Accident Insurance.* For those who fly, pilots, passengers, mechanics, and students. Life and accident insurance policies may be obtained for anyone of the foregoing classifications, also aerial photographers, airplane and accessory salesmen, and others. The amount of insurance granted and the premium rates therefor, depend upon the nature and amount of flying to be undertaken. Policies cover for accidental death and/or dismemberments

and loss of sight. Policies may or may not provide for specific weekly indemnity payments in the event of disabling injury.

The rates for aviation insurance are not as high as generally thought. The proper submission of full and complete information, as a rule, results in lower premiums than when only partial information is available. The average rates per \$100.00 insurance for fire and theft on an airplane, kept in a good hangar, are less than the rates for fire and theft insurance on a popularly priced automobile operated in one of our large cities. Premiums for aviation public liability and property damage insurance are lower than premiums for the same coverage on a large baggage or express truck, or a truck used for general hauling.

Premium rates for all forms of aviation insurance are based on loss experience—as improvements in design and construction of aircraft continue, and as the skill and experience of the operating personnel increase, so may we expect a decrease in the premium rates for practically all classes of aviation.

Aviation insurance underwriters are confronted with a costly and momentarily limited field within which aviation insurance must be cultivated. There were on July 1, 1930, in the United States, only 6,684 licensed aircraft (it is estimated that 1,000 of these were unsold—in factories and distributors' stock). This left 5,684, and we can now deduct 3,089 as aircraft not eligible for insurance (having identification number only, and therefore, not licensed). The total number of aircraft available for insurance was thus only 2,595.

The average value of airplanes including motors (military and naval aircraft excluded) built during 1929 was \$9,519.00. The maximum value of an aircraft is in the neighborhood of \$165,000.00, and the minimum value of a new plane is approximately \$1,000.00.

The growth of the industry indicates that in the near future there will be built planes on which aviation insurance companies will be asked to issue policies for \$400,000.00 to \$500,000.00. It can thus be seen that aviation insurance underwriters are confronted with a real task in making it possible to cover concentrated values and risks wherein there is a large liability exposure—say, \$100,000.00 public liability, \$50,000.00 property damage, \$10,000.00 passenger liability each for from 30 to 80 passengers, workmen's compensation on pilots and crew. The total amount at risk in such a case, together with the insurance on the aircraft itself, would be in the neighborhood of \$2,000,000.00. Aviation insurance has been and will continue to be one of the most important factors in the development of aviation.