



Picture by William MacRae Gillies
The plane headed straight for the earth. Fortunately the Secretary was able to reach the pilot's cockpit.

(Reading time: 15 minutes 45 seconds.)

THE TIME: Evening of March 31, 1931.
THE PLACE: Aboard a train, Washington to Detroit.
Two business men in conversation:
"Well, that crash got old Knute Rockne. There's a dirty break for everybody, but what a black eye for flying! How many men can you name whose taking off would have occasioned such a stir in the press? Well, there's Hoover, Coolidge, Henry Ford, Will Rogers. Whom else can you name? Anyhow, tomorrow and for some time to come those big tin planes will go chasing across the continent empty."

Allow me to interrupt at this point to interpose a fact: Next day, over that same route, Transcontinental Air Transport ran double-headers necessitated by heavy traffic.

"When will they ever get this flying down to where it will be reasonably safe? My wife makes me promise, every time I start on a trip, that I won't fly. But my boy, in high school now, gives her the grand razz. He's absolutely bugs about airplanes. He says when he grows up he's going to be an aviator, own his own plane."

This conversation was undoubtedly duplicated in thousands of places, that night of March 31.

It carried me back to an evening many years ago when the word came the Titanic had gone down, carrying with it hundreds of the great names in finance, letters, statesmanship, and trade. What a hubbub! What a furor that caused! All the papers ran out of black-faced type. Just as we had begun to believe that crossing the ocean was prosaic as hitching up the horse and buggy and driving to the county fair, the largest, most palatial liner afloat, went down. It carried with it, to mention just two celebrities, John Jacob Astor and Isidor Straus.

Long after I had berthed for the night, that observation-car conversation between two average Americans

*The Air Chief of Our
Army Reviews the Lessons
Taught by Disasters*

Army observation planes in flight during the Air Corps maneuvers last spring.

kept running through my mind. One line especially persisted: "When will they ever make these airplanes reasonably safe?"

Here are facts and observations on that subject which may interest others troubled by the same inquiry.

There are three great subdivisions of aeronautic activity in the United States: the army, the navy, and civil aviation as controlled by the Aeronautics Branch, Department of Commerce. Formerly there was a fourth, the air mail, controlled by the Post Office Department. But air mail is now carried by civil operators on contract. There are a handful of planes assigned to the Treasury Department, operated largely by the coast guard, but so few are these they do not affect our problem.

It took the federal government several years to recognize that the Wrights' invention had heralded a new industry. It was twenty-three years after the first flight and there were more than three thousand airplanes flying up and down the country before the federal establishment took any heed of this air baby. There had long been government aid and control of rail traffic; lighthouses, inspectors, regulations, and huge sums had been the government's contribution to water commerce; there had been federal aid for motor travel. Yet nothing whatever was done for air commerce until 1926.

In that good year, spurred by the Mitchell controversy and thanks to the Morrow Board, a farseeing act was passed by Congress. It set up the Aeronautics Branch in the Department of Commerce, authorized to supervise interstate air transit. That act also provided the first federal aid. It authorized inspecting and licensing aircraft, testing and licensing pilots, testing landing fields

November 28, 1931

Banishing DANGER from the Airways
The Air Chief of Our
Army

By Major General
JAMES E. FECHET



General Fechet, chief of the Army Air Corps, author of this article.

and lighting airways. It spelled the beginning of the end of the gypsy era; it presaged the finish of dangerous haphazard flying.

It may be well to go back just for a moment and take a glance at what had happened in the army and navy as to airplane crashes. The prewar era was devoted exclusively to both services to experimentation. Neither had any air establishments worthy of the name. No earth-wireless communication cables had been laid. No radio had been recorded. The most charitable thing we can do with the war era in this aspect is to overlook it. In the feverish haste to create great air fleets overnight, starting from nothing, mistakes were made and many lives were lost. I look back over the war period, the remarkable period that we fared as well as we did. We built 12,000 airplanes and 32,000 engines, trained 160,000 flyers, and built thirty-two training schools in eight months. At sunset they threw at us to us to turn out airplanes, and rarer youngsters at dawn before sunrise.

Whad some queer ideas then. Well do I recall the first crash I ever saw. An instructor and a student fell in a spin on the flying field. The fire wagon, ambulance, and stage commander arrived almost simultaneously. Hasty examination showed the instructor unconscious, badly injured. The ambulance left with him. The student, only slightly scratched but badly frightened, was rushed to another plane and hurried into the air. Our theory was that he would lose his nerve if allowed to cool off. The

wrecked plane, clearly unfit for further use, was dragged to one side and burned. All concluded the best thing to do with that crash was to forget it, and bend all effort on the problem at hand: training the greatest number of fliers in the shortest possible time.

After the war, however, we began to realize that perhaps accidents had a lesson for us. Inspectors were appointed to look carefully over all wrecks, examine all remaining parts of aircraft, piece controls together, take testimony of pilots and witnesses—attempt in every way to draw coherent, reasonable conclusions. Slowly year by year certain ideas began to solidify, certain coincidences seemed to recur.

At this time an attempt was made to compare the statistics of the army with those of the navy covering the same period. Great difficulty was experienced because of different methods employed and wholly different terminology used in recording accident data.

Here another government aeronautic agency stepped in and performed a valuable service. The National Advisory Committee for Aeronautics called a conference of representatives of all interested departments. This conference evolved a common system for tabulating and recording accident data. That was in 1926. So now, five years later, we have enough experience to have worked out what the life-insurance companies would call a table of reason-
are they.

There is one amazing thing about these results, and that

[CONTINUED ON NEXT PAGE]

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Color Is the Key to Good Interiors

Liberty

November 28, 1931

[BANISHING DANGER FROM THE AIRWAYS]
Continued from page fourteen

You have heard a lot said and seen much written about the danger to planes from lightning and storm. I know of no positive case where lightning struck a plane in flight. Storm areas are now well charted by the Weather Bureau, and, thanks to the Guggenheim Fund for the Promotion of Aeronautics, much has been done to supply this data to the airman in flight, largely by the use of radio. So we can well expect to see our percentages in the weather column rapidly diminish.

The first problem is to convince all pilots that they are not supernatural, cannot fly blind without instrument aid. A good illustration of this came up recently. An experienced mail pilot was flying by night from New York to Washington, following the lighted airway. After passing Baltimore he flew into a snowstorm; the lights to front and rear on the beacon chain were suddenly blotted out. Still, a flyer of such experience could have turned and backed out of danger, but the wet snow clogged the Pitot tube of his turn-and-bank indicator gyro. That valuable aid deserted him. He found he could not keep the plane on a course without it. He wisely jumped to safety. As a result of this experience, the inventor of the indicator gyro has been called in to devise a method of freeing this instrument from this imperfection.

The second problem is to get all planes properly equipped with lately developed instrument aids. The third is to increase our effort to supply up-to-the-minute and continuous weather information to the pilot as he flies. The last problem is to supply landing fields at reasonable intervals to afford safe harbors. When all this is accomplished, the weather will be reduced to a fairly trivial handicap.

Then there is the class of accidents charged to material or structural failure. In all fairness, I must say that the percentage I have quoted probably includes many accidents listed as structural failures which do not rightly belong there. A great many crashes whose causes are listed as structural failure really occurred through pilot ignorance or carelessness. A greater strain was put on some part of the craft than it was designed to stand. Some planes, largely military, built for acrobatics, must have high factors of safety in all parts. But there is no reason under the sun why a transport plane should be built strong enough to fly upside down. Building to high safety factors adds weight, cuts down performance. The essence of air travel is speed. Hence a compromise. Transport aircraft are strong enough for all normal uses. The answer is, use them normally. This resolves itself into management of operation and pilot selection.

IN the experimental field there will always be some structural failures. I recall hearing one of our experienced test pilots once say, "I can tear the wings off of any airplane ever built." True, perhaps—but don't worry about that, because you'll never be called upon to ride with him when he does it.

I do not believe that imperfections in material constitute now much of a hazard to civil air travel, and such hazard of this nature as there is continually will be reduced.

Next comes a survey of the last and greatest cause of air trouble: pilot error. The army, navy, and Department of Commerce all agree that more than fifty per cent of aircraft crashes are directly traceable to pilot error. Let's break down this class a little further. There are pilot

errors due to lack of judgment, lack of training, lack of experience, and lack of mental stability.

Again consider them in inverse order. Lack of mental stability generally is found in very young pilots. The fledgling who finds himself aloft is all too often filled with a desire to thrill the multitude. It generally takes several crashes and a thousand hours of flying to sell him the idea he isn't the world's best pilot. Then he sobers up and settles down. Unfortunately, some pilots remain play boys all their short lives. There is one good way to handle this fellow: clip his wings; keep him on the ground. All air lines should have experienced pilots for operations managers, to be constantly on the alert for outcroppings of these symptoms among pilots. All suspects should be promptly isolated, kicked out.

And aside from the naturally unstable pilot, there is another fellow more dangerous still. He is the pilot who uses alcoholics to excess, or does not keep himself physically fit. You know how the railroads handle such cases. Well, the air industry must do the same, except more so.

NEXT comes lack of experience. Here is a real problem. How can a flyer get it without flying? The answer is, he can't. It takes hours in the air, the cumulation of a variety of experiences over a long period, to make an experienced pilot. Air lines must handle this problem, when old pilots are not available, by a system of copilots, air understudies, who learn by the hard school of apprenticeship.

The vice president of an air line came to me one day and said he wanted to get recent graduates of the army flying school for pilots on his air line. He was outraged when I told him he was stupid. Our graduates are skilled to a high degree indeed in the simple art of piloting. What they lack is experience. No better copilots could be found in the whole world than these lads, but added to their training must be experience over the airways before they are safe alone to pilot passenger-laden air busses. Air-line superintendents are coming to a realization of this fact. They now keep accurate pilot logs and for the most part have installed apprenticeship systems. The Aeronautics Branch, Department of Commerce, has done a great work for this cause in the system evolved for licensing pilots.

Lack of training is not such a menace as it once was, due to government supervision of flying schools. Before any private owner or public operator employs a pilot he should look carefully into his training. Right here it may be well to add that real pilots are professionals, not air chauffeurs. They belong to a profession. If you are thinking of owning an airplane, don't hire an air chauffeur. Employ a professional pilot.

Lack of judgment! There's the crux of the matter. It's a hard problem because it's a mental one.

In flying aircraft you haven't much time to make decisions, generally. Emergencies arise where the pilot must survey all related facts in a moment, weigh them in a second, and act instantaneously. And he must be right the first time. Second guessers don't live long in this air game.

Bankers select assistants for honesty. In procuring personnel they have become experienced in picking that type of human being who carries the integrity stamp. Business managers select salesmen with pleasing personalities. Executives in all phases of business have become fairly good rough-and-ready psychologists. Air-line superintendents must develop that gift for use in selecting pilots who possess flying judgment. Sight must



Picture by William MacRae Gillies
How blind flying is taught. The student pilot sits in the hooded rear cockpit.

different way.

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plain colors will bind together the color of all the other furnishings. When the walls are covered with a variegated paper of a forceful character, a rug of

dark blue-green or in a dark mahogany brown, and the curtains are best in a creamy buff background with orange flowers or figures

touches of yellow-green. If we have a rather room which we wish light yellow or yellow could be planned with both white and violet, secondary color of yellow which are necessary to quality of yellow. The walls ivory; woodwork, furniture ivory striped in lavender, rug white and black, with one or two ornament yellow. Or the curtain cretonne with background gray with yellow and

Curatins and

NEXT

not be lost of this fact, however: good judgment can be expected only of well-trained, experienced flyers.

You have seen the excitable automobile driver who always, in an emergency, loses his head and does the wrong thing—stalls his car on the road track, etc. Also you have seen the slow-thinking, slow-reacting type who thinks up a good play after the game is over. Well, that kind of a pilot is T.N.T., high explosive to the nth degree. Learn to know the signs, and when he comes looking for a job, don't hire him.

A friend of mine once complained that his pilot cracked up his plane the first day. I said, "How did you come to select him? Where was he trained? How long has he flown? In fact, how do you know he is a pilot?" My friend said, "Of course he's a pilot. He showed me his picture and he had a pair of wings on." Dumb, you say? My friend is a power in finance. He wouldn't select an assistant in his business without searching inquiry, careful scrutiny. He just had to learn a lesson many others must heed.

In the army we are making flying safer year by year. In the course of the Air Corps maneuvers this year, 600 airplanes flew 4,000,000 miles in war games without a single fatality.

Civil aircraft operating over established air lines are showing ever-increasing effects of this same training, discipline, and organization.

So, now that I've thought it over, I can say to the man in the Pullman the next time I see him: "This afternoon flying on regular air lines is reasonably safe. The day after tomorrow it will be entirely so."

THE END

Route Lindberghs



Route Lindberghs Took on 19,000-Mile Flight

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