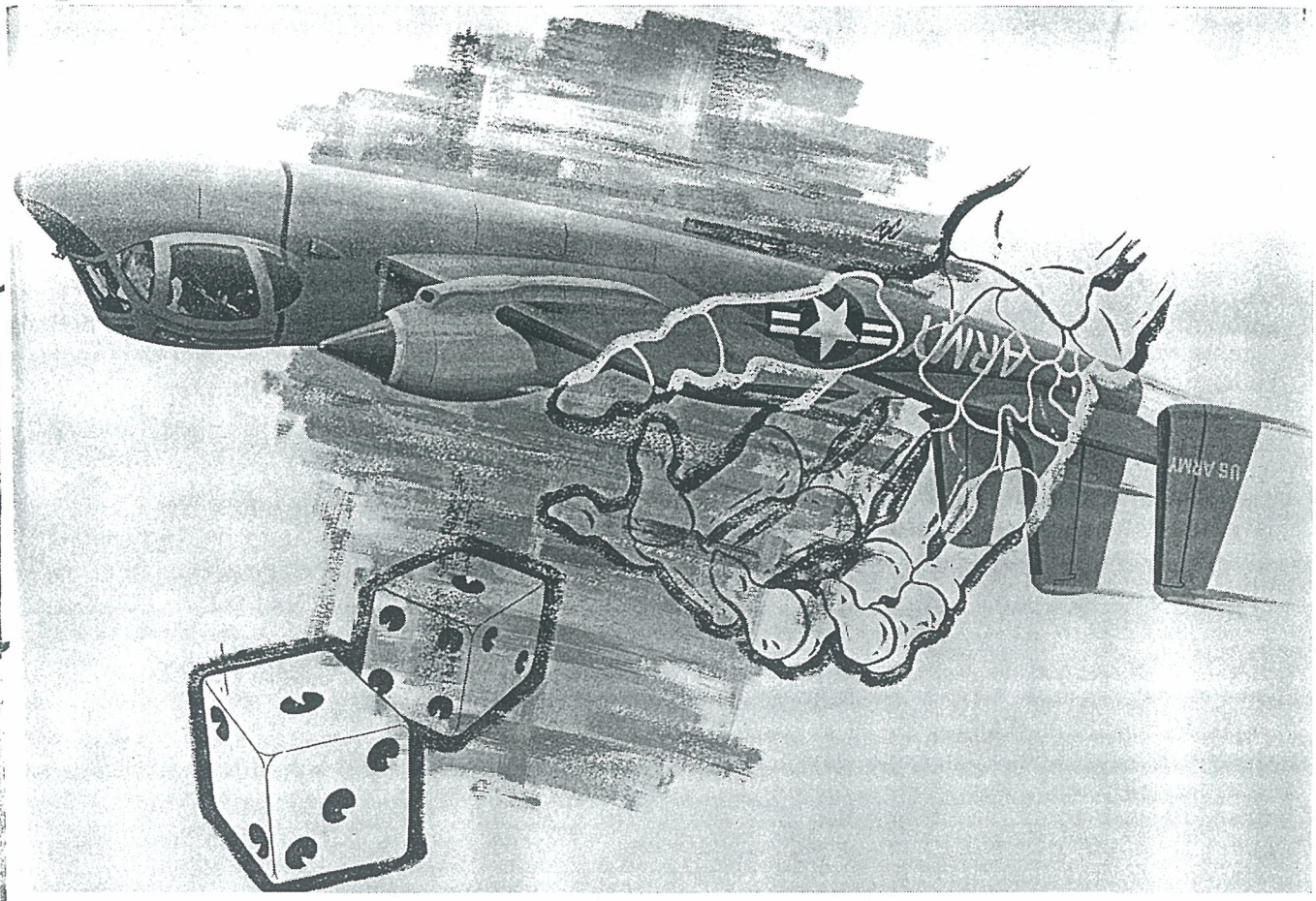


DEADLY ROLL

IT WAS LATE afternoon. A 2,000-foot ceiling cast its shadow over the small county airport. Rain fell from a dark cloud in the distant northwest. Personnel from the military detachment, finished with their work for the day, were gathered around the new aircraft parked in front of the operations building. It was an AO-1 Mohawk, the first of its kind they had seen, and they were waiting to see it fly.

In the operations building, the Mohawk pilot, a qualified instructor pilot who had flown the aircraft in, and another pilot, a local officer who had gone through a factory checkout and needed some time to make him current, were getting ready for their flight. Someone jokingly asked the instructor pilot: "Are you going to demonstrate a roll? You're not going to wring him out, are you?"

The instructor pilot answered, "No."

They walked out to the aircraft, completed their preflight, got aboard and started the engines. The waiting crowd watched the Mohawk taxi out to the runway and swing into position for takeoff. Its two turbo engines whined shrilly as power was applied. The aircraft rolled ahead, gathering momentum rapidly. The nose came up and it was airborne. Its landing gear retracted and it climbed swiftly away from the airport.

At an altitude of 1,500 feet, the pilot leveled off and called the tower for permission to make a low pass over the field.

Prepared by the United States Army Board for Aviation Accident Research.

Permission for the low pass was given and the tower operators watched the Mohawk make a 180° turn back toward the field. It went into a steep dive, leveled off at approximately 150-200 feet and flashed across the airfield at a speed estimated at 250 knots. At the end of the field, it pulled up into an aileron roll to the left. The aircraft completed two rolls, described as beautifully executed, then climbed away.

During the climb, spectators saw the speed brakes extend and remain out. The aircraft leveled off, turned back toward the airfield, and began another dive, again pulling out at 150-200 feet. With speed brakes still extended, the Mohawk made its second pass at an estimated airspeed of 160-180 knots. It began another roll to the left, hesitated briefly in the inverted position, then continued, with the nose dropping and a noticeable yaw to the left. The aircraft lost altitude rapidly and struck the ground while still in a 15° right bank and a 20° - 30° nose-low pitch attitude. It exploded at impact, scattering parts for more than 200 yards. Both pilots were killed instantly.

Buzzing has been variously described as illegal low flying, a willful zooming over and on a particular area, or hedgehopping. Regardless of your choice of definition, it is invariably an egocentric flight of fancy, a deadly attention-getter.

Buzzing accidents are almost always the result of collision with unseen objects (hill, tree, powerline, building, etc.), inadvertent stall and spin, a combination of centrifugal force, high angle of attack and vanishing space, or loss of orientation and coordination during attempted low-level aerobatics.

Why the speed brakes were extended during the last low-level pass and roll of this flight is a question that will never be answered. There was speculation that the proximity of the speed brake switch to the throttle may have resulted in its unintentional activation when power was applied for the climbout from the first pass. This is supported by witnesses who saw the brakes extend at that point. If true, it doesn't help to explain why neither pilot noticed the lower airspeed of the second pass. Airspeed is a vital and determining factor in the success of any aerobatic maneuver. Even had they failed to notice the airspeed indicator, the slower groundspeed of the second pass, apparent to witnesses, should have given them a clue. More important, these answers won't help solve the paramount riddle: **Why do pilots give up good judgment and give in to buzzing?** To understand this requires a study of the

PSYCHOLOGY OF THE SHOWOFF

Inflicting a buzz job on the local countryside, whether seeking adulation, trying to prove prowess as a pilot, or both, is tantamount to flexing muscles, beating the chest and giving out with the mating call of the eagle. The pilot sees himself as king of the sky and mas-

ter of his machine. He is stricken with the desire to display that dominance. Deny you've ever had this feeling and you're fooling nobody but yourself. The fact that you're reading this proves one of two things: either you've been lucky so far, or you were able to resist an

IMPULSE

The league batting champion, walking along a city street, comes to a sand lot where a neighborhood game is in progress. He watches a batter strike out against ineffective pitching and is seized with a sudden impulse to show his prowess. He takes off his coat and tie and asks for a turn at bat. After belting three straight pitches over the fence to the loud voiced admiration of players and bystanders, his ego is satisfied and he continues his walk, impulse forgotten.

Or, closer to home — since few of us are league batting champions — you're out for a pleasure drive. Nowhere in particular to go and no certain time to return. It doesn't matter whether you go 10 miles an hour or 80. Then you get behind a slow moving truck. You follow it for several miles, growing more and more impatient. Each time you pull out to pass, there's a car coming from the other direction. The truck starts up a hill and around a curve. Its speed slows to a crawl. Impulse grips you. You shower down on the gas, whip out into the other lane and pass. Safely around, impulse gone, you begin to wonder what could have made you pull such a fool stunt. You make a silent oath it'll never happen again. But you get behind another truck and. . . .

From these, it's a short step to the pilot flying a new high-performance aircraft before an audience. He is a member of a select group, the first to fly this type aircraft. As a member of this group, he enjoys tremendous prestige.

Soon, other aviators will check out in the aircraft and enlarge the group. As each new aviator joins, the prestige of the group is spread thinner and thinner. The pilot's position as a member of the select group is threatened. He feels a strong need to retain prestige. What better way can he find than to put on a demonstration before this audience?

Somehow, shortfield takeoffs and landings just don't fill the bill. He needs to do something spectacular to show the crowd just how hot he and this new aircraft are—something like a low-level roll. This kind of thinking gives birth to an impulse and. . . .

These examples help to illustrate what happens in the mind of the showoff, but they don't explain why. The answer to this is very complex. According to the psychologists, it requires an understanding of how we react to

FRUSTRATION

Social contacts of groups of people call forth some of the most subtle and delicate adjustments. Every person wants to gain the approval of the group, to have his merit recognized and to feel that he has achieved something. These needs are as important in human life as the simpler physiological demands for food or warmth. When they are frustrated, the individual is out of equilibrium with his social environment, and adjustive activity is called for.

There are many forms of frustration. Two of these are material frustration and social frustration. We need not be concerned with the first of these because people generally make constructive adjustments, either solving their difficulties, or giving up the attempt with no undue show of emotions.

Social frustration, however, is very likely to evoke emotional behavior, and so result in less successful adjustment.

One of the subtle types of social frustration arises when a strong immediate motive is thwarted by an individual's social habits and values. How much frustration will be represented by any given situation depends to a large extent on the strength of the motives of the individual concerned. If a person has always had his difficulties smoothed by others, and if he is always praised, he may develop an exaggerated motive for pre-eminence and mastery. Any minor obstruction to this motivation then calls for excessively intense adjustive behavior.

Even so, most of us are able to resolve this type of frustration by satisfactory adjustments. These are usually unspectacular and go unnoticed in the course of everyday life.

But there are some who cannot adjust in this satisfactory and unheralded way. This kind of person, frustrated in his attempt to secure esteem and prestige in a social group will probably adjust by "showing off."

Boiling this psychological jargon down to its simplest terms, we find that all of us want the approval and praise of whatever group we happen to be a part. This is motivation.

Our past training, accepted rules of society which govern our behavior and regulations or laws may prevent us from satisfying this motivation. Now we're frustrated. The question is, Can we adjust to this without breaking our training, social rules, laws and regulations? Or will we violate all of these by "showing off"?

How about you? □

IT COULD HAPPEN TO YOU

KILLER ON THE LOOSE!

The following incident took place one afternoon during early summer while on an instrument training flight in an L-20.

An instructor and three students were in the aircraft returning from a routine training flight. Scattered thunderstorms were reported in the area, but none as particularly severe or concentrated. Nearing destination, an instrument clearance was obtained for a practice approach and letdown. The clearance instructions were to proceed outbound on the northeast leg of the Low Frequency Range for 10 minutes, maintain 7,000, reverse course and call for further instruction over station.

During the flight inbound the aircraft was in and out of the overcast about 50 percent of the time. It appeared that the weather was thickening and a decision was made to request an immediate letdown upon reaching the station. Approximately 2 minutes from the station the aircraft was in the overcast solid; it was quite dark with only light rain and mild turbulence, all of which seemed to be increasing rapidly as we neared the station.

Upon reaching the station the student started a turn, which was neither required nor expected. At that instant the full effect of the storm hit the aircraft. The aircraft was apparently flipped almost completely over and headed straight down; all gyro instruments were tumbled. The aircraft reached a speed of 195 mph before the instructor could start corrective action to reduce speed and stop the turn.

It was necessary for the instructor to lean far over the student to try and see the turn and bank instrument. During the process of trying to get the turn stopped, the storm carried the L-20, with all power off, to 11,000 feet, immediately dropped it to 4,000, back up to near 7,000, and suddenly tossed the aircraft out of the storm ahead of the roll cloud into clear air, three-quarters of the way inverted at an altitude of only 2,800 feet above the ground.

The instructor was not able at any time to establish a heading and get out of the storm. It is possible that due to having to lean over the student to see the instruments the instructor did get some vertigo, which hindered the recovery; however, the instructor does not remember encountering any vertigo. Severe turbulence, heavy rain and light hail were encountered within the storm, with cross drafts, and apparently suddenly lowering and rising pressures.

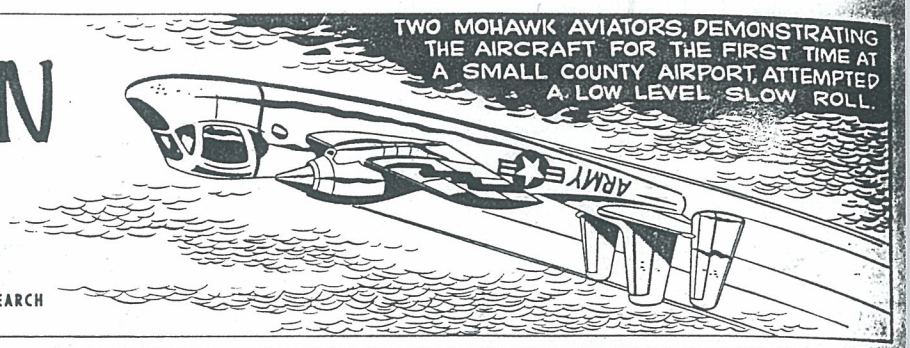
In attempting to reduce speed the IP swept the panel clean, cutting all power, prop and mixture, hoping to increase drag and help slow the excess speed. After getting the speed slowed the instructor was able to hold it around 85 and 90 mph, but was absolutely unable from the right seat to get the turn stopped.* Upon being tossed from the storm the IP immediately righted the aircraft, restarted the engine, cancelled his IFR flight plan and reported the severity of the storm. The IP was able to fly north, find a weak spot, and penetrate the storm VFR. Upon returning to his home station, inspection of the aircraft was made. No damage was found.

This storm had made a major development between two reporting points and had gone unnoticed by the FAA stations. It might be noted that this same storm or system was responsible for the death of a duster pilot that afternoon. □

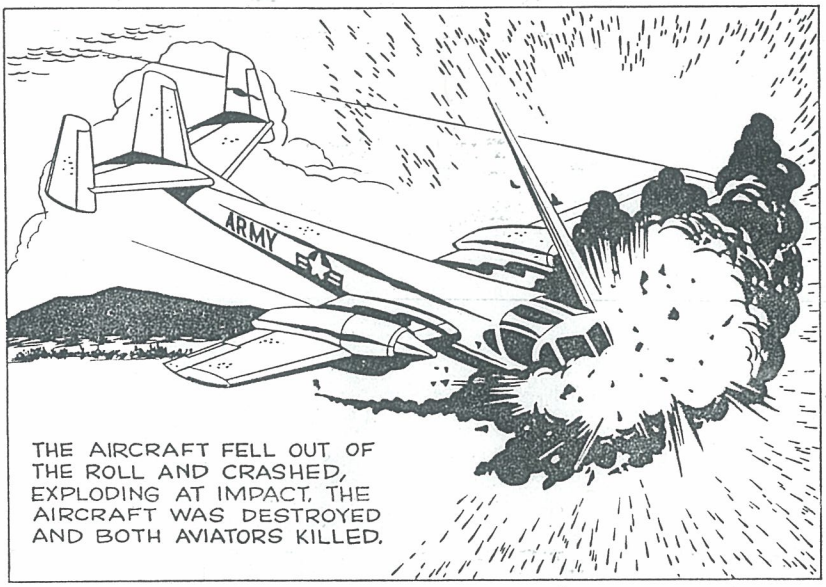
*Cutting mixture and pulling prop to high pitch does not conform to USAAVNS procedures. The -1 on the L-20 recommends 115 mph for T-storm penetration.—Editor

EJECTION SENSE

prepared by
THE U. S. ARMY BOARD FOR AVIATION ACCIDENT RESEARCH

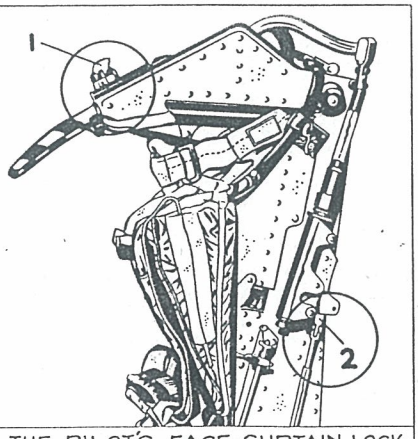


TWO MOHAWK AVIATORS, DEMONSTRATING THE AIRCRAFT FOR THE FIRST TIME AT A SMALL COUNTY AIRPORT, ATTEMPTED A LOW LEVEL SLOW ROLL.



THE AIRCRAFT FELL OUT OF THE ROLL AND CRASHED, EXPLODING AT IMPACT. THE AIRCRAFT WAS DESTROYED AND BOTH AVIATORS KILLED.

INVESTIGATORS, DIGGING THROUGH THE WRECKAGE, DISCOVERED THAT THE AVIATORS NOT ONLY DISPLAYED POOR JUDGEMENT IN THE LOW LEVEL SLOW ROLL, BUT FAILED TO CHECK TWO ITEMS ON THE MARTIN-BAKER SEATS THAT WOULD PROBABLY HAVE PREVENTED SUCCESSFUL EJECTION!



1. THE PILOT'S FACE CURTAIN LOCKING LEVER WAS FOUND JAMMED IN THE "UP" OR SAFETIED POSITION.

2. EVIDENCE WAS FOUND TO INDICATE THE DROGUE GUN TRIPROD SEAR WAS NOT INSTALLED IN THE OBSERVER'S SEAT DROGUE GUN FIRING BODY PRIOR TO COCKING.

THIS CHECK LIST MAKES GOOD EJECTION ***SENSE*** FOR ***YOU***

1. FACE CURTAIN LOCKING MECHANISM - ***LOCKED***
2. TIME MECHANISM TRIP ROD - ***CONNECTED***
3. PARACHUTE ATTACHMENT STRAP - ***HARD PULL***
4. EMERGENCY OXYGEN GAUGE - ***1800 PSI***
5. LEG RESTRAINT CORDS - ***SECURE***
6. SECONDARY FIRING HANDLE - ***LOCKED***
7. LAP BELT - ***HARD PULL***
8. DROGUE GUN TRIP ROD - ***CONNECTED***
9. DROGUE PARACHUTES WITHDRAWAL LINE - ***CONNECTED***
10. PARACHUTE SCREW CONNECTOR - ***CONNECTED***
11. WEDGE PACK - ***1" SIDE PLAY***