

FLIGHT STATISTICS



With Comments by
GRAMPAW PETTIBONE

Confusion Contributes to Fatal Midair Collision:- A six-plane flight of TBF-1 airplanes was practicing formation tactics. At 1500 feet, while flying in a Vee formation of two plane sections, the flight leader ordered by radio, "Assume defense formation". This maneuver had not been discussed in the pre-flight conference and the leaders of both the second and third sections were, accordingly, confused by the order and did not know what to do. After asking for a repeat, the leader of the second section noted that the third section seemed to be dropping back. He thereupon assumed that he was to form column between the first and third sections. While ma-

neuvering his section into this position, his wingman collided with the leader of the third section, resulting in the death of all three occupants of one of the airplanes.

Bureau Comment:- This accident was caused by poor planning and a serious error in judgment. The flight leader was blameworthy in that he failed to include a description of the defensive formation in his pre-flight conference. Had this been done, the confusion which led to the accident would have been avoided. However, the immediate cause of this accident was the fatal error in judgment of the section leader who led his section into such a position as to jeopardize the flight. The section leader's initial request for "Repeat" on the signal was correct, but should have been continued until the order was understood. There is no substitute for good, common sense in coping with unusual and unforeseen circumstances.

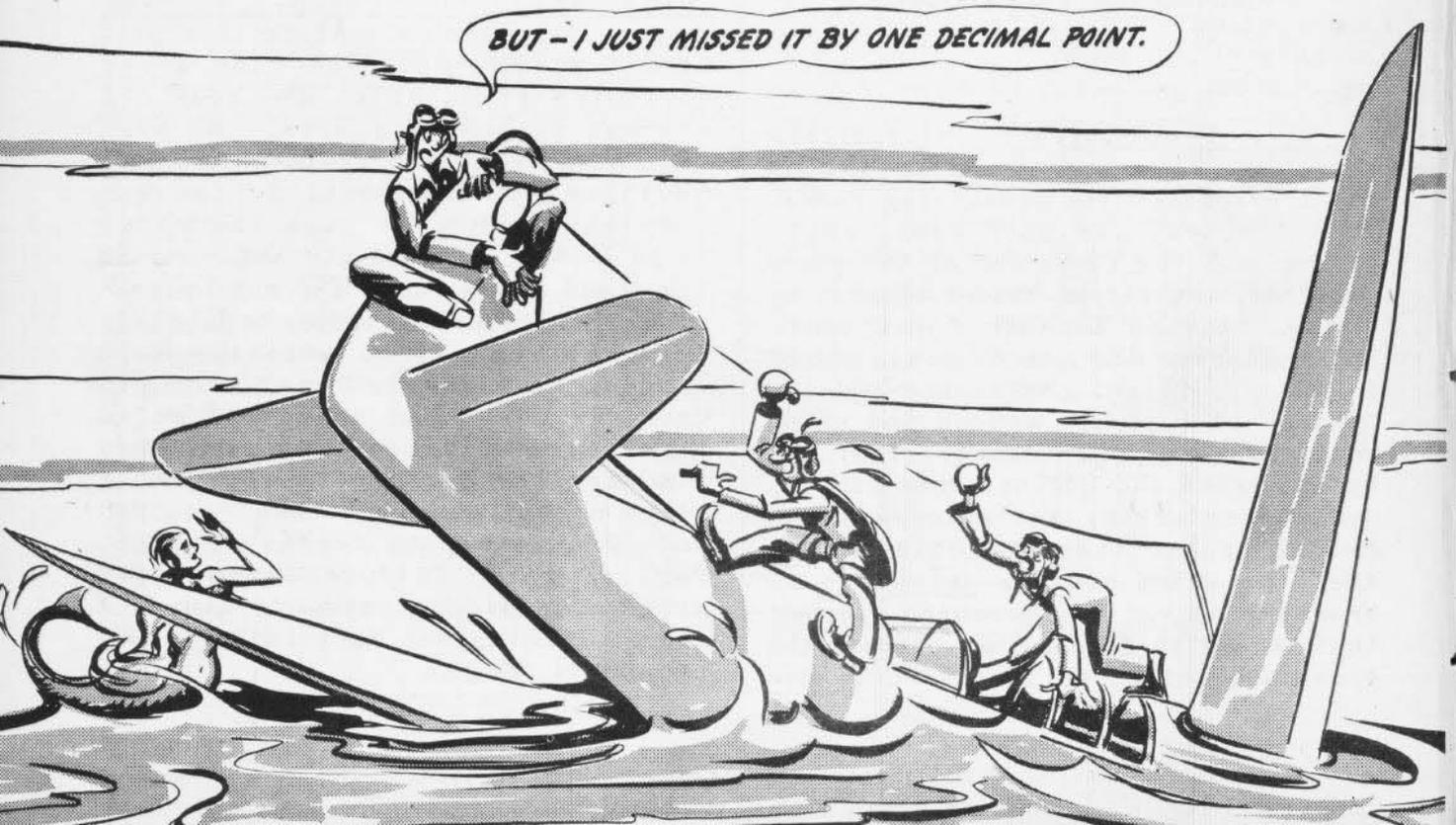
He Left Undone Those Things Which He Ought to Have Done and Did Those Things Which He Ought Not to Have Done.- Although estimating that part of his flight would be made after dark, the pilot of an SNC took off without parachute flares. He also neglected to obtain up-to-date radio navigational information. He was completely unaware that the radio range he was going to use had reversed its A and N quadrants two months previously. After becoming hopelessly lost, he managed to effect a safe landing at a small, local airport. Upon learning that he was 75 miles from his destination, he permitted his airplane to be refueled with a lower octane gasoline than required and then attempted further flight. Partial power failure immediately after a hazardous take-off caused a forced landing and definitely terminated this flight.

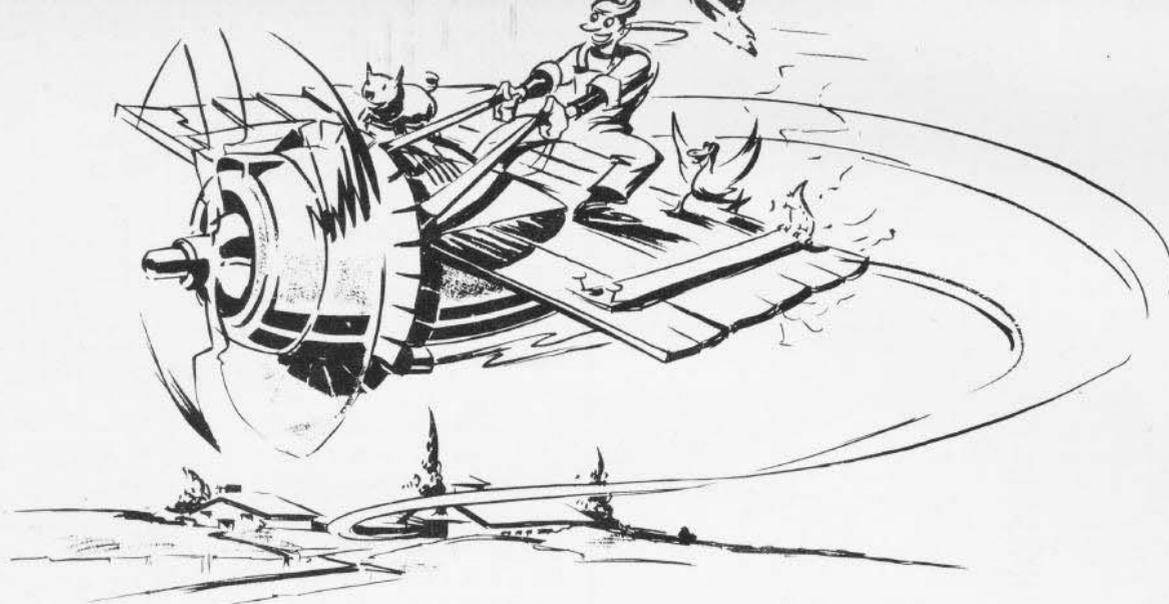
Bureau Comment: The negligence involved here is too obvious to require comment. With reference to the use of low octane gasoline, article 14-502, part (b), page 184, of Bureau of Aeronautics Manual, is hereby quoted for your review.

"Engines should normally be operated on gasoline of the octane number specified by the Bureau of Aeronautics in its operating instructions, as the fuels so specified are those necessary to prevent detonation during rated power operation; There is no objection to operating engines on a fuel of higher octane rating than that for which they are designed, while on the other hand, operating an engine at high output on a fuel of lower octane rating than that for which the engine is designed will cause detonation, which is followed almost invariably by serious damage causing engine failure. It should be borne in mind that any detonation or pre-ignition is injurious to an engine, and that severe detonation will completely destroy an engine in a period of seconds of full throttle operation."

In order to improve performance and range in recent engines, the carburetor is set as lean as possible throughout the operating range, based on the fuel for which the engine was designed; thus the use of fuel of a lower grade is likely to result in detonation and loss of power during any engine operation from cruise to take-off, inclusive. For this reason, fuel of a lower octane rating than specified in latest Bureau of Aeronautics Technical Instructions for each type engine should never be used unless required by wartime exigencies. If, in circumstances similar to the case above, you are unable to obtain the proper grade of gasoline locally, do not compromise with a lower grade; stay on the ground until you procure the correct fuel.

Inadvisable to Lower Flaps While in a Turn at Low Altitude:- The pilot of an F4F-4 was making an approach for a field carrier landing. While in the final turn, at an altitude of approximately 125 feet, he lowered his flaps. The airplane immediately stalled, fell out of control, and crashed.





Something new has been added

Bureau Comment:- An understanding of the aerodynamics involved should readily convince any aviator of the danger of lowering his flaps while in a turn at low altitude. The following explanation of the flight characteristics concerned may help in a fuller appreciation of this danger.

In level flight, the lift vector is directed upward, exactly opposing the weight vector. In a turn, the direction of the lift vector is inclined inward with the angle of bank. Since the vertical component of the lift vector must remain constant and equal to the weight, it is necessary to increase the lift in a turn. This increase in lift may be obtained either from increased speed or by increasing the lift coefficient.

The increase in lift coefficient can be obtained either from increased angle of attack or from lowered flaps. Lowering the flaps, however, also introduces another factor -- drag; either in level flight or in a turn. Drag reduces speed. To compensate for this in level flight is not difficult but may be confusing in a gliding turn. The main cause of confusion at such times is the failure to appreciate the effect of increased drag with flaps down. This, in turn, results in failure to compensate for the increased

drag, either by steepening the glide path, or increasing the power, or both, as necessary to maintain flying speed. It may be impractical to further steepen the glide path at low altitude; in any event, to do so greatly modifies the approach path mentally selected by the pilot.

The best advice is to put your flaps down in the straight-away, or if you must put them down in a turn, know what the reaction will be. Use throttle, keep plenty of airspeed, and **DON'T STALL.**

See, also, Technical Note 42-36, "The Effect of Slots and Flaps in Take-Off and Landing".

Use Full Runway:- Case 1. Due to personal reasons the pilot of an SNC was late in reporting to the line. In order to make up for lost time, he elected to take off from mid-field instead of using the full runway. His haste must have impaired his technique for he had trouble in his take-off and ended up by crashing into obstructions at the end of the field.

Case 2. The pilot of an F4F, on coming in to land, noted that he was high and fast. Instead of going around again and making a proper approach, he tried to land. By side-

slipping over the edge of the field and fish-tailing violently, he was able to touch his wheels down slightly past mid-field, but still at excess speed. His brakes failed to keep him from running off the end of the runway, where he groundlooped and nosed over.

* * * *

Grampaw Pettibone says:- Not worth a tinker's damn, except in helicopters!

Crash Due to Accidental Movement of Master Switch:- At approximately 1000 feet, shortly after take-off in an SNB-1, a passenger moved through the pilot's cockpit in order to get to the bomber's compartment. Just about this time both engines cut out completely. Both pilots made a hasty check of all instruments, but failed to locate the trouble. A good, wheels-up landing was made in a near-by corn field. Upon more complete inspection, it was noted that the master switch was in the "off" position. It was determined that the metal adjusting clip on the passenger's QAC parachute harness had caught on this switch while he was passing through the cockpit. Both pilots had used this master switch and were familiar with it, but failed to

note, during their hasty check, that it had been switched off.

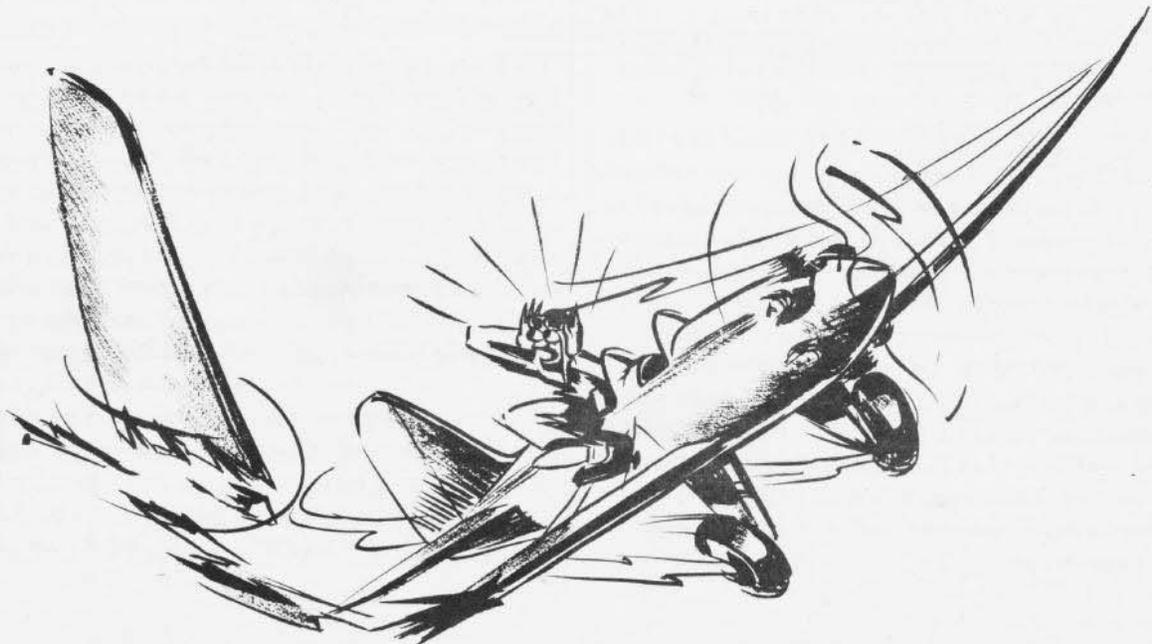
The squadron recommended that a more satisfactory guard be provided for this master switch and forwarded three-view photographs of a proposed guard.

Bureau Comment:- Fleet Air Photographic Squadron One is complimented on the simple and effective guard for the master switch which they designed. A bureau change order is being issued to incorporate this guard in all SNB-1 airplanes. In the meantime, personnel should be warned to be especially watchful not to accidentally trip this switch.

* * * *

Grampaw Pettibone says:- Do a thing right and you get results; do it wrong and you get consequences.

Frost on Wings Contributes to Take-Off Crash:- During a take-off at an outlying field immediately after sunrise, an N2S-1 was barely able to gain sufficient speed to become airborne. The engine was turning up normally but the airplane would not climb. A



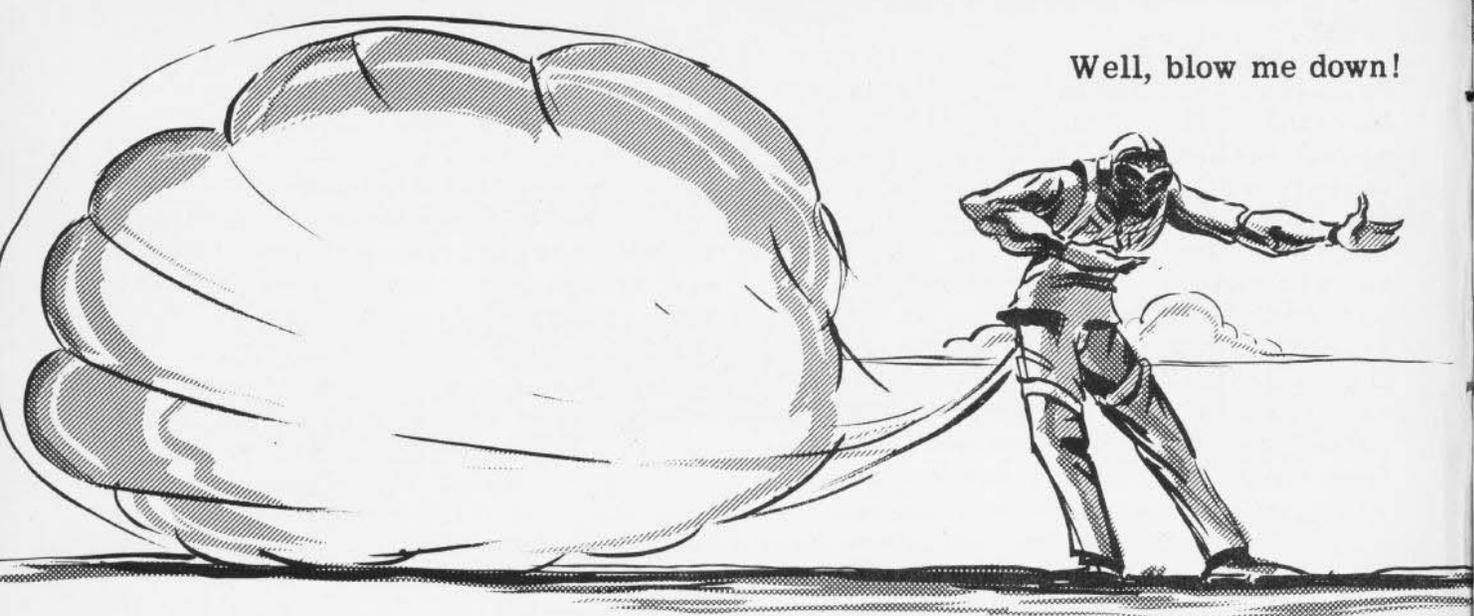


crash landing was then made in an adjoining field resulting in a washout of the trainer. Upon an immediate investigation, frost was found on the upper wing of the crashed plane.

The Trouble Board attributes this crash to the pilot's failure to heed the warning in Article 13-130 of the Bureau of Aeronautics Manual, which is as follows:

"Pilots are warned of the danger in attempted take-off with any kind of frost or ice deposit on the wings. A slight deposit that is barely visible may double the wing drag and greatly reduce available lift. This results in excessive take-off run and a marked reduction in path angle of climb after take-off. It is imperative that any frost or ice deposit be carefully and completely removed before attempting a take-off."

Watch Your Altitude:- The safety pilot of an SNV-1 took over the controls and climbed to approximately 2000 feet for the purpose of acquainting his passenger with the stall characteristics of this airplane. After demonstrating several stalls, the pilot attempted to show the effect of torque when power is suddenly applied at or near stalling speed. He pulled the airplane into a stall and then suddenly shoved on full throttle. The SNV rolled to the left about its longitudinal axis until it was almost inverted, at which time the pilot attempted recovery by dropping the nose and pulling through, as if in a split-S. Insufficient altitude remained to complete the maneuver and the airplane crashed into the ground. It is believed that altitude was gradually lost during the first few stalls and



Well, blow me down!

recoveries; the pilot apparently failing to take this into consideration before entering the final maneuver from which he crashed.

A similar crash recently occurred when an instructor became so absorbed in teaching acrobatics to a student that he neglected to observe his altitude. After stunting continuously for about 20 minutes, during which time altitude was lost with each successive maneuver, he was seen to crash from a falling leaf, entered at low altitude.

* * * *

Grampaw Pettibone says:- Such careless disrespect of basic flight hazards is astounding!

It has been said that a man's best friend is his dog, but any good aviator will tell you that when you're flying, a man's best friend is altitude -- and plenty of it.

Misjudging Wind Direction:- The pilot of an SNJ-4 proceeded to land at an outlying field where the only wind indicator was a small wind sock at one corner of the field. He

glanced at the sock and then landed parallel to it, but (alas, alack!) down wind. Result: Groundloop and noseover.

* * * *

Grampaw Pettibone says:- This fool maneuver has been going on ever since the first wind sock was invented. This indicates that Darwin's evolution business is working out mightly slow, at least as far as navy pilots are concerned. Better rely on the old rule-of-sock: FLY OUT OF THE SOCK, NOT INTO IT.

NOT INTERESTING?

On the contrary, others may find stories about where you are and what you're doing exciting. Send in - we'll judge!