GRAMPAW PETTIBONE

Single Engine Emergency

The right engine suddenly failed when a PBJ was ten miles from the field at 1000 feet altitude. The pilot advanced power on the port engine but having allowed the airspeed to drop below that required for efficient single engine operation, he was unable to maintain altitude. The propeller was not feathered. Slow speed made necessary an exaggerated amount of rudder and rudder trim for the power being used. Hatches were open preparatory to abandoning ship.

All of these errors resulted in excessive drag. The plane just barely made it back to the field where it crashed due to a hurried and poorly executed landing.

Grampaw Pettibone says:

The winning jockey in a horse race is usually the one who knows how to get the most out of his mount. It's the same in aviation; the winning pilot is the one who knows how to get the most out of his plane because he knows *all* its flight characteristics.

Despite the engine failure in this case, there would have been no crash if the pilot had known his business. Merely knowing how to take off and land isn't enough; you've got to know how to handle your airplane under all circumstances.

Single engine operating technique is a *must* for all twin-engine pilots. Squadron CO's should insure that their pilots are proficient in this technique. Flight Safety Bulletin No. 31-44 is a good point of departure.

He's Up! He's Down!

The following pilot's statement is quoted from a recent TBM-3D accident report:

"The accident occurred during night touch and go landing practice. One landing had been made. On the downwind leg of second approach I had too close an interval on the plane ahead and was not going to land. Just before I reached the turn into cross leg the plane ahead decided to go around again. I put my flap lever in the *Down* position, felt them go down and assumed the wheels too had gone down. I did not check the wheel lever which, due to the fact that the interlock had been removed, stayed in the *Up* position. Resulting landing was wheels up with damage to plane as indicated."

▶ *Comment*—**This pilot was assigned 100% responsibility (carelessness) because of failure to check for fully extended gear before landing.**

The landing gear and flap control interconnector has been removed from TBM's in production and Aircraft Service Change No. 210 calls for its early removal in older planes. It is up to the squadrons concerned to see that information of this nature is properly disseminated and to insure, by careful briefing, that it is fully understood.

Expensive Business

An electrician's mate from the attending PATSU at an advanced base was sent out to check a faulty fuel pressure gauge on a PBM-3D. When he had finished his work, the plane crew made preparations for getting underway to conduct a taxi test in the bay.

Sometime during these preparations, the electrician went aft to answer a call of nature, following which he *left the tunnel hatch open.*

Approximately 20 minutes after the airplane had cast loose from the buoy, it filled with water and sank—a total loss.

Grampaw Pettibone says:

We are at WAR, gentlemen! The enemy lie awake nights trying to figure out ways to destroy our aircraft. Just how serious this accident really was may be judged from a statement appearing in the accident report: "No replacement plane is available in this area."

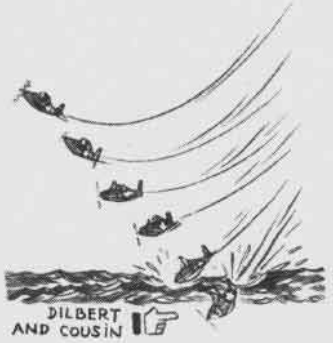
The electrician was far from being alone to blame for this accident. Had the pilot required proper inspection to be made before getting underway, this important hatch would have been found open. Also, as has been pointed out several times before, all men who are allowed to work around airplanes must be given at least basic indoctrination in safety precautions, including special stress on all tabus.

Collision in Tail Chase

During an *authorized* six-plane tail chase in training, No. 4 lost sight of No. 3 and ended up in front of No. 3. No. 3 did not see No. 4 and overtook him from behind and above. Both planes crashed out of control.

▶ *Comment*—**While it is desirable in maneuvers such as this that the leader be kept in view, the primary responsibility of following planes is to keep the plane next ahead in sight *at all times.* Once the plane immediately ahead is lost sight of, it is vital that the following plane pull out of the formation immediately. Failure to do so in this case proved fatal.**

Of equal importance during tail-chase maneuvers is the question of altitude. Although not involved in this accident, there have been numerous instances of following planes being flown into the ground or water. This is particularly true in dives and glides due to the tendency for each following plane to go a little lower than one preceding. Flight leaders should be aware of this tendency and fly accordingly; pilots of following planes *must* watch their altitude.



▶ **It is desired to point out that tail-chase maneuvers are a violation of flight regulations unless *specifically authorized* for training purposes among pilots of adequate experience who have been previously briefed on the maneuvers.**

Cut! LSO gives the signal to pilot of torpedo bomber coming in the groove. The LSO runs the show in landing operations; upon his good judgment depends the speed with which his carrier takes its planes aboard for rearming and refueling. Pilots must learn to obey his signals promptly.

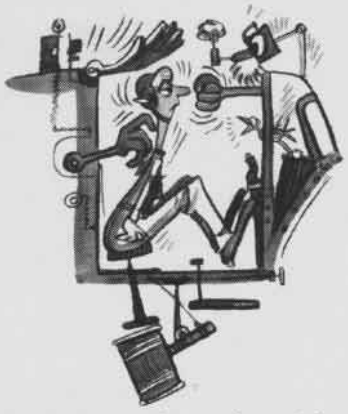
An Automatic Stimulator

A pilot with 550 hours' flying time was making a familiarization flight in a TBM-3. On his take-off roll, retracted the landing gear before becoming airborne. The usual damage resulted.

The squadron commander commented on this accident as follows: "Remedies to prevent accidents of this 100%-pilot-error type are hard to find. In cases such as this, we restrict pilots not in training to flying types of aircraft which have manually operated landing gear, so that the extra chore of turning a crank 30 or 40 times will impress upon them to 'never raise the gear too soon.' Now if we can find some similar way of impressing upon pilots 'don't forget to lower your landing gear,' we may yet disprove the theory: *You can teach them to fly but you can't teach them to think.*"

Grampaw Pettibone says:

With regard to getting pilots to lower their landing gear, experience has shown that bells, buzzers or lights are too



easy to ignore to be good reminders for this. I am working on a gadget, however, which I think will do the trick. It is very simple, consisting of a radio altimeter with two electrical devices attached; the complete installation to be known as the Automatic Stimulator.

As the name indicates, this equipment operates automatically. When the altimeter registers 200 feet above the ground in the landing approach, a relay closes. This energizes an electric circuit which actuates an arm housed in the fuselage. The arm swings out and slaps the pilot awake.

When the altimeter registers 50 feet, another relay closes and another circuit is energized which actuates a tenpenny nail in the pilot's seat pack. The nail jabs upward one inch and prods the pilot into action. It is of interest to note that there will be a cut-out switch installed in the nail circuit. If the wheels are down *and locked*, this switch will prevent the nail circuit from being energized.

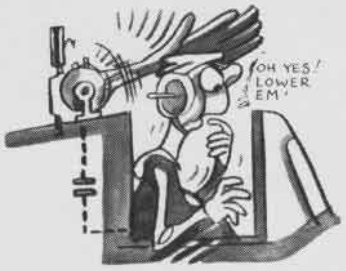
After a very few flights with this equipment, it will be found that it acts as a thought stimulant; pilots using it will be less prone to forget their landing gear. To obtain the best results, however, the equipment should first be used in training on the ground. Installation should be made in a mock-up fuselage to which is also attached a motion picture projector and a radio loud speaker. The pilot should wear his flight gear to help increase the illusion of flight.

At the start of this training, a one-reel movie should be shown of actual wheels-up landings with the attending serious results. The movie should be in technicolor to bring out the red faces of the pilots involved.

Immediately after this movie, the pilot should get into cockpit for his first lesson. The loud speaker furnishes sound effects to make the training more realistic. When the arm swings out and slaps him at 200 feet on his landing approach, the loud speaker blares out, "Don't forget to lower your landing gear". And when the tenpenny nail starts jabbing him at 50 feet, the speaker screams, "You forgot to lower your gear".

This method of training is not new. Psychologists refer to it as the "Stimulus-Response" method. It is based on elaborate tests proving that by "mental association", animals, as well as humans, can be trained to respond in a specific manner to a particular stimulus. In this case the loud speaker reminds the pilot to lower his landing gear each time he is stimulated by being slapped or prodded. After going through this a sufficient number of times, the number depending on the individual, he learns to lower the gear even though the loud speaker is turned off. When he reaches the point where his "motor reflexes" consistently cause him to lower the gear merely upon being slapped, he is said to be properly "conditioned" and is considered ready for actual flight in an airplane in which this equipment is installed.

As you can see, there is a lot of research back of this project. A little thought on the subject suddenly opens up an entirely new vista for aviation, the possibilities of which are limited only by the number of *different* stimulating devices that can be



mounted in an airplane. I can see the day when these devices will be so numerous and complete that the properly "conditioned" pilot can just sit back and let them take charge of him—from take-off to landing. He will receive the proper stimulus whenever it is necessary for him to do anything and his "motor reflexes" will automatically accomplish the correct action without it being necessary for him to think about the matter at all. This will usher in the "Golden Age" of aviation. It will probably be known as the "Era of the Automatic Pilot". Until this Utopia arrives, however, flight safety will continue to be assured in only one way—"by the sweat of thy brow."

GRAMPAW'S SAFETY QUIZ

ALL AVIATORS *should know the answers to these questions. In the air, the penalty for not knowing may prove fatal. If you miss an answer on the ground, penalize yourself by looking up reference.*

1. Are check-off lists required in all Navy airplanes?
2. An expert pilot can fly by "feel" in the overcast; is this true or false?
3. In naval aircraft, whose responsibility is it to see that abandon-ship signal and procedure, and the location and operation of emergency exits are known and understood by all personnel aboard?
4. In an emergency parachute jump what should be your first consideration after leaving cockpit?
5. Is it permissible to join in formation with other aircraft in the air if not specifically ordered to do so?

Answers on Page 40

Three-Way Responsibility

Occasionally an accident occurs which a number of people could have prevented if they had been on their toes. *Here is one example which easily could have ended differently:*

A group of fighter planes came in for a landing during limited visibility just before sunrise. The first aircraft landed short on the starboard side of the runway and slowed down before reaching the prescribed turn-off area. The second pilot, thinking the plane ahead had landed to port, made a normal landing and run-out—also on the starboard side of the runway. About two-thirds through his landing run, he overran the first aircraft. The pilot of the lead plane was killed. The tower had the field under positive radio control, but gave no warning of imminent danger to either pilot.

▸ *Comment*—Obviously, the responsibility for this accident rests mainly with the overtaking pilot, for failing to keep the lead plane in sight and for neglecting to insure a clear landing area.

As the Aircraft Accident Board pointed out, however, the pilot of the lead plane and the tower personnel also were interested parties who might have prevented this accident. The former should have followed standard flight discipline regarding landing and taxi doctrine for group operations; the latter should have been alert to the existing danger, and warned the pilots when the danger became apparent.