

## A New Flight Skill

By  
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IF A FLIGHT begins with a smooth take-off, and progresses right on course and altitude, followed by a gentle descent and a perfect landing (with the wheels down), it's a good flight by a skillful pilot. At least it appears that way. In this modern time, though, with increasing traffic, increasing collision hazard, and an increasing number of mid-air collisions, the smoothest most talented aviator in the world can in truth be a pretty lousy pilot if he doesn't hold up his end of the see and be seen concept.

See and be seen gets pretty short mention in modern flight instruction and in flight testing, but there is a certain amount of technique involved. If it can't be called technique in the truest sense of the word, maybe it could be called awareness—awareness of where mid-air collisions happen most frequently and awareness of some of the common weaknesses in airplane spotting and flight planning.

First a true story to illustrate that seeing airplanes has more to do with motivation and the time spent looking than it does with experience or acquired skill. When we moved

to this metropolitan area 10 years ago, the move was from a place with less air traffic. More traffic would normally suggest more vigilance, and with this in mind it was mentioned to Ann that \$1 would be paid for each airplane she spotted first. Within a few days she had to be convinced that the offer was all in good fun for it only took that long for her to run up a \$125 airplane spotting bill. Most were miles away, and some alleged airplanes turned out to be birds, but the fact remained that she was able to find them out there somewhere.

The lesson is: 1, Don't bet with your wife, and, 2, If a pilot spends enough time looking, he will see a lot of airplanes, and his chances of trying to share a given piece of air with another pilot at the same time will diminish.

### Statistics

Figures back up the notion that development of skill in seeing and avoiding other traffic is something worthwhile. From 1950 to 1965 the average number of mid-air collisions per year was just over 15 with most years fairly close to

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the average. In 1966 there were 28 mid-air collisions, in 1967 there were 27, and in 1968 there were 9 in the first third of the year. Just think, all the hysteria over collisions last year because of the two spectacular airline/general aviation accidents which only involved a total of four airplanes. The other accidents, of which you heard nothing unless one of them happened in your area, involved 50 airplanes! Something which affects 50 general aviation airplanes as seriously as a mid-air collision is worth working on.

### Myth

There is one myth we would like to do away with before going any further. Most people think that when you have a mid-air collision, *boom you have had it*. If it is any comfort, only about half the mid-air collisions have been fatal to the occupants of one or both participating aircraft, and about 25% of the people in the colliding airplanes have been done in. The latter percentage came from interpolation, is approximate, and would only reflect the results of collisions between general aviation airplanes of like size. So, even if we do everything wrong and have a mid-air, there's still hope.

It's better not to have one, and a good way to start working on avoidance is to know where most collisions happen.

Most happen near airports and a

lot of these happen in the final approach area. In almost every collision at least one of the aircraft was climbing or descending. Student pilots are the most collision-prone pilot group, probably because they spend more of their time around airports, and because they direct more of their attention to things inside the airplane. In virtually every collision both pilots could have observed the other aircraft soon enough to avoid the accident had they looked in the proper place at the proper time.

Where don't pilots look?

When flying in the traffic pattern, attention tends to be directed almost entirely toward the runway of intended landing. Probably 60% or 70%, or even more, of the eye time is directed toward the runway—on downwind, base, and final.

It is true that a runway is like a baseball—you have to look at it to hit it—but, things being as they are, it is a good idea to develop a plan for dividing attention between the runway and the airspace around the airport—checking for other aircraft on downwind or about to enter downwind, for other aircraft on wide or close base leg, and for other aircraft on final, including straight-in approaches.

### Helper

Next, a commercial for people who make boom microphones (none of them advertise in *Air Facts*, so there is no conflict of interest).



These are not only cockpit conveniences, they are good collision avoidance devices. Why? Because every pilot observed, including the author, tends to look at a hand held microphone when addressing it. In a crowded pattern at a controlled airport, this can take up a lot of looking time. So can finding the microphone, and replacing it after the transmission. It would be less expensive to learn not to look at the hand-held mike when talking, and to pick it up and put it back without looking at it, but, it would be easier to buy a boom mike.

### Checklist

Checklists need to be memorized, and run while observing the airspace around the airplane. That last minute check-GUMP for gas, undercarriage, mixture, prop—really needs a "T" in it somewhere for traffic. Possibly the word could be expanded to GUMPT. If you can think of something for ION to stand for that could be added to the end to make the pre-landing check spell GUMPTION, something which goes a long way in an airplane.

One important thing which can help in the looking process is to descend to pattern altitude well before reaching the airport. That way you will be spotting aircraft in the pattern on your level rather than trying to see them against the ground, which is the most difficult backdrop for airplane spotting. It's better, if terrain and obstructions

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permit, to be at pattern altitude two or three miles from the airport.

With it in mind that a lot of the collisions happen on final, this is a place to triple the scan. Often, a low wing airplane lets down on top of a high wing airplane. So, up and down are good places to look. Most modern light airplanes fly final at about the same speed so there isn't a lot of overtaking. The accidents often occur because of a difference in rate of descent. Something suggested once before which still seems like a good idea is to fly a slightly offset final approach. If our final is 10 degrees offset to the left, yours is right in the center, and old Joe's is 10 degrees offset to the right, we would all have a pretty good chance of seeing one another before reaching the terminal point of our relative flight paths. There is the possibility that all three of us could have chosen a final offset 10 degrees to the right, but that seems remote enough.

Several of the final approach accidents have happened with one airplane established on final, and the other airplane turning final. It's a hazard to be aware of.

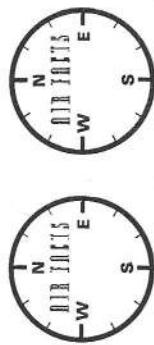
### Enroute

Enroute, it is possible to plan flights to avoid areas of high traffic concentration. True, under present rules you can fly through a busy terminal area so long as you stay over 2,000 feet above the surface within five miles of the controlled

airport, and so long as you maintain VFR. Why bother to exercise that right, though, when it is really easier to give the busy places a big berth unless headed for them. It is also good to fly at lower altitudes when within, say, 30 or 40 miles of a congested terminal area. By lower we mean 3,000 feet above the surface, or less.

When VFR cross-country at lower altitudes it is good to be aware of any airport along the route, as even a small-time airport means traffic, climbing and descending traffic.

Airways should be avoided. Omni navigation can be very effective VFR without flying along airways. Even between two omni stations where there is an airway, it's possible to set the outbound heading five degrees off the airway, and then the inbound to the next station will be five degrees off when you switch over half way between the stations. It's best to avoid flying right over the omni station, too, as that is a great congregation point. A fellow we were flying with yesterday had had his first near miss the day before—right over the Pottstown VOR. When omni navigating just wander off course a mile or so before reaching the station, and watch out for the other guys who are navigating precisely. Also enroute, forget about detailed flight logs and computers. The average time-over, ETE to the next station, and ETA calculation takes almost a minute of the pilot's undivided attention.



### Altitudes

On altitudes, if below 3,000 above the surface why not try *Air Fact's* Automatic Altitude and Heading Separation system? It's simple. Just paste one of the accompanying stickers in the center of your altimeter with rubber cement, and then match the 100 ft. pointer with the heading flown when less than 3,000 ft. above the surface. If you don't want to try the sticker, just imagine a compass rose over your altimeter, and, for instance, when flying west fly at 750, 1,750, or 2,750, or more over high terrain. Northwest would be 875, 1,875, or 2,875. Southeast, 1,375 or 2,375. It's easy to imagine the altitude for a given heading with a bit of practice.

Above 3,000 feet above the surface the rule says VFR traffic should fly odd or even plus 500, according to the direction of flight. That's good, and it keeps level VFR traffic away from level IFR traffic, but it also congregates all the level VFR traffic at a very few altitudes—usually the first odd or even 500 above where the bumps stop. It doesn't seem like it would hurt anything to be a bit on the random side and fly odd or even plus 600, or



plus 400, just to spread things out. An airplane is only six or eight feet tall, and a little vertical separation can mean a lot.

In busy areas, stay away from 10,000 feet. There's a law now that jets fly at 250 knots IAS, or less, below 10,000. So, when they climb they might tend to pause vertically for acceleration at 10,000, and when descending they might spend extra time around 10,000 in the slowing down process.

As far as looking goes, sit in your airplane on the ground some time and develop a looking system, which will take maximum advantage of the airplane's visibility. Remember that for looking to be most effective, the eye must pause and digest everything it sees. So, if you pick a dozen spots to look and develop a scan, much like the instrument scan when you are flying instruments, then all areas should get good coverage. Don't just look ahead and 90 degrees to each side. Look back, up, down, around, and forward.

There is some hardware to help. All airplanes do have blind spots, where we have to rely a bit on the other fellow to see us. On a high wing someone might let down on top, in a low wing someone might climb up from underneath. One or two of those strobe lights can be used to brighten things up and help attract the other fellow's attention if he's coming from our blind spot. The strobes are effective day

or night and should be high on the "next accessory" list.

A transponder is another great aid, VFR (we all know how valuable it is IFR). Any time you are flying, the transponder should be on and set to 0600 if you are VFR, even if you aren't talking to anybody. Radar will always give any transponder return they see as traffic to IFR aircraft they are handling. With it on 0600 it's almost certain that you will be given as traffic to IFR aircraft, and they will be looking for you if in VFR conditions.

Don't rely too much on help from the ground in VFR traffic avoidance, though—whether flying VFR or flying IFR in VFR conditions. If you are IFR, or getting VFR traffic advisories, there might be traffic the radarman doesn't see because it is not transponder equipped, or, because he is busy doing something else and doesn't have time to study the dim blips and give them as traffic. VFR traffic advisories are really nothing more than a pain to the guy on the ground. If you are going VFR, just turn your transponder to 0600, don't talk to anybody, and keep alert and watch for other traffic.

The sky really isn't crowded. Rather it is practically deserted, at least that 38' X 30' X 6' piece of it we want to use 2% of the time is practically deserted. With a little attention to the see and be seen concept as a recognized flight skill it can remain that way. ♦ ♦

## AIR FACTS

# Speed Record Activity

As you can see by the following, a lot of pilots have been working on Air Facts Speed Records. We'll print all recorded through May 10th, separated by horsepower categories. There are still a lot of records which have never been set, so have a try at one of those. Or, have a try at breaking one which has already been set. We'll give a rundown on some of the people and flights and will reprint the rules at the end for your convenience.

## 0-165 HORSEPOWER CATEGORY

Here we have the first breaking of another pilot's record. In April C. R. HULLIHEN set a Memphis to St. Louis record, and vice versa, and in May DR. WILLIAM J. BEAN undid both of Mr. HULLIHEN's records. One was beaten by only one minute! Dr. BEAN was not aware of the existing records as they had not been published before. They are included in the list this month because they did stand as records for a while. Maybe Mr. HULLIHEN will polish his 172 and have a try at getting his records back.

VIRGIL MORGAN bought his 150 horsepower Mooney Mark 20 in 1957. It is used as a business airplane, and he plans to trade for a twin later this year, but wants to really give the 0-165 horsepower category a whirl with it first.

MR. HUGELMAN'S two Tri-Pacer flights between Minneapolis

MR. STINSON is a Divisional Manager for Investors Diversified Services, Inc.

MR. CLARK is president of the Home Security Life Insurance Company in Durham.

MR. OTTERBEIN is a 20 year veteran of the Navy.

Date	Pilot & Hometown	Cities & Type Aircraft	Time & Speed
3/17/68	Dr. William J. Bean New Orleans, La.	New Orleans to Memphis Cessna 172	2:57 119.4 mph
4/6/68	Virgil Morgan Everett, Wash.	Portland, Ore. to Seattle Mooney M-20 (150 hp)	:57 135.6 mph