

TEE EMM



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*Pilot Officer Prune says—
"Take Tee Emm regularly!
Prevents that Thinking
feeling!"*

R.A.F. PHOTOGRAPHIC EXHIBITION.

An Exhibition of Photographs taken by R.A.F. Official Photographers will be opened at the Camera Club, 11 Grosvenor Street, London, on February 4. The Exhibition will be open to the public throughout the month from 11.00 hours to 18.00 hours every day (excluding Saturday afternoons) and from 14.00 hours to 18.00 hours on Sundays.



"I hope that these Training Memoranda will continue to be as widely read and studied as they have been during the past two years. It is impossible to exaggerate the importance of constant training in ensuring the highest operational efficiency."

Air Chief Marshal, Chief of the Air Staff

AND STILL IT GOES ON!

AS A RESULT OF CALCULATED DISOBEDIENCE OF ORDERS, THIS CAPTAIN OF AIRCRAFT KILLED HIMSELF, SIX OTHER AIRCREW MEMBERS OF THE ROYAL AIR FORCE AND TOTALLY DESTROYED AN AIRCRAFT."

This comment was made by a Commanding Officer on the proceedings of a Court of Inquiry. The Court of Inquiry was trying to discover the exact reason why an aircraft detailed to carry out a local flight test lasting 45 to 60 minutes should have been 84 miles away an hour later. And why it appeared to be doing a general shoot-up of an inoffensive village.

Witnesses saw it doing this shoot-up. They also saw it, during the proceedings, heading for some trees about 30 feet high. They saw, too, at the last minute, the pilot attempting to climb. The nose and fuselage cleared the trees but the starboard tail plane and elevator hit them and broke completely away in the air.

And the Court of Inquiry could find *no* reason for all this. Except the usual one in these cases—calculated disobedience of orders.

THE GEN THAT MATTERS



FLIGHT-LIEUTENANT HYEBROW drew a deep breath and faced a little group of air bombers. Then he let it (the breath, not the group) out. It came out like this:

"Now the difference between a No. 412, Mark III**, modified, and a No. 412, Mark IV (a) is that, whereas the replacement of the phosphor-bronze shear wire (No. 26 S.W.G.) by an aluminium shear wire (also No. 26 S.W.G.) in the Mark III**, modified, is to be carried out by squadron armament personnel under the supervision of a Specialist Armament Officer, Senior Armament Instructor, or N.C.O. armourer or fitter-armourer, in the case of the Mark IV (a), the modification is already incorporated by the manufacturer, provided only that the issue of the store took place before 4th April, 1927 . . ."

One by one the air bombers dropped off to sleep—all except Sgt. Straddle, who was asleep before he started. . . .

Well, the stuff Flight-Lieutenant Hyebrown was handing out was probably perfectly O.K. In fact, it must have been, because he'd got it straight from the book. *But*, while it was no doubt of some use to somebody, it certainly meant little to an air bomber, even supposing he could remember it.

"Bombs and Comps" has always been a troublesome subject; and how much of it should be taught to aircrews has always been a bone of contention. Armourers who have grown up with the bits and pieces—and experts like F/Lt. Hyebrown who know everything—too often delight in displaying their "amazing ability" for remembering the smallest details. (Does a little swank come into this? We think so.)

Now some aspects of the subject are of great interest to the air bomber; such as the effect of a delay, why a bomb is "safe" on an aircraft, the T.V. of bombs, heights of release, and so on. He wants to know—and ought to know—

all about such things. Well, so he can. All these points, and many others just as intriguing, are dealt with in the new *Bombs and Comps Notes* for aircrews. It might well have been called, "Bombs and Comps Without Tears," for that's what it is, the chief tears conspicuous by their absence being "Numbers," "Mark XXXII's," "stars" and such-like confusing small change that clutters up the more valuable coins—and, shall we say, notes.

The Notes are in two parts. The first part is for instructors, and is in the form of six simple lectures, all cut and dried ready for delivery. The second part, which is for pupils (bless 'em all, bless 'em all!), has all the gen in tabloid form.

If, when you get these Notes at your school, you let them go the way of all bumph, you will not be doing your job as an instructor, and your instruction will be the poorer. Take the Notes and read them right through to get the spirit of the thing. Then deliver each lecture in your own individual way—no matter how individual—but give them in accordance with the best principles of teaching. (See TEE EMM leading articles for February, March and April, 1943, on "The Art of Instructing", and also "Don't be a Parrot" in October, 1943.)

So save yourselves and your pupils from those attacks of mental indigestion. Go for "The Gen That Matters."



BALING OUT ON OPS.

THE following article comes from the captain of a Lancaster who had the misfortune to get shot up by a night fighter while paying a formal visit to Dusseldorf. Having been shot up, they shot the E/A down; but later caught fire and had to abandon. All baled out safely and the writer was back in England within three months, not caring to stay in Germany because he doesn't really like Germans.)

Baling out on operations really starts months before you do it, for every operational crew should practise parachute drill good and hard and often, while safely parked in their own aircraft at dispersal. (P.O. Prune by the way is still in hospital from having done a practice bale out at dispersal and forgetting he wasn't airborne.)

The first important point is that every man should know exactly where his parachute is stowed; then all he has to do when it's wanted in a hurry is to stretch out his hand. Memorise, too, exactly where all those little nooks and crannies are, so that, should the time come, you won't trip over any obstacles. In a modern bomber these occur in the most unexpected places, gremlins frequently introducing new ones at the last moment.



Parachute harness must fit correctly; on no account must it be loose.

Irving jacket, and the Mae West on top, your harness will probably be too tight. As that may mean disaster, have it properly fitted by the parachute section. And don't forget to examine the release pins of your parachute pack.

After the crew has got used to this practice in daytime, try it at night, when for once there will be no searchlights, flak, or fighters to worry you. If one particular member of the crew—say a gunner—has difficulty in extricating himself from his turret, let him have several practices of his own, clipping on his chute and moving up to his escape exit. Time him doing this and keep him at it until he is proficient; it may bind him badly at the time, but it may save his life later. (Incidentally, frequent parachute practices ensure that escape exits work correctly.)

As it takes a few seconds for a man to clip on his chute, it is essential that warning be given to all the crew to put on parachutes before the executive order "JUMP, JUMP" is given, such as "Captain calling, captain calling, put on parachutes."

The best way to get this sort of thing taped is to have each man of the crew in his allotted station in daylight, complete with full flying clothing and with parachute packs correctly stowed. The captain, after explaining what the form is, next takes up his own position with all flying controls unlocked. The intercom should be switched on.

The captain then calls up "Practice, repeat practice, jump, jump!" So that he may know that every man has had his order, it *must* be acknowledged verbally by each member of the crew. The best way to do this is for the crew to answer in turn, starting from the nose of the aircraft and finishing with the rear gunner, as follows:—"Air Bomber answering, Flight Engineer answering" and so on, until Tail-End Charlie has said his piece. After acknowledging, each man should grab his chute, and clip it on, first removing his helmet and oxygen apparatus. The intercom plug has a nasty habit of getting caught in all sorts of things as soon as you move to take up your jumping position, so always remove this.

Parachute harness *must* fit correctly. This is terribly important. It's one thing to have your harness fitting comfortably on non-operational flights, but on operations when you have stuffed your escape aids and other things inside your

This should then be followed by the executive order, which should be answered verbally as mentioned above. When a man answers—e.g., “Mid-upper gunner answering”—it should then mean that that man has received the order to abandon, that he has got his chute on, and that he is ready to move to his allotted escape exit.

So far as the air bomber is concerned, or whoever is at the front guns, he should immediately, after acknowledging the executive order, pull off his helmet, clip on his chute, pull up and jettison the escape hatch and fall out as if he was doing an ordinary forward roll in the station gymnasium, going out with his hand on the rip cord. Going out this way during the real thing, the slipstream will catch him on the back while he is doubled up and can best stand the impact. If a fellow goes feet first out of a fast aircraft he *might* hit his head or face on the edge of the escape exit—and after all it doesn't matter how good a parachute a man is wearing if he is unconscious and can't open it. The little caterpillar will have done his patient work in vain.

The air bomber should be followed by the rest of the crew in the order applicable to their type of aircraft.

Now for cockpit lights. If you have to get out, the chances are that you are on fire and a few more lights inside the aircraft won't do any harm. So turn on sufficient lights inside to make moving about easy for the crew. If (as it was in the writer's personal experience) the lighting system is u/s, it's a good thing for someone whose turn to bale out comes later on to shine a torch on the escape hatch.

Next—rip cords. Don't pull your rip cord as soon as you are clear. You and your yet-unopened-chute are probably travelling forward with more or less the same airspeed as your kite, and this means a correspondingly increased jerk when the chute opens. Therefore, as long as you are sure of your altitude—the navigator should if possible have given this and an approximate position to all the crew before the jump—delay opening your chute for a few seconds to allow yourself to slow down



It doesn't matter how good a parachute Sgt. Winde has, if he's unconscious and can't open it.

somewhat. Recently on the radio a parachute expert said that the speed of an airman baling out before the chute opens slows down after a few seconds to an even 118 m.p.h. which is a good deal slower than the speed of your kite. So delay a little, count up to five or so, and then pull your cord.

Finally a few words to captains and pilots of aircraft. Every captain knows it is his job to get his crew out first, but in the meantime he'll have his work cut out keeping steady and level at not too fast an airspeed. He may easily have an engine u/s in which case his aircraft will be aerodynamically unbalanced. While flying he probably won't notice this as he can always use his trimming tabs anyway. However, when his turn comes to follow the rest, he'll find that the aircraft won't fly straight and level on its own. In this case use George if you have it spinning; if not, try throttling back a good engine on the other side and see if you can't thus even up the drag. Then try and trim your aircraft into a gentle glide, so that you can leave your stick without the aircraft doing a neat diving turn of its own while you are trying to get out. There's no future in that.

For aircraft with the throttle and pitch controls in the centre of the cockpit, lower your seat and put all pitch controls to fairly coarse. That will greatly help the exit for your feet.

It's quite a different thing trying to get out of a spinning half of a machine from trying to get out of one under control; so if there is an engine on fire and you decide you'll have to get out, get out quick.

And always remember it's better to have two feet on the ground in a strange country than to lose your life altogether. After all, those two feet can take you a long way! Even back home!



Sergeant Backtune very nearly gets two feet on the ground in a strange country.

TEE EMM'S CROSSWORD PUZZLE

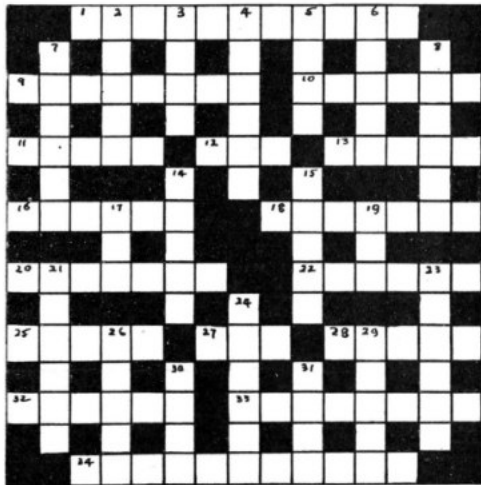
WE'VE been going for nearly three years, but we've never had a crossword puzzle in TEE EMM yet. Something wrong somewhere (as Prune said when he narrowly missed a large mountain sticking up out of the middle of the Irish Sea).

Still, it's easily rectified (as Prune said removing the lucky horseshoe he hangs on his compass and changing to the right map sheet) and so here is our first crossword puzzle. It is devised for us by the Aircraft Safety narks, so the answers, we understand, have a certain bias towards the various schemes and devices which the authors are continually seeking to popularise.

Here it is. Solution next month.

DOWN

2. Tender (5).
3. Many telephones are this (4).
4. The Air Ministry gets lots of these for these (6).
5. A frequent predicament of Prune (4).
6. Ridden by a Radio Cowboy? (5).
7. SILENT (anag.) (6).
8. This isn't as pleasant as it may sound (6).
14. You might live in one if you were posted to Greenland (5).
15. Stumbles (5).
17. See 12 across.
19. See 27 across.
21. They can be good or bad (6).
23. SUNLIT (anag.) (6).
24. His twentieth century descendant acts in much the same way (6).
26. Better have this if there is to be a low-flying prosecution (5).
29. Mabel seems to walk slowly (4).
30. Flying tail heavy? (4).
31. — — (4).



ACROSS

- 9 and 1. Black and white and met all over (two words, 8, 11).
10. The Control Officer said "Let there be light" and this is what happened (6).
11. A simple addition to make you fly high (5).
- 12 and 17. TRAITS (anag.) (6).
13. The verse is confused and so cut (5).
- 16 and 20. Devised for your especial safety (two words, 6, 7).

18. Hard certainly, but not if you've a flare for it (7).
20. See 16.
22. A joke, it is said in France. Any light? (7).
25. You should not read your A.P. 3024 in this for a proper study of this kind of 20 (5).
- 27 and 19. As worn by the best Fighters (6).
28. Ever so nice (5).
32. Rounds—or parts (6).
33. Found in 34—with knobs on (8).
34. Look before you land—at this (two words, 7, 4).

ONE OF OUR WELLINGTONS WAS BURNT



Frank swears he was 'nt there.

You can have aircraft fires on the ground as well as in the air. The difference is that the latter are likely to be more dangerous to the crew. You can, however, learn from both.

Here's a story (from the Court of Inquiry findings) of a Wellington burnt on the ground at an O.T.U., during which a certain amount of finger-trouble seems to have been experienced by all. We'll tell the tale without comment. See what you can learn from it. There's something in it for all, from aircrews to Station Commanders.

A crew of eight had boarded a Wellington for a practice cross-country, but the engines had not yet been started. The pupil W/Op. noticed the Verey pistol was not in its stowage and asked the pupil navigator to find it.

The pupil navigator discovered the pistol in the instrument box. It was not in its proper stowage because the pistol was a No. 4 and the stowage was for a No. 3. (Some weeks before, a return of aircraft which had pistols that did not fit their stowage had been made to the Maintenance Armoury, but at that date no replacement pistols had been received.)

The pupil navigator took the pistol out and instead of giving it to the pupil W/Op. who had asked for it, he tried to load it himself, though he had no knowledge of how to do so. The Bombing Leader later stated that all pupils, including navigators,

were supposed to be shown how to load and fire the pistol at a Pyrotechnic course. This navigator, however, had apparently received no instruction in loading pistols in Wellington aircraft.

Not being able to "break" the pistol the pupil navigator asked the screened air gunner to do it for him, which the latter did. The pupil navigator then loaded it himself and gave it back to the screened air gunner, not saying it was now loaded, but merely asking how the safety catch worked.

The air gunner, knowing that it was empty a few seconds before, did not dream that it had been now loaded and, during his demonstration, pulled the trigger. The pistol naturally went off and at once started a fire.

Someone (apparently either air gunner or navigator) immediately shouted "Fire! Get out!" and the whole crew scrambled. No one attempted to use the extinguisher, though either of the above men might easily have brought it into action.

The captain did not take charge and attempt to stop the panic, nor did he order the extinguisher to be used. After getting his crew quickly and safely out he did not re-enter with another extinguisher, before the flames became too intense.

The fire was tackled by ground crew with extinguishers from nearby huts. The crew helped by going in search of more extinguishers. Two extinguishers, however, from the nearest hut and one from the dispersal hut were found to be empty.

A passing corporal ran to the Armoury and in the excitement of the moment did

not properly warn the telephone operator of the fire and its location, but asked for the fire-tender, which was not necessarily an urgent demand. The call was thus put through to the Guard Room, instead of the proper fire action being taken and all the sections concerned warned in order. Further, the fire-tender, as it happened, was not then at the Guard Room but over at the crash tender base by the Flying Control Watch Office. The result of all this was that it did not arrive at the scene till nearly ten minutes

afterwards, by which time the fire had such a hold that the aircraft could not be saved.

Delay would have occurred anyhow, for it was later discovered that in the standing list of sections to be warned by the telephone operator, Flying Control was *not* for some reason included, so that even if the correct procedure had been carried out, Flying Control, where both fire tender and crash tender were at the time, would still not have been warned. And that's that.

CALLING ALL "T. STRETTON'S"

If anyone named "T. Stretton" is reading this, perhaps he'll communicate with the Air Ministry, T.F.2 Branch, who are responsible for Pilot's Notes—and hear something pretty much to his disadvantage. And P.O. Prune, too, will be delighted to award him an O.I.F. with as many Joints as will go.

For this T. Stretton apparently wants three copies of Pilot's Notes. And to get them he used the Form 294A, which is the application form for official publications. So far so good.

He, or his clerk, then filled in the Air Publication number and the number of copies required and added in the column "Reason for Demanding" the words "For use at the above School."



"Speak up if you're there," says P.O. Prune.

At this point the strain began to tell on the T. Stretton brain, for that's as far as he has got. Well, actually he *has* signed it "T. Stretton," but there is *no* date, *no* rank except the initials "C. I." (Chief Instructor?), *no* name of the School, *no* postal address—in fact, there is dammall else on the form at all. Yet he has sent it up, just like that, in duplicate too, to the Air Publications and Form Store, and hopes to get his three copies. T. Stretton is a believer in miracles!

Six Air Ministry Branches have tried to trace (among R.A.F. officers, R.A.F. instructors, civilian instructors, and Dominion officers and instructors) a T. Stretton—but without luck.

So T. Stretton goes down to history as the man who is still wondering why he hasn't got three copies of Pilot's Notes—and probably he'll write again one day soon to complain indignantly that he hasn't had them and what do those Air Ministry stooges think they're doing besides sitting on their fannies. And we might add that according to A. P. F. S., who are at the receiving end of these Forms 294A, there are others who do the same. They all seem to us good examples of those people who "just can't be bothered with forms and so on—let's get on with the war!"

YOU BEND 'EM—WE MEND 'EM

Extract from a letter from a fitter L.A.C. in India.

SUNDAY morning I am going away to do a job maybe two days, maybe two weeks, the time these jobs take depends on whether the aircraft is a complete "write off" or repairable on the site and can be flown away. If it can't be flown away from the site then the damn thing will have to be dismantled and assembled again when we get it back to the field. Our pilots seem to make a point of bringing their ships down miles from any place, and in difficult bush country. I bet ten to one this is no exception; that means a long job. Pilots take our motto, "You bend 'em and we mend 'em," too much to heart; they sure are doing an awful lot of bending. Twelve months ago we brought in a much bent aircraft and dumped it in a corner of the hangar. There she reposed, a very sorry sight. Her face right in, her belly all ripped and torn, broken stumps of beams, where two powerful engines once roared sweetly, stuck out of battered bulkheads, her port mainplane broken and twisted almost to the centre section, her legs retracted and hidden by a shapeless mass of metal that was once a graceful streamline engine. We believed that this pitiful wreck would never again strain at her chocks with engines roaring. . . . But we were wrong; after careful examination it was found the poor old girl still had a spark of life in her. We started operating on her immediately, removing dead metal, patching and straightening the slightly wounded and bruised parts of her body. Slowly through long months she began to look beautiful again. During this time other doctors of aircraft, strolling around this hangar with their hands in their pockets, pretending a faint but definitely sarcastic interest in the patient and those that tended her, nicknamed our patient the "Mayfly." However, these last two weeks I and another fellow (he's quite good too) have built up two engines and installed them in the "Mayfly." Now once again we are waiting for spares, but all we need are the two airscrews and then after running up adjustments the "Mayfly" "Willfly." Now all these sarcastic aircraft doctors are wanting to know when the great day will be and whether they can book seats for the test flight. I guess we have plenty of spare seats, but we who slaved hard and long under considerable difficulties to restore a tragic wreck to its original beauty are "Mayfly proud." Aside from the pilot, her doctors only will be in attendance during her test flight. (Excuse my cough—must be all this patting on the back !)





BOAT BUSTING

LITTLE known to the flying world in general, virtually a new industry has been born in the last twelve months and, what's more, has been paying good dividends.

Just as in 1940 and later the Fleet Air Arm was associated with the R.A.F. in happy co-operation, planting mines in most of the enemy-occupied Dutch, Belgian and French harbours and carrying out torpedo "rovers," so yet another job was found for the ubiquitous Albacore and Swordfish—and thus old associations with the R.A.F. were renewed.

The task came about in this way. Whereas the Spitfire and Typhoon boys had made things pretty unhealthy in the Channel for any enemy shipping by day, it was not possible for fighters to stop them on dark nights. It needed comparatively slow aircraft which could search on their own account and slide—or dive-bomb—the quarry with a decent-sized stick of bombs.

The job was the more urgent for three reasons.

First, because Fighter Command's "train busting" successes had forced the resourceful Hun to push his heavy coal and iron-ore shipments into coasters,

which endeavoured at night to "port-hop." And pretty short hops at that. For example, in a voyage from Flushing to Bordeaux he would be satisfied sometimes with as short a hop as Calais to Boulogne.

Secondly, because in certain of the obvious portions of the Channel the Germans had started intensive mine-laying operations to prevent second-front armadas approaching except through gaps; which also place our assault craft in a vulnerable position.

Thirdly, because we had begun to disregard the Hun's waning air power as a menace to our convoys, and by night and by day had relieved pressure on our railways by again running south- and east-coast convoys. Against these convoys the Hun, unable to attack by air power, had now begun to employ his E and R boats and had made some profitable attacks. Moreover, this E and R boat campaign inconveniently coincided with the period when we were short of M.T.B.s and M.G.B.s, which were being sent overseas for the Africa landings.

There were, therefore, three requirements: to stop the Hun's night coast-wise traffic; to prevent the laying of the

enemy's protective minefield which he hoped would keep invasion or offensive M.T.B. sweeps from his shores; and to intercept, break up, and sink E and R boat raids attacking our convoys.

A Squadron of Albacores was detached to operate under Fighter Command. The aircrews consisted mainly of old Malta crews, and an odd twist of fate returned them to the airfield from which their old squadron a few months previously had carried out their last operation against *Scharnhorst* and *Gneisenau*.

The first method of operating was for the aircraft to be at "immediate readiness" from dusk to dawn. A word on this "state" might enlighten some Prunophile pilots and observers whose cleverness at quickly getting ready to fly is not outstanding. "Immediate readiness" means being airborne within five minutes. Last-second telephone briefing from Sector or Group prevents the observer planting his chart board and other impediments in the aircraft beforehand and pilots also must be briefed out of their aircraft. The familiar practice of some sprog observers laying a trail of navigational gear and the hottest of gen all the way round the dispersal hut and from the perimeter to their aircraft is definitely frowned upon. Had Rudyard Kipling known about scrambling Albacores and Swordfish at night on a rough surface with a full bombload and getting them airborne within five minutes it seems likely that "IF" would have had an additional couplet.

"On the ground" readiness proved satisfactory for beating up R boat mine-laying sorties and within a few weeks the enemy activities ceased on this portion of the coast.

As for the port-hoppers, it was found that standing-by on the ground was useless for catching them, so standing patrols were kept up from dusk to dawn.

In this way small formations of E or R boats could not get away with dashing out of Calais and into Dunkirk before the aircraft could intercept them. Trade became good—good enough for the Hun to put up night fighters each end of the patrol lines; but although they tried hard and caused a certain amount of highly descriptive speculation amongst the Branch Boys, the Hun has not met with the success he expected.

It would be difficult to disclose boat busting methods employed in the air without getting involved with the Security narks, but for the benefit of all T.B.R. pilots and observers, any of whom may have to carry out similar operations in the Pacific, a few golden rules should be studied.

Pilots! Wear your night-adaptation goggles for at least half an hour beforehand. Within minutes of being scrambled you may be over an inky black sea. Flares are *verboden* both for your own sake and for that of friends operating on the surface in the same area.

All you will see of your target will be the wake. You'll need to choose your targets quickly and make your attack so as not to be silhouetted against the light, whether it be the moon, or the diffusion set up by searchlights on the coast.

It's difficult to convince an irate C.O. that you shook your safety links off on your way home owing to the bumpy weather, it just doesn't happen; but the tiring and unconvincing oratorical effort can be avoided by making all your switches and setting the Mickey

Mouse as soon as you leave the coast.

Observers! Brevity is the soul of wit. If you're not brief and sparing over the R/T you'll join some other kind of wit in the next world. The longer you talk the more fixes the Hun will get on you, and you were never meant to shoot it out with a night fighter.

Yet a fourth factor soon had to be dealt with—the Armed Merchant Cruisers. They fitted out in the French Atlantic ports and thence port-hopped either west out to the Atlantic or more often up Channel to make their way to a port from which course could be set for the North Atlantic. The latter route was preferred, because the Portsmouth and Plymouth Commands once held an "At Home" and provided uncomfortable interceptions on the other one.

The A.M.C. and likewise the large merchant vessels were promptly dealt with in combined operations.

For the A.M.C.s and large M/Vs, the enemy then began to employ escorting flak-ships and frequently surrounded the whole with an outer screen of E boats. It's useless your pretending you know all about escorting flak-ships, so look it up. And if your Intelligence King can't oblige, call his attention to W.I.R. 170 of 11.6.43.

QUIZ: Do you also know the difference between "E," "R," "M" and "T" boats? If you are ever briefed to attack escorting "T" boats and you think they're about the same as an "E" boat—you may not have another think coming.

A final word on waiting for the bell to ring in dispersal.

Enough time is spent moaning over standing-by to warrant the moaners keeping separate Log Books. Oddly enough, those who moan the loudest are generally those who "can't find their gear" when the balloon goes up.

Long waits and hectic flaps appear at first the normal experience in operational squadrons. But the waits can always be employed to some benefit, including the regular consumption of TEE EMM* and much other published gen. If whilst on training you accustom yourself to employing inevitable waiting time usefully, it won't come so hard when you are waiting under keener circumstances; and as for those hectic flaps—with a little self-organisation they melt gently into the background, into organised routine.

* A quite unsolicited testimonial; we haven't even stood the author a drink for it!

PRUNE EXPLAINS

WE'VE had a couple of letters in the last few days—one of them rather rude—pointing out that in our Christmas issue we printed a photo of a Pilot Officer being invested by P.O. Prune with the M.H.D.O.I.F., whereas the Orders were stated to have been won by a Warrant Officer. It was even suggested that we were now eligible ourselves for the O.I.F.—which seems to us pretty much like *lèsé majesté*.

Prune, however, whom we consulted about it, has an explanation of the apparent discrepancy. He says: "The investiture was not made at the actual time the Orders were won, but, as is usual with official Investitures by persons of importance like myself, some while later. By then, as it happened, both Warrant Officers had just been promoted to Pilot Officer in further recognition of their fearfully good show—and thus it was that the photograph did not appear to agree with the words of the actual citation."

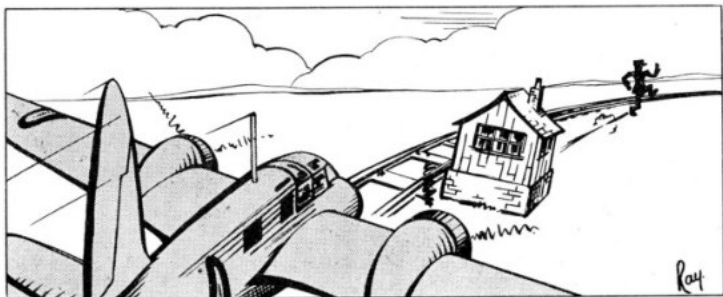
CORRECTION

IN our December number we printed a little piece about the importance of brushing hoar frost off the wings of aircraft before you take-off on these nippy mornings. We instanced the take-off some long while ago of three Oxfords, where this little formality had been omitted, with the result that all of them crashed. One indeed, we said, hit a local signal box with its wing and carried most of it away, leaving the signalman standing solitary at his telephone in mid-conversation.

We have now heard from the actual pilot who did this. While pleased to have had his accident thus immortalised in TEE EMM (he must be about the only chap who feels that way!) he points out an inaccuracy. He says the signalman wasn't inside at the time and so was not—as we reported—heard to continue his 'phone conversation with—"Ye ken the signal box here—weel, it's *no* here the noo!"

The facts he assures us were these. He had only just managed to get airborne and the signal box being just beyond and between two hangars, he realised he'd have to hit something. So he chose the signal box, as being smaller than a hangar, and we confess we see his point. The signalman, however, a canny Scot, had not worked for so long near an airfield without anticipating trouble, and so was keeping a sharp and practised eye on all aircraft taking off. He saw the Oxford bearing down on him, and by the time it actually hit, so far from being at the telephone, he was a quarter of a mile down the track!

That's the true story—but the moral of our original article remains unaltered. Remember that hoar frost can form on an aircraft in a very short time to a dangerous degree. It *must* be brushed off before flying—if wing-covers or preventive compounds have not been used.





TEE EMM'S Brains Trust

Tee Emm, being an official publication, everything in it appears with the approval of the Air Member for Training and represents official views on policy. This page, however, we reserve for occasional unofficial correspondence, to which we have tried to dig out an official reply.

LETTER. "DEAR SIR,—Having followed your 'Brains Trust' pages with interest I will ask you to settle an argument between a friend and myself, either publicly via TEE EMM, or privately if you don't think it would interest many readers. It concerns the relationship between the angle of bank of an aircraft and its rate of turn.

"I say that the rate of turn is entirely dependent upon angle of bank; radius of curve, etc., being brought in automatically, but *independent* of the *weight* of the aircraft. That is, assuming a rate-one turn is a turn through 180° in one minute, and it requires 15° of bank to produce it in an Oxford, it will still require 15° of bank to produce it in a fully laden Halifax.

"My friend argues that that is all very well on paper, but in practice any Halifax pilot will agree that it requires far more than 15° of bank to turn his aircraft through 180° in one minute. Well, I've never met a Halifax pilot, so I don't know, but I shouldn't think many pilots time their turns against a stop-watch, anyway. Can you settle this argument please?"

REPLY. We think the answer may be given simply as follows:—

The angle of bank in an accurate turn is dependent on both the speed of the aircraft and the rate of turn: it is not directly affected by the weight of the aircraft. For a given rate of turn, therefore, the correct amount of bank depends on the speed of the aircraft, so a Halifax turning at 180° per minute at perhaps 160 m.p.h. will need more bank than an Oxford turning at the same rate at say 100 m.p.h. If, however, two different aircraft carry out the same rate of turn at the same speed, they will both require the same angle of bank in an accurate turn.

It was stated above that weight of an aircraft does not directly affect the angle of bank for a given rate of turn. The weight of an aircraft does, however, affect its stalling speed and so in a turn it sets a lower limit (depending on the rate of turn) to the speed at which you can carry out the given rate of turn; or, putting it another way, it sets a limit to the steepness of turn that can be carried out at a given speed.

LETTER. DEAR SIR:—I am writing to you for information on a subject which has been puzzling me for some time past. I should like to know the aerodynamic advantages involved in the fitting of a dihedral tailplane to an aircraft. I have noticed a growing tendency, particularly in American designs, to incorporate this characteristic, and am rather at a loss to reason out a satisfactory explanation. I can only think that it is in some way connected with slipstream interferences, but as this is only a surmise I should appreciate a more authoritative opinion.

REPLY. A dihedral tailplane gives a certain amount of fin effect, but we think the usual reason for it is that the firm wish to raise the tailplane in order to get into a different part of the slipstream or downwash, either because of buffeting or in the hope of improving longitudinal stability. We don't think any more subtle reasons can be found without a lot of inquiry. Further opinions would be welcome.



WE'RE publishing the following series of articles for the benefit of those who are or may be, posted to the East. Quite possibly those who are already there may also find here something they didn't know or have forgotten. Remember, too, that while the articles are primarily about Indian and Burmese conditions, a lot of the stuff applies equally to other South-East Asian theatres of war.

I. GENERAL FLYING CONDITIONS

The first thing to get into your mind is the size of India. However big you think it is, it's really much bigger. For example, put a map of India over a similar-scaled one of Europe so that Delhi comes on London, and you'll find Calcutta somewhere in the neighbourhood of Warsaw, Karachi 500 miles out in the Atlantic from Land's End, and Cape Comorin, India's southernmost tip, on the Atlas mountains.

This means that when you go places it's usually a full-range job, and if you boss your navigation or let the squander bug into your fuel tanks, you may not find convenient airfields to act as "perches, Prunes, for the use of." In the U.K. P.O. Prune can quite happily lose his way or miscalculate his fuel and all it means is a pleasant and unexpected visit to a strange Mess with a can or so

of beer thrown in. But if you miss your stopping place out East, it's not just a matter of putting down at another one ten miles further on. You may not be able to reach that next place at all with the fuel you have; so it's a question either of finding your destination, or force-landing.

Two things are, therefore, much more important in Asia than in the U.K. First, always make most careful calculations about your petrol-consumption, and invariably allow plenty of flying time in hand after your E.T.A. This is your safety margin in case you don't hit off your destination exactly and have to stooge around a bit looking for it. Secondly, see that your navigation is expert, for even your safety margin won't allow you to flap around the sky for ever, if you do miss your way.

Good navigation in fact is doubly important, for it's not till you actually get to India or Burma that you realise the lap of luxury you've been living in in England as regards radio aids and general ground service for the lost pilot. On top of everything your journey is also complicated by the existence of hills that really are HILLS. Even flying at 10,000 feet is no guarantee that you won't bump into one of them.

Another complication is introduced



Prune can always deal with a sudden hill—even in India.

during the monsoon period. The monsoon covers a lot of India and the East beyond and makes flying difficult but by no means impossible. If it has any merit it is that it is seasonal; you (or rather the Met Magicians) can predict when it will come and when it will go. In some parts it begins about June and goes on till November. Its main stock-in-trade is south-westerly winds with low cloud, heavy rain and patches of nil visibility, but it has some pretty sidelines, including heavy electrical storms and abnormally high winds.

There's nothing to be frightened of, however, in monsoon weather, not even the torrential storms which frequently come at the beginning of the period. All you have to do is to treat it with a certain amount of respect.

Dust storms—which are to be expected at certain times of the year,

usually the beginning and end of the hot weather—are another problem. Once again, all that is necessary is to treat them with respect. There's really nothing mysterious about them, but when in real doubt, land. Flying is further complicated by the enormously wide range of temperature. You may take off in snow and land in 110° in the shade. You should therefore be in a position to "adjust your dress" accordingly.

We now come to radio aids. Unfortunately, owing to priority claims elsewhere, these are at present not up to the same standard to which you've been accustomed. There are, however, radio aids which will work very efficiently, *if* properly and intelligently used. Use them, too, as much as possible when flying, both as practice for speed and also to get to know their peculiarities and limitations.

What with climatic conditions, difficulties of maintenance and again the vast areas with which you are concerned, don't expect to get *too much* help from your radio, but always remember that you *can* get help, if you know your stuff. It's up to you.

There's also a very efficient diversion scheme in existence in India. It's slightly different from those you're accustomed to, so make yourself familiar with it. Finally, don't forget you can always turn back: in countries like India and Burma this is not considered sissy.

Now for a pleasanter side of the picture. Outside the monsoon period, from November to May, navigation is really very simple—except for heat haze, which we'll refer to later. Simple, that is, as long as you can map-read effi-

ciently. Landmarks are easy to pick up because in most parts of India and Burma they are few and far between. Remembering this last, however, you should always be on your guard against panicking because you can't pick up any sort of landmark after a quarter of an hour's flying, as in England. "It's a long time between landmarks," as the Governor of the Punjab says to the Governor of Madras.

The most reliable landmarks are railways and contours. Since railways are not so thick on the ground as at home, it follows that when you spot one you can identify it easily because it's quite probably the only one within a hundred miles. But one word of warning: make sure that it *is* a railway, and not a canal. In certain parts of India there are bags of canals and from a height they have often been mistaken for railways. As for contours, strain every nerve to get a layered map, if you can, and practise comparing them with the ground. You'll find them invaluable where roads and railways just *are* not.

Rivers, on the other hand, are things to beware of. They are shown on the map as very large and very bright blue and look like excellent landmarks. In point of fact, however, they have a nasty habit of drying up in the hot weather, and so hardly showing at all or else just as a thin trickle between vast sand banks. And, to make it more difficult, during the rainy season mere small streams on the map suddenly swell to the size of rivers and, just for the devil of it, often change course altogether as well.

Local heat haze often takes a hand in the hot season and restricts visibility

considerably, while in some areas early morning mist (which is actually cloud forming on the ground) will stop flying for the first hour or so of the day. It's quite safe to fly in this early mist, as its top is usually only about 200 to 500 feet and the sun soon gets on the job and puts paid to it. But on the whole there's little to worry about flying in fine weather (though owing to haze, long visibility is not to be expected) *so long as* you remember what we said at the start: India is a big country sparsely furnished with airfields and whatever else you do you can't afford to take risks with either your petrol or your navigation.

(Next month: "Aircraft and Airfields.")



Prune always takes an interest in contours.

PILOT'S NOTES ARE FOR YOU!



P.O. Prune says 'Who needs 'em anyway?'

We had a letter the other day—signed only “Ditched Crews,” so we can’t answer it—the writers say they have studied the advertisements for Pilot’s Notes on the back of TEE EMM. They then ask if we would investigate how many copies of Pilot’s Notes there are on their Station for “in a weary 3 weeks’ search we have only managed to unearth *one* solitary copy of same. You will agree with us when we say that this is scarcely sufficient for the use of about 100 pilots. Who can wonder that 99 of them are U/T Prunes.”

Hard words, my masters! Still, we did our little best by trotting along to the Pilot’s Notes lads here and their words were even harder. Here is their advice. (“Ditched Crews,” are you listening?)

They say: “With gun in hand—most essential—make your unit commander read A.M.O.s A.93/43 and N.1747/42. If he can’t read for heaven’s sake tell him that it’s his *job* to see every pilot has a *loan* copy of Pilot’s Notes for appropriate aircraft, obtainable on Form 294A from A.P.F.S., 81 Fulham Road, S.W.3.

Well, there you are! It’s your unit commander’s fault, not yours apparently. Anyway, we gather the Pilot’s Notes Editors are investigating the situation right away, and we now hear that, so far as they have been able to ascertain, no fewer than 195 copies of Pilot’s Notes General had been sent to the station concerned.



THE MONTH'S PRUNERY

THE MOST HIGHLY DEROGATORY ORDER OF THE IRREMOVABLE FINGER (Patron:

Pilot Officer Prune) has this month been awarded to Pupil Navigator — for All But Perfect Improvisation.

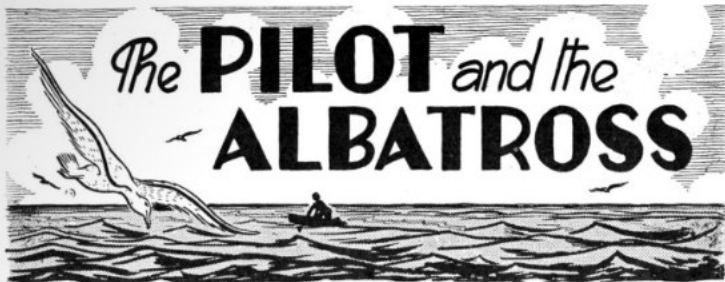
While on a training cross-country, he found that his air-plot had reached the folded edge of his Mercator Chart. Not bothering to unfold his chart he continued his plot on the table. By the time he had got a fix his air-plot had reached the edge of the table, and unfortunately, therefore, he could not find a wind velocity.

The M.H.D.O.I.F. is also awarded this month to W.A.A.F. — for Keeping Well Abreast of the Facts of R.A.F. Life.

Being on telephone duty, when it was reported to her by the Station Orderly Officer in the course of his duty, that “Spitfire XXXX due here at 10.50 hours is now overdue,” she said: “Spitfire? Is that a monoplane or a biplane?”

Being told that a Spitfire was a monoplane and one of the best known single-seater fighters, she asked how many there were in the crew.

Being told that there was as a rule only one man in a single seater she said: “Oh, well, I’m new, but I’ll learn.”



THE following is an interesting and valuable account of a U.S. fighter pilot's experiences after being ditched in the Eastern tropics. He spent twenty odd days at sea on a small parachute pack rubber raft and yet was rescued in surprisingly good condition. The account is taken from a bulletin called "Survival Experiences" issued by Solomons Air Command.

"I tied my emergency kit and canteen to my 'chute straps, snapped my shoulder straps, opened the cockpit cover, turned on my landing lights and made a power landing with full flaps and wheels up. The tail hit, then the nose hit a swell and the ship nosed over. I released my safety belt and just sort of dropped out into the water. The aircraft sank in about ten seconds. I didn't think to turn the handle to open the turtle back hatch and let the raft out. It should have popped out when the aircraft sank, but it didn't.

"In my jungle back-pack, I had three cans of pemmican, two chocolate bars, a canteen of water, and some vitamin tablets. In addition, I had the regular aircraft emergency kit of canteen, three cans of pemmican, one chocolate bar, and malted milk tablets. I had my own canteen on my belt, a .45, extra clip of ammunition, knife and the rubber raft pack with chlorine tubes and sea marker powder.

"It got pretty cold in the water, sitting on that little parachute pack rubber raft, so I cut my chute shrouds, saving them for lines, cut the chute in two and used half for a blanket. The other half I lashed to the raft, but it disappeared during the night."

The pilot went down on July 14th. For the first ten days, the water was frequently rough. He shot an albatross, which alighted on the raft, ate the liver, drank the blood in water, and used the fat both for eating and greasing his revolver. For periods of two, and later three, days he drank sea water, first greasing his throat by eating some of the fat. He says he suffered no ill-effects. The story then goes on :

"It was mercilessly rough, all day and night. The waves slapped, slapped, slapped. I was very uncomfortable and took morphine for relief. By this time,

I had a lot of salt water sores and there is only one position you can take on a boat like that. All you can do is slouch in that position or sit straight up.

"On 25th July, I shot two more birds. I tried to make a fish spear out of a bird's beak, but I never finished it. The next day—26th July—a Jap bomber passed 500 feet overhead on course 120°. I saw another shark and it rained a little that day. An albatross came and sat on the edge of the boat for about four hours. I stroked his neck and talked to him and he pecked at my hand. He was Oscar, my friend. It rained all that night and I filled all my canteens, using the sea anchor to catch the rain. Rain water somehow doesn't quench your thirst, however. If they would put some lemon crystals, or something to give it a little flavour, in the emergency rations, it would be much better.

"On 28th July, half a dozen big sharks were with me all day long. I shot another albatross and speared a fish with my sheath knife. I got a couple of flying fish out of the albatross' gullet. The bird's juices had started to digest them, but they still looked like fish all right; they were tender and pretty good. My canteen cup slipped out of my hand that day and I lost it. The night was cold and windy.

"There were more sharks the next day, 29th July. Shortly after dusk my boat capsized but everything was well tied on so I didn't lose anything and I managed to right the boat without any trouble. I found another coconut. It was no good but I made a cup out of it for bailing and storing bird meat. The bird meat was more tender when kept awhile.

"On 1st August at 0900, a New Zealand Hudson flew past at 800 feet, turned, and circled me. I semaphored the word "eat" to them with my paddles and they dropped a New Zealand life jacket about 30 feet away from me. It contained a waterproof flashlight, five army emergency rations, 20 rounds of .45 calibre ammunition, a canteen of fresh water, a stainless steel mirror (my metal one was no good after a day or two on account of the corrosion), six tins of chocolate, and some cigarettes, also a Veré pistol, a map with my position marked on it, and the message 'Good luck, will send Dumbo soon.'

"The morning of 2nd August, I began to lose hope because I thought I must have drifted out of the position the Hudson reported. About 1200, however, I saw three Catalinas approaching from the north-west. Two of them passed by. I shot my Veré pistol and the third one saw me. All three of them circled me for about an hour and a half, dropping float lights. The waves were over 10 feet high and I didn't think they could land.

"Finally a Catalina pilot landed his aircraft some distance away; he couldn't see me and I couldn't see him. The other aircraft circled and he taxied towards me. As soon as I saw him I paddled hard towards the aircraft, and he took me aboard. His crew were seasick, but the Catalina pilot decided it was too rough to take off. They gave me grapefruit juice and fried two steaks for me with peas, and made coffee. I hugged the Catalina crew. I couldn't get over how they risked all their lives just to save one life."

Except for weak legs and saltwater sores, this airman, who spent more than

twenty days in his small raft, was found to be in such excellent condition that after four days he was discharged from the hospital. He had avoided sunburn by keeping his clothes on and cutting strips from his chute, which he put under his helmet so they hung over his face. He also used the grease from the albatross as sunburn ointment.

One of the most important reasons for his survival was that he was thoroughly familiar with all his survival gear and had given a great deal of thought beforehand to what he would do if he ever went down. While in training, his entire squadron unpacked and packed the 'chute packs and jungle packs. In addition, each member made up a supplementary kit, putting into it additional items he thought would be useful. For example, you will have noted that the pilot had three canteens of water—one on his belt, one in the jungle pack, and one in his supplementary pack.

If that pilot has done nothing else he must have made the Ancient Mariner (who suffered so much for shooting an albatross) sit up in his grave with astonishment; but with it all one vital lesson clearly emerges. Nothing is as terrible as it would be if you weren't prepared for it and had a plan worked out for dealing with it.



SATAN'S HOUR

II. THE FIGHTING-CONTROL EXERCISE

"SATAN finds some mischief still for idle hands to do." So used to remark P.O. Prune's old nurse when she caught him up to a bit of no good during an idle hour, as you may remember we reported last month.

Actually we were leading up to the fact that we had been gathering a few ideas here and there on various methods of occupying aircrews during those "Satan's Hours" of non-flying weather. Inactive crews are apt on such occasions to get a bit browned off, with subsequent damage to morale and efficiency, and

many Stations have devised schemes, exercises, training games and what-not to give them something definite, and helpful to do.

The one we told you about last month came from the Fleet Air Arm and was an escaping exercise. Here is an excellent one direct from Bomber Command H.Q. It is a "Fighting Control" exercise.

It is important to realise the purpose of the exercise. This is to give practice in the running commentary necessary during attacks at night. That is why dark goggles should be worn, and why the

models should be painted dull black. The models should be fixed on interchangeable sticks of varying height, so that attacks from underneath as well as from level and above can be simulated. When attacking the "Bomber" be careful to follow typical night fighter attacks. Do not move the fighters too quickly, especially for astern attacks. The average closing speed for a real astern attack at night is only about 30 miles per hour. If the "Fighters" wear gloves and button up their collars (they can black their faces too if they like), it should be more difficult to spot the fighter and further realism will be obtained. A mound of earth, or an air raid shelter may be useful to vary the horizon.

The Gunnery Leader's requirements are, first 1/20 scale models of Ju88, and Me110 mounted on interchangeable 4 foot and 1 foot sticks.

These larger-than-ordinary models of E/A are always available for teaching Range Estimation at O.T.U.s, Gunnery Schools, etc., and though often apparently conspicuous by their absence on Operational Stations, they can definitely be obtained if you ask hard enough. We are assured that, at the time of writing, these models are still in stock. At the worst, get someone to make some.

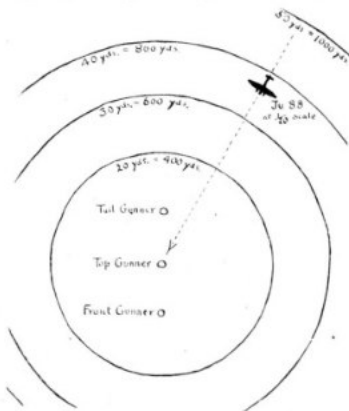
Also required are four reflector sights with batteries, goggles (further particulars of goggles to follow); some dull black paint, and a bucket of whitewash. And then we're off.

Paint the models and sticks dull black. Mark out on the airfield (avoiding of course runways) or any convenient place near your crew rooms, three small circles to represent nose, top and tail turrets and a cross to represent the astrodome,

in their correct position in relation to the fuselage of an aircraft. With centre the "Top Turret" and radius 20 yards, 30 yards, 40 yards and 50 yards, mark off four larger circles, which will represent distances of 400 yards, 600 yards, 800 yards and 1,000 yards respectively (see diagram). You will see that models and ranging circles are to the same 1/20 scale, so that Reflector Sight's assessment of wing-span/range will remain O.K.

Here's how you carry out the exercise. Assemble a crew, stand the gunners in their appropriate "turrets," complete with sights, keep the Captain by you and he'll join in, and send a spare body with one of the models out beyond the 50-yard mark. The Gunnery Leader will check up the range estimation with the spare sight.

Now as he walks in towards you, simulating the approach and attack of a night fighter, it is up to the gunners to size his



range up in their sights, and to give "Fighting Control" to their Captain at the appropriate moments. Also they must keep up a running commentary, handing over from one to each other. This sort of thing :—

Tail Gunner. Fighter port quarter down 1,000 yards—prepare to corkscrew port.

Captain. O.K. Tail Gunner—Mid-upper search Starboard.

Mid-upper. Mid-upper searching Starboard.

Tail-Gunner. Tail calling—he's closing in, 700 now—closing—corkscrew port, Go! . . . He'll break Starboard.

Mid-upper. Mid-upper calling—he's breaking Starboard bow—resume course.

Front Gunner. Front Gunner here, Fighter going away on Starboard bow.

When the crew has got the long range attacks taped, they should practice the shorter range ones. Then, the commentary will simply be "Fighter—Starboard (or Port) Go!" This "commentary" may be given by any gunner. If it is the Tail Gunner, the Mid-upper Gunner should search in the opposite direction to the position of the Fighter.

Important things to remember are :—

- (i) The exercise is to give practice in commentaries and range estimation of night attacks.
- (ii) The "Fighters" must be moved to simulate actual curve of pursuit or other fighter attacks. In the curve of pursuit, the attack

can be said to begin when the Fighter changes bank and goes into the attacking curve, often at about 600 yards, but in astern and underneath attacks sometimes less. The "Fighters" should not be moved too fast. Try having one Fighter formate level or above the bomber, while another Fighter attacks from the other side and down; or have two fighters attack simultaneously.

- (iii) Only one man speaks at a time.
- (iv) Keep commentary as brief as possible, consistent with the range of the Fighter. (See the article "Esprit de A.G." in the last October number of Tee Emm.)
- (v) Always tell your pilot when he can resume course—but do make sure that another Fighter isn't coming up somewhere else. It's better to corkscrew a little bit longer and be sure—but don't wear your Captain out unnecessarily.
- (vi) Pilots, in actual combat, only act on word "Go!"
- (vii) Captains who trust their Gunners can leave them to assess ranges without calling them out.

Well, the whole thing's simple enough. So simple that *blasé* O.T.U. Gunners are sometimes inclined to jeer. But, listen to them when they do a Fighter affiliation practice!

If you experience any delay in receiving your TEE EMM this month, or any other hitches in distribution, the Editor offers his apologies. Thirty-three per cent. of the whole TEE EMM staff has been called up at short notice. He is, rightly, joining the Air Force, and we wish him good luck.



He hadn't heard of single-engine flying speed.

THE EMM, the Royal Air Force's Training Memorandum, is a "Restricted" publication in the U.S.A. and for Official Use Only in the U.K. and the Empire. This means that those not entitled to see it are *not* to see it. It is primarily a Training Memorandum for air-crews, instructors and all those in the Air Force connected with these jobs. It is, in short, a Service Training Memorandum written *for* the Service, issued *by* the Service, and restricted *to* the Service.



Ask for
**PILOT'S
NOTES**

**Born 1939. Still going
strong.**