

TEE EMM



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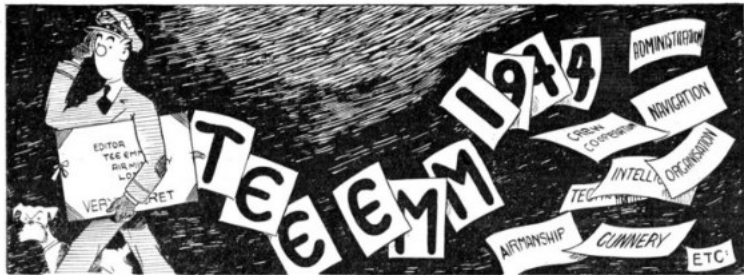
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*Pilot Officer Prune says—
"Take Tee Emm regularly!
Prevents that Thinking
feeling!"*



"I hope that these Training Memoranda will continue to be as widely read and studied as they have been during the past three 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

TEE EMM'S FOURTH YEAR

WITH this issue TEE EMM enters upon its fourth volume; and we are definitely in a nostalgic mood. For three and a quarter years we've sat on our behind in the TEE EMM office—when we weren't paying flying visits to stations in search of gen and good company—and for three years solid a new issue of TEE EMM has each month rolled regularly off the assembly lines—sometimes, we must confess, rather to our surprise.

On a trestle table against the wall (the TEE EMM shop window), there are now spread out copies of the thirty-six issues. And frankly we're getting sick of the sight of them. At any rate we have this consolation: if General Montgomery is right in his recent forecast that the war will end in 1944, then we are entering this month, not only upon our fourth, but also upon our last, volume of TEE EMM. Unless, of course, the Japanese. . . .

It seems a hell of a long time ago since we wrote our first editorial. (In fact, it is a hell of a long time ago.) We then, as we remember, explained our policy in an apologetic manner. We said that the Air Force, compared with the Navy and Army, was a new Service. Though it had brilliant traditions they did not stretch very far back. But it did have a tradition of, shall we say, ebullience, even of unconventionality. It had, in short, a tradition of the Spirit of Youth. We thought, therefore, it would

not be out of keeping with R.A.F. tradition that TEE EMM, the new R.A.F. Training Memorandum, should in a small way reflect this spirit by an occasional intrusion of lightheartedness into serious subjects, by an occasional unconventionality of treatment, and by an occasional lack of stiffness in the presentation of training and instructional points and information.

The above were our very words; since then we have aimed at putting them into effect. And after all, we had a pretty clear field. For at that time nearly every publication, pamphlet, or what-not, emanating from authority, *i.e.*, the Air Ministry, was, to say the least, somewhat heavily written, the ideas which it set out to convey swimming helplessly for dear life in high-running seas of gravid verbosity.

The authors of such publications had quite a style of their own. To give you an example, when a fellow wanted to say something like "Consider how commercial aviation has helped to develop radio navigation and blind approach" he squared his shoulders and wrote this: (It's a perfectly genuine specimen—we have the original in our office.)

"As the present stage of development of radio-navigational and blind approach facilities is due, in no small measure, to the incentive which has been provided by the requirements of the operation of commercial air-lines under all-weather conditions, it is, therefore, of interest to consider briefly what these requirements are."

Fifty words instead of thirteen—and even those thirteen aren't really necessary. Because, after all, if you're writing (in fact have written) about a subject, why preface that writing by saying you are going to do it? If you weren't going to write, you wouldn't have written at all. No wonder, then, that some publications which contained good stuff weren't being read by those to whom that good stuff was necessary, and at whom it was directed.

And so for three years we've tried to provide that stuff in perhaps a slightly more readable form—shorter words here, snappier phrases there, a trace of humour—at least that's what we like to think, so please don't destroy our middle-aged illusions—and, of course, pictures, *and* Prune.

That we seem to have succeeded has been borne in upon us during the last three years not only by the fact that TEE EMM definitely *is* read, but by that sincerest form of flattery—imitation. For there are now many official publications—by no means confined to the R.A.F. either—which write lightly and unconventionally and have pictures and which weren't in existence three years ago. We have assisted, perhaps not at the birth, but certainly at the conception, of many of them.

Once indeed we were rung up by someone who said he had the idea of starting up a completely new (*his* word) type of official publication. He said he thought of calling it "Emma Tee," and could we help him by writing up the stuff and could we ask our friend Fougasse to draw a cover—something in Air Force blue might be a good idea—and he'd thought about inventing a character to run through it, say a Pilot Officer, did we think Pilot Officer Prim would be a good name?

We told him we thought the idea highly original but we were too busy to help. We then wished him luck and rang off.

At least we feel we have lit, if not a candle, at any rate a small night-light, in official journalism.

However, the moral of all this—setting aside our nostalgic maunderings—is that TEE EMM, in spite of a certain light heartedness, is not meant to be a humorous magazine. Don't read it just for the funny bits! It tries to put the gen over. And the gen is there, provided or passed by the experts.

We are out to help you. We aim to print stuff you *want* to read rather than stuff we think you *ought* to want to read. We welcome suggestions for articles or articles themselves (which certainly need not be written up in final form, so long as the basic gen is there) on any subject, preferably training or instructional, which you think will be of value to the Service as a whole. As long as you genuinely think this, never mind how ropey your ideas may seem to you—they'll all be checked by the aforesaid experts here in the Air Ministry, who, mark you, are not mere holders-down of stools, but nearly all of them of recent operational experience. So send stuff along. You'll get an answer at any rate—even if you don't achieve publication.

On which note TEE EMM starts its fourth year.

BIRTHDAY PARTY AGAIN



FLIGHT ENGINEER: POST WAR

NOW when this war is o'er and done,
Perhaps by nineteen fifty-one,
There'll come a cry from some small lad :
" Tell us a bed-time story Dad ! "

Then sadly reaching from a shelf
A book which notes not dwarf nor elf,
Dad slowly reads from faded leaves
Of Wing 'Tip and the Vortices.

And other gen the notes unfold
Before the tale is fully told ;
The loss of lift at tip of wing,
Defeated by the Flying Ring.

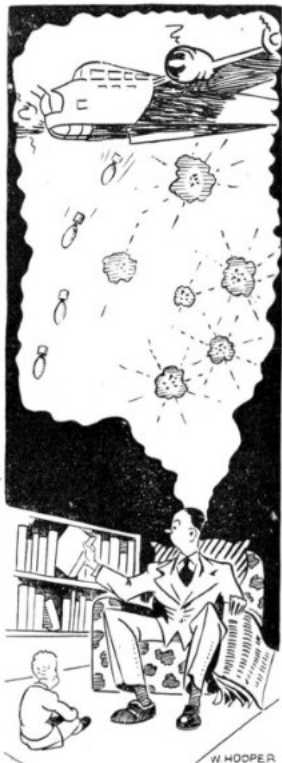
When cruising for the greatest range
The I.A.S. must never change ;
Except you know when bombs are gone,
And then you choose a lower one.

Economy in mixture strength
Has often been discussed at length ;
Full tanks last longest using " Weak,"
In " Rich " you think they've sprung a leak.

Now bombers are not flown for pleasure
With Revs and Boost fixed 'at your leisure ;
Boost must be high and Revs quite low,
If flying furthest you would go.

Endurance cruising is a bind,
Its rules stick in the simplest mind,
The first one's short ; you just " Fly Slow,"
The second's shorter still ; " Fly Low."

And now you bear in mind my lad,
What happened to your poor old Dad :
For scoffing at these tales of flight,
He ended up a Stalg mite.



THROW A CHEST, SERGEANT WINDE!

SERGEANT WINDE has written in to us with a bind. He seems to think air gunners are a suppressed trade. Quite what it's got to do with TEE EMM we don't know; all the same you should just see our post bag; it seems to cover every subject under the sun, whether it's up our street or down someone else's alley.

The burden of poor old Winde's complaint is that the air gunner doesn't get enough publicity. He has just as much, if not more, vital work to do as the pilot, air bomber, or navigator, but less glory. The pilot, they say, is frequently reported as having destroyed a couple of Hun night fighters on his way back from Berlin, but it's really 80 per cent. the rear gunner. Why, says Winde, do we so rarely hear of the gunner's exploits? Doesn't he ever do anything worthy of being recorded? Etc. Etc.

Without taking sides in this controversy—whenever we do join in an argument between two other people we nearly always end up by getting set upon by both—we feel we should like to print here just two examples (which happen to be before us) of some recent fine work by air gunners. They are only two of many, and, as we say, they just happen to have come into our IN tray (that grave of lost causes) as we write.

First: A certain Sergeant rear gunner, since leaving his O.T.U.—to which all credit for most efficient training—had completed seventeen sorties. On no fewer than thirteen occasions—a pretty high proportion—he was engaged in combat. And in those combats he, in conjunction with his mid-upper gunner, actually destroyed *six* twin-engined night fighters and damaged *five* others. That's practically an average of a "kill" and a "damaged" to every two combats.

Second: A Stirling was on its way home when the rear gunner sighted an enemy aircraft on the port quarter at 800 yards. He began to fire at it at 600 yards, while both aircraft manœuvred. Eventually the E/A dived below to starboard beam at a range of 100 yards, when all gunners opened fire. It continued to dive and was not seen again.

But this was not the only attack. During the rest of the journey no fewer than *eleven* attacks were made on the Stirling and as testimony to the way that Stirling could dish it out, only two of the total of nine attacking aircraft persisted in coming in for a second dose, and one of them was destroyed. The Stirling was undamaged.

Well, there you are! Winde can now step out in the middle of the room and throw a chest—as long as it inspires him to go and do likewise.

But will it? We wonder.



GLIDERS AND GLIDING

WE decided this month to have a piece in TEE EMM about gliders, so we primed ourselves up with some articles in the *Illustrated London Sphere* and the *Daily Scotch*, and with Brigadier Chutney's new book "Spearhead or Mallet? The Future of Airborne Tactics," and lastly with a talk on the wireless by the Air Correspondent of *Peg's Paper*; and here's what we wrote:—

Down the starry vault of the midnight sky come the long trains of gliders, four or five in each train, towed at a vast height by the latest and most powerful bombers. At the English coast the bomber pilot releases the slender tow-line and turns for home; the glider pilots take up formation and set course for the Fortress of Europe. They look, with their gull-shaped wings, like strange grim birds; yet for all their slender elegance, the flimsy structures of bamboo and canvas carry a formidable fighting force. Each soldier pilot sits tensely at the controls. With his birdman sense he detects the faintest upcurrent, and immediately he enters rising air he pulls the stick back and soars with it. Not for him the noisy engine; in his motorless craft he knows the joys of silent flight. Over the landing zone he circles patiently till dawn, then puts the nose down and dives silently to earth, the flat gliding angle of perhaps 1 in 30 enabling the glider to land in almost any space. . . .

At this point we stopped. Not that we weren't getting along fine—we loved every word of what we'd written—but it dawned on us that perhaps we'd like a little official approval before going farther. So we sent it along to a certain Group H.Q. who are experts in this matter.

We really only wanted to get their O.K.: what we got was more like a K.O:

Here's what they said! We're publishing it instead of the rest of our trenchant, powerful and thought-provoking article—which we may yet sell to the *Church Times* or *Men Only*.

All that plummy stuff that TEE EMM has written above sounds very familiar. It seems to sum up the popular impression of gliding matters—and by "popular" we do not mean entirely *outside* the R.A.F. We'd like therefore to take TEE EMM readers through it in some detail.

First, about these "glider trains." (We believe this gag started shortly before the war, when a well-meaning Russian photographed a string of single-seater sporting sailplanes towed nose-to-tail, and shot a line about mail carrying.) It is perfectly true that if your gliders happen to be too small for your tugs, or your tugs too big for your gliders, and you have to shift a lot of gliders in a short time, you may have to tie two gliders to one tug. Even an old Hector has lifted eighteen chaps in this way, if you include the two desperate types in the Hector. And with a bigger tug you can tow more than two gliders if you really want to. But the sort of thing that is done on a fine Saturday afternoon to impress visitors is not necessarily to be recommended for the general run of pilots on a wet Saturday night.

For the one thing you do not, repeat not, do, is to tow your gliders in "trains," nose to tail. It is the silliest possible arrangement. The slightest ropiness in any one pilot's flying is promptly transmitted to the others. If, for instance, No. 4 pulls No. 3's tail down, No. 3 in correcting pulls No. 2's tail down, by which time No. 1 is probably flying sideways anyhow.

Another point against [it] is that if glider No. 1 has to cast off in emergency, he automatically casts off everybody else, though they may not have an emergency at all. And when we say he casts them off, we mean that they are definitely cast off from the tug and so deprived of motive power—likewise any cheerfulness they may have maintained that far. Furthermore, unless they are all pretty quick at pulling the plug they are still tied to each other. The thing then becomes rather like one of those party practical jokes: "Causes roars of laughter in the home—tell your friend if he looks through the telescope he will see a Parisian view—instead a sharp needle will spring out removing his eye and disfiguring him for life—all your guests will be delighted." Indeed the whole business is so unpleasant to think about that we'll hasten on to the next point.

We take considerable exception to the remarks about being towed by the latest and most powerful bomber, but we don't wish to give the opposite impression: that we tow with the oldest and ropiest one. We do, however, wish to dispel any impression that Bomber Command aircraft can be whistled up at half an hour's notice to do a bit of towing at ten bob an hour. Even if we could persuade Bomber Command to leave Berlin alone, on the grounds that you can't saw dust, there would be more to it than just hooking a glider on and steaming away. There is no Black Magic in it, but towing does need learning. If you've ever had to tow a broken-down car on a



frosty road, you'll see what we mean. A curious thing about this, by the way, is that a glider pilot never apologises to a tug pilot for giving him a rough ride, or *vice versa*. This is due to "Hooke's Law," which says that "the source of any jerk in a tow-ropes is always at its other end."

Next, about the gliders themselves. They do not have gull-wings except perhaps to the artistic eye of the *Daily Scotch* Correspondent. Gliders are not enlarged sailplanes: indeed, they are not really gliders. They are Aerial Barges or Flying Pantechnicons, if you like, or even just Motorless Aircraft. For the primary function of a military "glider" is not to glide but to be towed, which as any aircraft designer will tell you, is a very different proposition. If you give it a low wing-loading and a high-lift wing-section like a sailplane, it will tow with about the same ease as a barrage balloon. It must be matched to its tug.

And as for that bit about "a gliding angle of 1 in 30" (without dwelling on the rather academic point that "1 in 30" is not an angle), a flat glide is all very well if you want to go places from a height, but when your three-acre landing field is surrounded by sixty-foot elms, a gliding ratio of 1 in 2 is a nicer thing to have. What you want, of course, is a reasonably flat glide plus a terrific amount of control over the glide angle, even if this means flaps the size of barn doors worked by a steam winch.

Now for that "flimsy structure" stuff! Ask the erks who have to take gliders apart; or the Naval types who recently tried to sink one, which was obstructing shipping, by ramming it with their nice new boat. We even recall a military document which described how to destroy a glider in order to prevent its falling into the hands of the enemy. It advised smashing the main spar with a rifle butt. If the author had wintered in billets near a Glider Training School, and had had to reduce glider spars to manageable fuel units, he would know that even the resources of a well-equipped saw mill are hardly equal to the task. We would advise him to prevent his glider falling into enemy hands, by using the rifle on the enemy and not on the glider.

Next we read about soaring with the rising air. Military gliders (we still need a word for them) do *not* soar. Pilots of the Glider Pilot Regiment will insist hotly that they have kept them up for half an hour. This is true. There are rare days when the whole sky is going up. But on most days of thermal



FLIMSY STRUCTURE

lift the rising columns, or bubbles, of air are about as much use to a glider as to an aeroplane. For operational purposes we can forget about soaring, even in the day-time in summer, so we won't comment further on the effect of pulling the stick back on meeting rising air.

Finally, may we shatter that happy dream of "silent flight"? If you can imagine the sound of a goods train shunting on a wooden bridge, followed by a raspberry-blowing competition held during a gale, ending with a brief bomb-raid on a barrel factory, you will have a tolerably good ear-picture of a glider take-off, free flight and landing respectively.

And as for that "birdman" tripe! Birdman my . . .

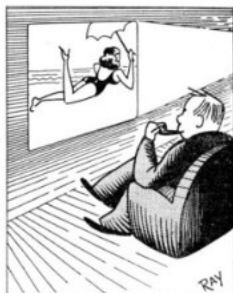
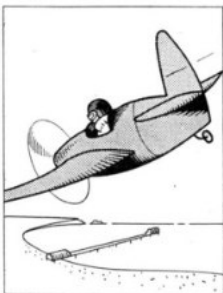
WE'RE UP TO DATE AT LAST

AN American Air Force reader pointed out to us the other day that TEE EMM wasn't up to date. Reason: we hadn't got any "funnies"; in other words, we never published a "comic strip." Since we're primarily a Training Memorandum, it had never occurred to us to have one—and who can compete with Jane anyway?—but the accusation has been rankling more than somewhat.

So in deference to enormous popular clamour (that American Air Force reader) we've produced herewith a comic strip—with, of course, an instructional angle. (The girl isn't Jane: it's probably Waff Winsum on a forty-eight.)

It's our first "funny"—and we may as well tell you it's probably our last. Comic strips are a little outside TEE EMM's scope, and we don't want to risk having a far-from-comic strip torn off us by the Proprietors.

Still, in a Birthday Number, what the hell . . . ?





PLAYING AT ENEMIES



TWO years ago it became apparent to the Lordly Ones who control Air Force destinies that the only time our bomber boys got any real practice at evading searchlights or manœuvring against night fighters was when they were up against German searchlights, or the German Air Force. Conversely, the Searchlight people complained that it was all very well fingering the sky hopefully night after night, but the only time *they* got any real practice was when actual German bombers came along and obliged.

The obvious answer, of course, was : let *our* searchlights and night fighters occasionally practise on *our* bombers : in other words, let our bomber boys play at "Being the Enemy." All concerned said "Smashing fine idea ! Let battle commence !" And so "Bullseyes" came into being.

The growing pains once over, Bullseyes began to get quite like the real thing. Just as the Army for years had things called "Tewts" (it sounds like a disease, but really means Tactical Exercises Without Troops) so might the Air Force now be said to have "Tewbs" or Tactical Exercises Without Bombs. In short a good raid could be had by all, without damage to any (except of course when Prune, who hadn't quite got the

idea, was only saved by his usual poor deflection from bringing down a Lancaster on his first exercise. And the damage referred to, we should explain, was only that caused to Prune personally when the Lancaster's crew later journeyed specially over to his Station to make his acquaintance.)

The main objects of Bullseyes may be summed up as under :—

- (a) Practice for bomber crews in operational cross country navigation and tactical manœuvring against searchlights and fighters, as if over hostile territory ;
- (b) Practice for night fighters in making interceptions under all forms of control ;
- (c) Practice for as many searchlights and gun crews as possible under conditions as near as possible to the real thing ; and
- (d) Practice for the ground organisation, R.A.F., Army and R.O.C., under enemy attack conditions.

You will see that all this can really be summed up in one word—Training. But there's a little more to it than that. For there is this about Bullseyes, and indeed all other exercises : they are not much use if you don't *learn something* from them. To do this you must—since an

exercise can never be the real thing—keep to the rules, and follow out the instructions given.

Here are some points that are important and which are not always properly borne in mind—with the result that the exercise isn't as valuable as it might be.

First, bombers!

The records of Bullseyes show that invariably fighters report more interceptions of bombers than bombers report attacks by fighters. This can mean only one thing: that bomber crews are not as alert as they should be; and that in the real thing there'd be too many cases of "He never knew what hit him!" Bombers should, therefore, remember that fighters may attack anywhere along the route, not only in the searchlight areas. The fighters are intercepting for *your* benefit and they're going to intercept just how and when they can—as would the German fighters.

As we've said before, Bullseyes are meant to represent an operational flight as nearly as possible; therefore, to get the best out of it bombers must treat it as such. This means the fullest pre-flight preparation and the most careful attention to briefing. Don't let up because you know you won't really be shot down. For, just *because* you let up on Bullseyes, you *may* be shot down on the real thing. The Bullseye records show that bomber crews' navigation has got them to the most extraordinary places, miles from their pre-arranged track.

Now the chief cause of this straying, it has been diagnosed, is too great a faith in the Met. wind. *Don't* rely implicitly on it! Always find the wind for yourself and do not disregard your own finding

simply because it disagrees with the forecast. Two cases that not long ago really happened illustrate this point. On one occasion the crew reported most favourably on British searchlight efficiency at a place which turned out to be the Dutch coast. On another night a crew came back perfectly furious because the Southampton guns had opened up at them, when in point of fact they had been over Cherbourg, having actually crossed the Channel on a clear moonlit night without any of them having seen the water. They had been relying on a forecast wind from the South, when the real wind was from the North. If that's the way they go about an exercise, on the real thing they'd probably find themselves over Madrid instead of Brunswick.



Prune says, "Southampton seems pretty jumpy to-night!"

Don't let yourself get into the habit of thinking, "After all the searchlights are really friendly ones." Treat them as if

they were *hostile*: try to evade them; practise your tactics. Even if you are properly held, don't call for "douse" unless you are in real difficulties.

We hate to say it, but it's been proved fairly often that bombers douse searchlights just to get a clear run on the "Flashlight" target. Even Prune calls that cheating—apart from begging up the value of the exercise. Do you think you'd get any result by calling for "douse" over Berlin?

Talking of searchlights, make certain you know and can recognise your recall signal. Don't get muddled up with the legitimate "homing" of some lost unfortunate who's turned up as an unwanted guest at your party and hates every moment of it because he's only got five minutes' more gravy. Mistaking someone else's homing for your recall, Prune says, is a darn good excuse for getting home and to bed before the others; but, he adds, it's not wise to use it more than once.

Next, fighters!

Make certain that you recognise your target properly. To report a Halifax as a Lancaster simply means that a lot of Very Important Group and Command types, who are trying to collate the reports properly, go telephoning off to a Lancaster Group about certain of their aircraft being "shot down," when all the time they have the wrong people, and it should be a Halifax Group on the other end of the wire.

Note particularly all the instruction you receive at briefing time about the correct signals to give when making an interception. If you are at all doubtful about what these are, or you haven't done a Bullseye for a long time, contact

your local Brown Job who will have all the latest gen. (Note for Brown Jobs: Make certain you *do* have it!)

If the target—the bomber you're after—is being well and truly held by searchlights, do not call for "douse." Remember that the bomber is also carrying out *his* mock battle. Conditions should be for him as near as possible to the real thing, and it's highly unlikely that over enemy territory the searchlights would all switch off once they'd pinned him. He must learn to expect and deal with maximum interference while carrying out his attack.

If by any chance you find the searchlights not up to standard, don't start belly-aching over the R/T about it; make allowance for the fact that in all probability they are, for obvious reasons, practising sound control.

Now, a word to both bombers and fighters!

The essence of Bullseyes is training, and unless both bombers and fighters log and report accurately and clearly, the whole thing can be messed up. Fighter navigators should note the time, position and height of the "kill": bomber navigators should also report accurately the same details about interception. Fighter pilots should record, as far as they can, how their targets manoeuvred and what their own opinion was, from the "hostile" point of view, of the action taken. Unless the Controlling Powers have accurate information for both bombers and fighters which can be "married up" afterwards, bombers who have perhaps been shot down three times may land under the impression they've never been seen—and can't be convinced that they have. Thus, the

whole value of the exercise is lost. For if the Big Noises in charge cannot pin down the actual aircraft engaged in any particular mix-up, they cannot discover who did what, and so cannot point out to the blokes concerned just where each was wrong or right.

Last, Control Organisation!

Bullseyes, remember, are also a practice for you. Controllers can get invaluable practice—particularly controllers who are under training. So make the most of it!

One final thing cannot be impressed too strongly upon all fighters taking part. Although you are naturally out to score victories—and the more the better—remember this is not the only object of the game. While the exercise is designed to practise you in interception, it is even more important in giving the bombers practice at operating under war condi-

tions of navigating, interception, searchlights and so on. Fighter crews *must* look on themselves primarily as *instructors* to the bomber boys. Their aim should, therefore, be to *help*, not to score a maximum number of kills. The whole idea of the exercise is to show up faults, and give pilots, crews, control and searchlight organisation a chance to make mistakes, without such fatal results as might ensue if the Hun was one of the principal players.

Well, all this may have given you something to think about; it may help you to realise your part in these exercises, to know what is expected of you, and to get the best out of "playing at enemies," by enabling the Training Staff to find out the best, and worst, of you.

For that, we repeat, is an equally important part of it all. The exercise is *not* finished when the exercise ends.



"You never saw us! . . ." "I shot you down! . . ." "You weren't within a mile! . . ." "Oh, pull your finger out! . . ." Etc.

Tee Emm wishes to express regret at the departure of the Assistant Editor—after exactly three years in the Tee Emm office. He has now left us for pastures new, and we wish him good browsing.

WHAT THE JAP IS DOING

JAPANESE Fighter Tactics.

These vary considerably, not only with the conditions of attack, number of aircraft, etc., but also with the skill of the Jap pilots. The Japanese fighter tactical unit is normally a squadron of nine planes, subdivided into three flights. Frequently a "Vee" of three fighter aircraft is employed, flanked by echelons of two fighters. The echelon pairs meet fighter opposition while the "Vee" goes in to attack. Fighter formations usually fly at altitudes of 15,000 to 20,000 feet, but are believed to operate effectively at altitudes of 27,000 feet or higher.

Japanese fighter pilots usually work with, and believe in, high cover. Their flights frequently take off about one half-hour apart, so that when one flight has exhausted its fuel a second flight can take over.

Deceptive tactics of various kinds have been extensively employed by Japanese fighters in efforts to lure our aircraft out of formations. Fake "dogfights" have been staged and decoy tactics have been employed, with one plane at a low altitude protected by others flying as high cover. Here are two reports on this :

(i) "I then turned east and saw a gaggle of 6 enemy fighters in no formation, giving, at the same height as the bombers, an aerobatic demonstration . . . a mock battle immediately below our squadron. Observing no Spitfires among them, I ignored this diversion and concentrated on an attack on the bombers."

(ii) "The fighter continued down, still on my 3 o'clock position, and flying parallel with me. He presented a tempting target which I nearly fell for, but I anticipated, and found, 2 enemy fighters on my 5 o'clock position and 3,000 feet above, waiting to jump me when I went down on the single fighter."

Reports from the South-West Pacific show a tendency for Jap fighters towards co-ordinated frontal and rear attacks. Enemy fighters have attacked our bombers from ten and two o'clock positions and from five to seven o'clock. These attacks have been co-ordinated by two fighters on each side with one frequently coming in above the wing and one passing below, each peeling off to rake the fuselage of our



aircraft. The enemy relies to a great extent on the manoeuvrability of his aircraft, and the variety of attacks has steadily increased. Typical attacks reported are :

- (a) One plane on level just out of range acts as a decoy and attracts attention while other planes attack from the opposite side.
- (b) Vertical dives through the centre of a formation.
- (c) A tight corkscrew on the top of our aircraft.
- (d) Level approaches skidding widely, combined with weaving.

After attacking, Japanese fighters frequently execute a half-roll and dive to accomplish their breakaway. By rolling just before the dive, they rake the bomber with machine-gun fire.

Japanese fighters are particularly observant of any damage inflicted on our bombers and are quick to take all possible advantage of this. Stragglers are a favourite target for concentrated attacks and when a tight formation is maintained by our bombers attacks are usually concentrated on the leader.

(The above is taken from *T.C. 41*, a paper dealing with Jap tactics. A further interesting paper on the subject of Jap tactics against ships is in preparation.)

PRUNE IS MODERN



W H G O P E R, P. A. F.

The inventors of jet-propulsion have nothing on P.O. Prune: he, too, can fly without a propeller—for short distances.

TEE EMM'S BIRTHDAY HONOURS

LIST



ON the occasion of Tee Emm's third birthday and to celebrate the start of the fourth volume, Pilot Officer Prune has been graciously pleased to award the Most Highly Derogatory Order of the Irremovable Finger to the undermentioned for services rendered during the past year, as recorded in the citations :

To Sergeant — for Seeing Things.

Having taxied to the take-off point while some parachute flares were dropping, this pilot mistook two of them and the glide-path indicator for the flare path, and on receiving a green took off till stopped after fifty yards by an obstruction.

To S./Ldr. — of the P.F.F. for Self Confidence of a Very High Order.

Disbelieving the Met. forecast he decided on a weather check of his own. At 16.00 hours, therefore, he took off in a Wellington although (i) he was advised against the flight ; (ii) there was a Group fog warning out for that night ; (iii) there was an industrial smoke warning out at that time ; and (iv) there were only three Stations open in Group.

He further took neither a navigator, nor a flimsy listing the local occults and pundits. In spite of his subsequent statement that he made several attempts to land, Flying Control, on the lookout for him, reported that he was never on the circuit. He finally put his Wellington down at a Station which had no runways, where he had to stay for four days.

To a Very Senior Officer for Notable Astronomy.

During an operational briefing at a Bomber Station he advised all navigators to take plenty of *Polaris* sights that night, as the Pole Star was at such a good altitude at that time of year.

To F./Lt. — for Guarded Recognition.

This officer's squadron, flying Hurricanes, took off—somewhere out East—to intercept some Jap fighters. There also took off on the same job a squadron of Mohawks, probably the only remaining one in the universe and possibly known as "The Last of the Mohawkians."

A grand dog-fight ensued, and recognition was evidently a trifle difficult in the

mix up ; for F./Lt. — was heard to say afterwards, on explaining a Certain Incident : “ I *thought* he was a Mohawk ; that was why I only gave him a short burst.”

To Lieut. — of the Fleet Air Arm and to the Control Office at “ W ” Station for Most Successfully Performing The Disappearing Aircraft Trick.

Lieut. — set off from Station “ A ” to fly to Station “ B ” and was duly signalled out to this latter. As he did not arrive and was not located anywhere else, overdue action was taken, with all the attendant flap.

It turned out later that owing to weather he had landed at “ W ” Station. The reason why his whereabouts was not telephoned to either “ A ” or “ B ” Station was that (i) none of the staff of the Control Office at “ W ” Station could find the name of “ A ” Station on their lists, though said airfield was built as long ago as the last war ; and (ii) Lieut. — had completely forgotten the name of Station “ B ” to which he was supposed to be flying.

To Flight-Lieutenant — for Ignoring the Existence of Pitch Levers.

Although the pilot had some eleven hours Wellington experience, he abandoned a flight on one of these aircraft after 45 minutes. The reason he gave was that no matter where he put his throttle levers he could not synchronise his engines.

To F/Lt. —, Control Officer at “ X ” Station, for Not Knowing His Cue.

A certain pilot practising Beam Approach was flying in thick weather and was working on the beam at “ X.” He obtained R/T contact with the “ X ” flying control and, having got permission to make an approach, requested QFE in order to adjust his altimeter. The answer came back “ Please say in plain language, as we have no copy of the “ Q ” code.”

To Sgt. — for Saving a Valuable Bomber from the Dangers of an Operation.

Just as his heavy bomber was due to take off on operations, he reported that he was unable to fire a test burst from his rear turret. An armourer was sent for who not only fired a test burst perfectly but was unable to find anything wrong with guns or turret. The aircraft, however, was by then too late to take part in the operation. It was ultimately discovered that Sgt. — was merely unable to manipulate the triggers owing to wearing three pairs of gloves. His motto now is “ The fault, dear gunner, lies not in our guns but in our gloves.”

To the U.S.A.A.F. Despatching Officer at — for Displaying Extreme Confidence in the Pilot he was Despatching.

Briefing a crew who were to carry out a flight in search of weather information he instructed the pilot in these words : “ If BLANK is out, land. If it's open, go on to DASH.”

BLANK *was* out—with strong winds, frost, drifting snow and a trace of ice on the runways, low cloud, poor visibility conditions, and frequent heavy snow squalls—in other words *out*, repeat *out*. Despite all efforts made to divert the aircraft to an open aerodrome the pilot landed successfully according to his instructions.

MIND YOUR MARCOLINS



III

SINCE we last wrote Sgt. Bactune has appeared with some new gen regarding Marcolins. These pests seem to have become the major concern of his life, but—as we hinted in our last article on the subject—we have a strong suspicion that Bactune is playing the game up for what it is worth. As the original discoverer of the Marcolin he became rather popular, not to say notorious, and did pretty well out of it in the way of free beer!

He has now put forward the theory that though Marcolins primarily function in the Marconi W/T sets they have begun an infiltration movement into R/T equipment.

This theory was being propounded to us by Bactune in the local—at some cost to ourselves—but we must admit it is worth considering seriously, for if the

Marcolins are really in quest of “*Lebensraum*,” we may expect mass invasion of the TR 1196 unless precautions are taken.

It is Bactune’s belief that the Panel 192 provides an easy path for this migration since it is common to both W/T and R/T. He says that in the Transmitter you should particularly keep an eye on the pea lamp where the Marcolins have been seen tearing out the filament; and on the channel disc where, if there are enough of them, they hang on one side and shift the slot so that on replacing the Transmitter it fails to engage with the selector motor, when they may be heard chuckling sardonically to themselves. The V.R. 91 is also a favourite hunting ground; here they stand shoulder to shoulder on the spring clips laughing gleefully at your efforts to force the valve out. You can, however, stampe them by correctly holding down the spring and the valve will then pull out quite easily.

In the chassis assembly they have been seen on some occasions wrenching at the sides of the trip bar on the top of the T/R relay until the H.T. contact shorts to the chassis. This, Sgt. Bactune assures us, gives them great delight, since they can adjourn to the power unit and warm themselves round the A.F. choke. They then celebrate their exploits by dancing all through the power unit, rubbing up against the carbon brushes till they have achieved an absolute carpet of carbon dust. This shorts the brush holder and thus provides them with a grand celebratory firework display.

The receiver unit, with its six valves, gives Marcolins great scope—for as we said before, valves are exceedingly vulnerable to their attacks. To repel or nullify such assault calls for a considerable skill in locating exactly where they are. This in turn calls for knowledge of your receiver and a good plan of campaign.

From a block diagram of the receiver, it will readily be seen that V₅ and V₆ can be checked by switching to "Emergency" on the Panel 192, and if this A.F. portion is serviceable, then the enemy is confining his activities to the first four stages. Check that the receiver crystal is in the correct socket, since Sgt. Bactune will tell you that Marcolins are quite capable of fooling you by mustering a squad to lift the crystal into the wrong channel. Incidentally, by moving this crystal up and down, you should hear "plops" in the 'phones: thus ensuring that no great assault has been made on V₂.

We were unable to get much more from Sgt. Bactune because he had been

in the local some while by then, and, not only was our money running out, but Bactune's mind was showing a tendency to wander. He did, however, manage to wind up his discussion—showing an amazing control of long words for that stage of the proceedings—with the following. "You mustn't forget that there are Marcolins who specialise in pestering one particular member of the crew, and these fall into two categories. First, those who, carefully watching the pilot, slip quickly up the Controller every time he goes to change the channel and neatly guide his fingers to the wrong button; secondly, those who, similarly watching the W/Op., take the first opportunity of his back being turned to get down to the Panel and put the switch to "Emergency" so that the W/Op's phones are "dead."

Bactune here stopped short, peered into his empty mug, looked enquiringly at us, and, as we buttoned up our coat in determined fashion, sighed mournfully, turned away and fell into a category himself—where we left him!





THE two previous articles in this series, which is written particularly for those who are going for the first time to India, Burma or other South-East Asian theatres of war, were on "General Flying Conditions" and "Aircraft and Airfields," and appeared in TEE EMM for February and March 1944.

III. JUNGLE FLYING

When you are flying in the East, it is as well to pay a little more attention to the country you are flying over than you would in England or even Europe. We don't mean this from the point of view of not losing your way; we mean that it is very essential to know what *type* of country is underneath you, in case you have to force-land.

In England the country has a certain sameness—railways, fields, towns, villages, a few mountains, occasional forest country, and so on; and the parts of Europe over which you aviate are very similar, except for the Alps. Should you, therefore, have to come downstairs in a hurry you already have a good general idea of what you're going to find below you and how to deal with it when you arrive.

In India and Burma, however, matters are very different. The variations of country in Burma and most of India are

extremely wide—come to that, so are Burma and India—and it's up to you to know what to expect.

Now, before we begin, we wish to say one definite thing. We don't want you to get into your head that while flying you must always be thinking of good places to land if you are forced to. If you are always worrying about that sort of thing you'll make yourself nervous and won't do your flying job properly. What we do want to emphasise is that knowledge gives confidence: know the types of country so that you *don't* have to worry about force-landing and can put it out of your mind, being fully confident that if you *have* to, you'll be able to cope instinctively.

Now for the types of country you'll meet—or rather which we hope you won't meet. We'll start with

Forest. Any forests you may have known in England are mere copses compared to those out East. There are no English ones that can't be crossed in a day's walk, while in Burma or India you can go on for days. And you'll pass through quite different types of forest too. Here they are.

First, there is Mangrove forest. Mangrove grows in the muddy coastal areas where the rivers are largely tidal. This results in swamps, interlaced by creeks.

The best landing to make in this kind of country is in a creek itself. Don't try the trees: they're tough customers and you'll come off second best. And you'll get wet and muddy in any case, so take it the more comfortable way.

Then there is the Evergreen forest (as opposed to Deciduous). This is of two main kinds, which might be called, like soup, "thick" and "clear."

The thick is very like the typical jungle of the film and novel, tall big-boned trees, and dense undergrowths matted and tangled like the muffler Prune's Aunt Jane has been knitting since 1940. The clear has the same sort of trees with the same big boles, but no undergrowth.

Thirdly, comes the Deciduous forest, the trees in which are bare of leaves from February to April. This varies considerably from place to place, but large areas of it will have bamboo in it, which is easily recognisable. Useful stuff, by the way, for it often grows up to 70 feet high and you can make anything out of it from a pipe to a house.

And lastly comes Hill forest, which is simply forest that grows—you've guessed it!—on hillsides. It is either pine-forest which you all know; evergreen, though the trees are smaller and have a certain amount of undergrowth; or dry and scrubby stuff with small stunted trees owing to lack of moisture.

Landing in any of the Evergreen, Deciduous or Hill Forests is a bit of a problem. You are quite likely to get stuck up a tree and in the first two types it's not much use thinking you can climb down, because the lowest branches may still be 80 feet or so above the ground. The only thing we can advise you to do—



if you can't spot a handy river or stream—is to try to glide in between two trees of equal size so as to balance the impact, and possibly you'll drop fairly lightly. Don't lower anything that may catch in a branch.

If you can, however, see any bamboo make for it. It has a lot of "give" and doesn't splinter. Sink on top of a clump and you may find it has a perfectly good cushioning effect.

Once down, a good knowledge of the type of forest will help you to know what to do next. Here's the gen:

In Mangrove forest make for dry land as soon as possible. We needn't really have bothered to tell you this—but be sure to note in which direction it lies, as you come down.

In Evergreen forest try working along the stream beds; if too difficult go uphill to a drier type.

In Deciduous forest the streams should be fairly easy going. They are sandy and wide and often have tracks made by game running alongside.

In Hill forest water may be a



problem; get downhill to the stream beds.

Our next type of country is the non-forest or open type. First comes

Grassland. There are parts (particularly the Shan States) where the country is rather like the Downs of England. This is a piece of cake—if you remember all you have been taught. Next are

Fields. Most of these are paddy fields, growing rice and each is small in area with little foot-high banks round to keep the water in. This means—don't put your wheels down or you'll be tripped up. Make a belly landing! Then comes

Beach. These are naturally found along the coast. Many of them are smooth and sandy; so mark these on your map, because others are rocky, and in others the sand is quick-sand. It's

best to make a belly landing unless you are *absolutely* certain the sand is firm. If the beach is mud, don't land on it at all; put down in shallow water and swim or paddle, ashore. Next is

Desert. This should present no particular problem for the forced-lander, but it is perhaps wise to assume that the ground is soft.

Finally there is

Light Scrub. This is quite a problem, but the answer to it is that it nearly always has a few clear patches. These may be expected near wide streams and villages and in the drier parts. So use these and avoid using the scrub. It's rather like super-gorse, but if you *can* get in on a clear patch it will at least stop you at the far side without turning you over.

(Next month: "Walking Home.")

A SQUADRON COMMANDER WRITES

REFERRING back to our article "So You're Posted Overseas"—in TEE EMM, Vol. III, No. 8—which dealt, if you remember, with the subject of keeping fit out East, we've had the following letter from a Wing Commander commanding a squadron. He says:

"Of the two periods of the day when malaria is most likely to be contracted, viz., dawn and dusk, the former is often the more dangerous as the troops are wearing their day clothes while getting aircraft ready for the first sortie. We found in India that the people on the early morning shift had to be made to wear long trousers and sleeves. Dusk is particularly dangerous after games because the chaps start drinking in daylight and sit around chatting and do not realise how swiftly the dusk falls in the East, leaving them still in shorts.

"I might say that, by observing the rules laid down in your very excellent article, I have just done nearly seven years in India, often in most malarious and fly-infested places, without even having had any of the many tropical diseases."

So there's confirmation of the value of the gen handed out in our article. If you're being posted overseas in the near future you might do worse than turn it up and re-read it.

FOR WANT OF A NAIL . . .

"FOR want of a nail the shoe was lost. For want of a shoe the horse was lost." So runs the old nursery rhyme, ending up—though from our present advanced and hoary age we can't quite be certain of remembering all that passed in the days when we were a man-about-nursery—"for want of a something the battle was lost." In other words, the loss of the battle was considered directly attributable to the original loss of a small nail.

This sort of thing is true today in the Air Force—but sometimes in the reverse direction. Not the lack of a nail, but the presence of one, or some similar equally small object, may cause the loss of an aircraft—if it gets in the wrong place.

Only the other day a u/t fighter pilot landed after a cross-country, taxied to dispersal and parked his aircraft. He then gathered up his maps, log, etcetera, and took them along to the crew room to put in half an hour with a novel (or just possibly TEE EMM) before going to lunch, intending on his way to the Mess later to drop the maps, log, etcetera into the Nav. office. But when he came to collect them up, where were all the etceteras? In particular the Verey pistol? Had someone in the crew room swiped it while he was immersed in his novel (or again possibly TEE EMM)? Or *could* he by any chance have left it in the cockpit? . . .

He raced over to the aircraft he had flown, but it had gone. Enquiry revealed that it was out on a solo trip—aerobatics.

Later he met the pilot who had been flying it and this latter had a good deal to say, which we can't repeat here without getting TEE EMM in bad odour with the Department of the Chaplain-in-Chief, for whom we have considerable respect, as his office is in the same building and he may come up and tear us off an episcopal strip!

For it seemed that during one of the pilot's aerobatics—a slow roll—something hit him on the head, finally ending up on the floor of the aircraft. It was, of course, the Verey pistol.

Luckily it didn't hit him hard enough to knock him out—as it might well have done—or there'd have been a pretty serious accident. Nor fortunately did it fall into the controls, where it might easily have fouled them and again caused a serious accident. But it was just luck that it didn't.

So remember that not only Verey pistols, but even such a small thing as a Sutton Harness clip, becoming detached from its string and falling into the bottom of the aircraft, means something there which the designer neither intended nor allowed for. And, like the missing nail, that extra clip may cause the loss of an aircraft, and—who knows?—even a battle.





OUTSIDE THE COCKPIT

AN essential, though highly inconvenient, feature of all warships is the presence of innumerable watertight doors. The aircraft carrier is peculiarly liable to this disease, but no one who is not mentally sub-human can deny the vital need for preserving watertight integrity, and so the casualties that occur among those who find themselves wrongly routed to the bathroom during "darken ship" conditions must be cheerfully accepted as part of the General Scheme of Life. The moral of this preamble on ship construction is that the division of your floating aerodrome into watertight compartments is a Good Thing, *but* it is unwise to carry this policy into your own activities in a carrier-borne squadron.

S/Lt. Swingit always maintains that he finds nothing tricky about finding his way around the ship. "After all" he points out "I know my way to the Flight Deck *via* the hangar, and after landing-on I reckon that a chap is entitled to a pleasant zizz in the Paymaster-Commander's favourite chair in the Ward-room Anteroom." In other words, Swingit subscribes to the too common theory that once outside the cockpit a

fellow's work is done, and that although there may be some fifteen hundred other stooges busy about the ship, it is none of his business—and, in any case, it is a bit of a bind being embarked at all.

Now this is a pity, because the ship is a floating aerodrome and the activities of those fifteen hundred other stooges are intimately connected with making the ship an efficient operational base for the likes of S/Lt. Swingit.

In the intervals when he is not holding down the Paymaster-Commander's favourite chair, Swingit is fond of discussing with his chums the importunities of such sordid folk as Seamen, Paymasters and the Engine-room Department. All of this goes to show that Swingit's immature intolerance is only equalled by his abysmal ignorance. It is, however, hard to point this out to him because he remains convinced that his ability to land on the deck by day and by night completely justifies the wearing of a pair of wings above his one (rather scruffy) stripe—and, in any case, he wouldn't understand a word of what one was talking about.

Of course he will grow out of this—at

least, we hope so—but he should be made to realise at an early stage that without those other guys in the ship who don't happen to fly themselves, he and his aircraft would very soon be relegated to what is nicely termed "a wasting asset."

Take, for instance, the Engine-room Department, ("No, you take it," says Swingit quickly) they don't have exactly a jolly good time of it, cooped up in the bowels of the ship, boiling the water which raises the steam which drives the turbines which turn the shafts which shove the ship through the water which produces the wind over the deck and hence enables Swingit to be safely caught by the arrestor gear, and not end up rudely entangled in the barrier. It is also a solemn fact that quite a number of these "ash cats" or "plumbers" (Swingit's term), who seldom see the light of day, take an intense interest in the activity of the ship's squadrons, and the boiler-room staff is deeply conscious of the fact that their ability to achieve "Emergency Full Speed Ahead" may well involve the life of a Seafire homing to the deck with its flaps shot away. Nor does Swingit fully appreciate, as he lies relaxed in the steamy luxury of a hot bath, that it comes to him by courtesy of the men in the evaporator rooms, often on watch for hours in a temperature of about 140°.

Again S/Lt. Swingit and his chums often wax scornful and witty at the expense of Paymasters and their breed, but there too, if they thought about it at all, they should realise that the Paymaster-Commander and his staff have the heavy and thankless task of filling some sixteen hundred stomachs several

times a day, even when the ship is at sea for weeks on end. Quite an important task when you come to analyse it. It really means: no food, no war. Swingit is deeply interested in his stomach, but although he would be the first to complain were a hot meal not waiting for him on his descent from the Flight Deck, he knows nothing, and says that he cares less, concerning the complex organisation which conveys his food from cold storage to his insatiable gullet. Yet he is the first to picket the Paymaster's cabin when there is the prospect of an unexpected run ashore; and his personal column in the ledger is simply bleeding with red ink.

It is not our intention to damn Swingit out of hand; it is only that it seems highly desirable to shed light on his darkness in these matters. A young Naval Pilot or Observer may be a first-rate man at his job in the cockpit; his navigation, deck landing, slow rolls, or the precision and aplomb with which he



During a visit to the engine room S/Lt. Swingit may easily learn something of which he had no previous knowledge.

drops a torpedo, may be beyond reproach; but as a *Naval Officer* that is only part of the job.

That Swingit should have an intimate knowledge of his aircraft and all matters concerning his squadron goes without saying, but he should also know his ship and have a working knowledge of that vast and complex organisation which goes to make an aircraft carrier an efficient and terrible weapon. After all, an aircraft carrier is a fascinating bit of mechanics and Swingit would find it quite worth his while, after he embarks with his squadron, to take the trouble to find out what it is all in aid of. A visit to the engine-rooms would only take an

hour or so; and it is remotely conceivable that he and his friends might see and learn something of which they had no previous knowledge. It might even be *interesting*. And certainly it would hardly be time wasted, if he were to trouble to find out where and how these men eat and sleep and have their being.

All this, of course, is mere supposition, and S/Lt. Swingit may continue to maintain that outside his cockpit the world goes by, and the call of the Ward-room armchair is one that cannot be denied. But this, as we pointed out when we started nattering on this subject, does seem a pity. . . .

THE SEVEN DEADLY SINS OF W/OPS. No. 1.



Failure to Search and Listen before Calling.



No. 10.—COMPUTING AIR SPEEDS

WE heard recently that there are Navigators still at large who continue to use the ancient and inaccurate method of computing true air speed, known as the "60/60" method.

This labour-saving but highly irregular feat is accomplished by aligning the sixty minute mark of the inner Appleyard scale against 60 + 1 mile per 1,000 feet of height on the outer scale and reading off a T.A.S. against the R.A.S. on the inner scale. The speed obtained is an approximate calculation if climatic conditions conform to the standard of A.S.I. calibration at that time (*i.e.*, I.C.A.N. or Isothermal).

As the temperature at all heights is constantly changing and vast seasonal differences in temperature must occur, it's obvious that an approximate calculation is useless. The three examples in the following tables illustrate the appreciable difference in true air speeds due *solely* to temperature changes. The approximation, of course, would be far worse when flying over countries where there are large seasonal temperature changes or when a flight involves an appreciable change in latitude and a corresponding difference in climatic conditions between the point of departure and the destination.

| Height. | R.A.S. m.p.h. | Air Temperature. | T.A.S. | By 60/60 Approximation. |
|-------------|------------------|------------------|--------|----------------------------|
| 2,000 feet | 160 | - 10° C. | 158.5 | 165.5 m.p.h. |
| | | + 30° C. | 170 | |
| 12,000 feet | 160 | - 25° C. | 186 | 192 m.p.h. |
| | | + 5° C. | 197 | |
| 20,000 feet | 160 | - 32° C. | 216 | 213 m.p.h. |
| | | - 8° C. | 226 | |



PARACHUTING IS NOT - REPEAT-NOT DANGEROUS.



II

New readers begin here.

Our hero has been told how safe a parachute descent really is, provided he knows his drill. He has been told that it is his duty to know his drill, because it is even more his duty to save his life and fight again. He has been urged to keep calm and confident when he gets the order to abandon and to go quickly to his escape exit.

"Then at the hatch he steadies himself for a brief moment, makes himself as compact as possible with legs and arms pressed together, arms across the chest and hands on rip-cord.

"A 'Cheerio' to the rest of the crew—and out he goes. He is falling, falling through the air. . . ."

You may now read on.

The first thing you'll notice as you leave the aircraft is—not unnaturally—a tremendous rush of air; for you start your journey, of course, at the same speed as the aircraft (Sir Isaac Newton). This will take your breath away if you are not ready for it—probably it'll do so, even if you are. But as the natural final velocity of a falling human body is only 120 miles an hour (Sir Isaac again) your speed will at once start to decrease.

After five seconds you will have fallen about 200 feet (old Izzy once more), and will be well clear of the aircraft. So now you can pull your rip-cord and

adopt a more leisurely method of progression. To judge the five seconds it's not a bad plan to start counting at one-second intervals as you leave the aircraft.

Now if you've made a good exit and your parachute harness is correctly fitted—and it's your responsibility to see that it has been—you won't get much of a shock when the parachute opens. Rather will it be a relief—due both to the sudden change of velocity and to the realisation that, thank God, the damn thing's worked all right.

You are now descending in leisurely state—delighted, and perhaps even awed at the silence and sense of detachment from the world. You are comforted, too, by the feeling of security given by the lift webs of your harness, which you will almost certainly have instinctively grasped. (You may, by the way, find the rigging lines are twisted; if so, kick with your legs and force your shoulders round so as to untwist them. Make certain you rotate yourself the right way, though; otherwise you'll only twist yourself further and further up!)

Going down! Third floor, books,



Parachute—
Observer Type

toys, ladies' underwear. . . Oh, so you want to turn round and have a look, do you? Well, this is the way you turn. Catch hold of the right lift web with the left hand and the left web—I'm sorreh, I'll read that again—the *left lift* web with the right hand, and pull hard, one against the other. This will turn you to the left and you can see the lie of the land over in that direction. If you

don't like the look of it, reverse the process and turn back.

Another thing you may want to do is to stop swinging—or damp oscillation as the experts call it. For though swinging may seem fun at first, it'll probably end by making you as sick as a cat.

To damp oscillation you must realise what causes it. The canopy of the parachute is perfectly symmetrical and holds inside it a compressed volume of air. Hanging from this canopy, rather like a pendulum, are *you*; and so when you swing, the canopy swings, back and forth across the top of this volume of air like the axis on the top of the pendulum of a grandfather clock, spilling out equal quantities of air alternately from either side of the canopy.

Now if the axis, whether canopy or clock, isn't symmetrical, the pendulum, whether the clock's or you, doesn't swing, and so all you have to do is to break its symmetry. This you do by

pulling down hard on a group of rigging lines, which in turn pull in the edge of the canopy and so break its symmetry, by spilling much more air from one side than the other. Hold the lines down for a few moments till the swinging stops, and if a gust of wind starts it off again repeat the process. We assure you that as long as you use reasonable care, the canopy isn't likely to fold up on you: there's quite a lot of air inside it, exerting quite a lot of pressure.

Your control of your movements, whether turning or stopping swinging, is, as you have seen, achieved by means of the lift webs, and at this stage we should point out that not all parachutes are the same. They particularly vary in regard to the harness and the lift webs (known also as suspension straps or risers). Three of these types are illustrated

somewhere or other in this article — wherever the printers have put them. They are the observer type, the pilot type and the paratroop type (the "X" type, or Statchute). The observer type, you will notice, is not so easy to handle as the other two, because it has only two suspension straps. When there are four straps divided right down to the shoulders the de-



Parachute—Pilot Type



Stachute—
"X" Type

gree of control is greater.

Well, you're still going down and you're beginning to like it quite a lot. So much so, in fact, that you'll probably begin to think you're going much too slowly. This is where you think again, because actually you are dropping at a rate of 20 feet per second. As the ground gets nearer it will start to rush up at you most alarmingly, and unless

you are ready for it and remember instinctively what to do, you may make a bad landing and perhaps damage yourself nastily.

But don't get scared at this stage. The answer is training. The percentage of all injuries, however slight, in emergency jumps is only 1 in 4, while at the Parachute Training School they are only 1 in 250. Good training, you see, reduces injuries by an enormous amount.

And now you are landing! Here's the form!

About 250 feet from the ground get into the following position:—

Grasp the two front suspension straps as high up as you can and pull down hard. (If you have only two suspension straps pull on one only with both hands.) This damps out any possible oscillation. Be careful not to tuck up your legs instinctively as you pull down.

Now press the knees and feet firmly together to make a single solid column,

two legs being stronger than one. Knees should be slightly bent, feet flat and parallel with the ground.

Round your shoulders, force your head down on your chest, and tuck your elbows in.

If you have managed to turn into the line of drift earlier, well and good; but don't try to change at this stage. Pull still harder, however, on the lift webs if you are coming in backwards; if forwards, ease your pull.

Take the ground with your feet, but not on heels or toes: keep the feet flat. Try and make the fall sideways, and then collapse loosely to that side as soon as the feet touch. (Again, if you have only two suspension straps be ready to fall to the side on which you are pulling.)

Don't try to judge the moment of impact: keep your proper landing position *and let the ground hit you!*

And there you are on the ground. . . .

Anything broken? Collarbone? Arm? Leg? Back? Neck? . . . No? Nor should there be, if you've followed the procedure correctly. For properly carried out parachuting is not, repeat not, dangerous. Go on, get up and claim your golden caterpillar!



Parachuting Position—
feet and knees together,
knees slightly bent, head
forward, arms reaching up.

ARE YOU LOOKING FOR A PUBLISHER?

ARE you looking for someone to publish a book you have written? Or for an editor to print your story or article? If so, before you do anything else, ask yourself "Is what I have written about the Service?" For if it concerns the Service in any way, it's no good considering publication till you have complied with the rules. And the most important of these rules is that your manuscript (even if it is only a letter to a newspaper) *must* have already had the formal written permission of the Air Ministry.

To get this you must go about the business in the proper way, which is to say you must submit your MS. in duplicate, through your C.O., to P.R.4 Branch, Air Ministry. If they approve it, they return one copy to you, with the official permission in duplicate; and one copy of this latter must accompany the MS. when offered to publishers or press. K.R. para. 1072, and A.M.O.'s A.374/42, A.742/42 and A.354/43 give you the gen in full.

What you must *not* do is to send an MS. to a publisher, or even a literary agent, without the official permission. For they do not know K.R. and if they publish it without permission, they *and* you get into serious trouble with the Air Ministry. And if they send it themselves to the Air Ministry to see if it's O.K., *you* are liable to get into serious trouble with the Air Ministry, all by yourself.

There have, so we are told, been far too many cases recently of budding authors not following the correct procedure; and, we are also told, pretty soon the Air Ministry is going to start throwing bricks at the offenders. Better see that you're not their first target!

These rules do not apply, of course, to contributions to TEE EMM, or to our bright little contemporary, the *R.A.F. Journal*. All steps are taken by the editors of these publications to see that the material is passed by anyone concerned.



P.O. Prune says that when that guy first started flying' A.M.O.'s were carved on stone.

AMERICAN WINGS

The "wings" worn by U.S.A.A.F. airmen are more numerous than those of the R.A.F. There are, for instance, six different wings for pilots alone. Tee Emm feels, therefore, that the following pictures of the principal American wings may be helpful to British readers.



1. COMMAND PILOT (i)



2. SENIOR PILOT (ii)



3. PILOT (iii)



4. NAVIGATOR



5. BOMBARDIER



6. OBSERVER



7. TECHNICAL OBSERVER



8. AIRCREW MEMBER (iv)



9. GLIDER PILOT



10. LIAISON PILOT (v)



11. SERVICE PILOT (vi)



12. FLIGHT SURGEON (vii)

(i) Over ten years on active list and 2,000 flying hours. (ii) Over five years on active list and 1,500 flying hours. (iii) Under five years on active list and under 1,500 flying hours. (iv) Other than those specified elsewhere. (v) Flies light aircraft, observation aircraft, etc. (vi) Non-combatant pilot. (vii) Flying Doctor. (In gold.)



He was a good glider pilot, but he just wasn't interested
in the cable angle indicator.

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.

In the Fleet Air Arm
they, too, know what is
the symbol of all that's
best in flying—Pilot's
Notes—a name justly
famous for excellent and
dependable gen.



*Pilot's
Notes
Please*



WITH APOLOGIES TO
MESSRS JOHN PLAYERS LTD
W. HOOPER.