TEE EMM

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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"

Marshal of the Royal Air Force,
Chief of the Air Staff

GIVE THEM AN INCH . . .

THERE are some people in the world—and we know them only too well—whom nothing satisfies. Give them an inch and they don't see why they shouldn't have an ell. They are not thankful for small mercies. They want the whole earth, tied up in ribbon with their name and address on it—and even then they'd probably complain about the colour of the ribbon. Sometimes, but not often, they get away with it; but they are not nice types to know and luckily they are fairly few and easily recognisable.

More frequently, we're glad to say, they *don't* get away with it, and in time, we hope, they learn sense. Why? Because they find that while they've been selfishly striving after that ell, loudly insisting on their right to have it, some other less grasping, and in fact more sensible, guy has taken the inch with gratitude—and they're left with nothing.

Such people, if you care to look at it this way, are in the position of the self-centred kid in the nursery who wants to go out and drive that steam-roller, throws a temperament because he isn't allowed to, and ultimately gets shoved in the corner by his nurse—what time his more prosaic brother achieves a flying start on the best tit-bits of the nursery tea, being, as we said, thankful for small mercies. (We'll bet

our artist seizes on that sentence for an illustration.)*

Now all this is a pretty general argument. What the hell, you ask, are we driving at? All right, let's get down to particulars. You may recall reading an article in our October, 1944, issue about the Air Crew Allocation Centre at Brackla (now removed to Catterick). We tried in that article to explain to you just what the A.C.A.C. was, and how it has been formed solely to help air crews who have finished a tour of operations, by fitting them, whenever possible, into future jobs suitable to their own particular qualifications. Well, some of you haven't quite got the idea, and unless you watch it you may find yourself losing the inch because you're after the ell, and only getting the tail-end of nursery tea because you want to drive a steam-roller.

This is only meant to be a friendly and, we hope, helpful warning to those—and from all we hear there are several—who have got the idea that from A.C.A.C. they will be sent at once to the exact job they ask for, regardless of any other considerations.

Let's reiterate the final sentence of our November article, and this time we'll italicise some of the more operative words or phrases.

" Brackla (we wrote) ensures that (i) you won't get a job for which you aren't *considered suitable ;* (ii) your *chances* of a suitable job immediately *or eventually* are *greatly increased ;* (iii) you have the opportunity of *consulting* specialist officers concerning your future in or out of the Service and also of getting a better idea of what jobs are *available ;* and (iv) you are interviewed by people who are no fools and are genuinely *interested in you*, and out to help."

Well, that's what we said and that's what we meant. We do not think it should be construed into meaning that the A.C.A.C. exists to give you immediately exactly the job you fancy, and that thus you have a right to beef if it doesn't work out that way.

Read the sentence again. It says the job you'll get will be one for which you are *considered* suitable. That doesn't necessary mean " *most* suitable," or for which " *you* consider yourself suitable " ; it means considered suitable by those who go into your case, but also have to bear in mind the demands of the Service, which naturally come before your wishes.

* We win too!

Again, it says "your *chances* of a suitable job . . . are *greatly increased*." That doesn't mean a suitable job is a foregone conclusion. Nor does it definitely say "at once"; it says "immediately *or eventually*."

Again, it says you have "the opportunity of *consulting* specialist officers." That doesn't mean telling them what you want to do and practically ordering them to fix it. It also says that you'll get "a better idea of what jobs are *available*," which once more doesn't mean that any fancied job is going to be called into being especially for you. And finally it says, and truthfully, that your interviewers "are genuinely *interested in you*." That means they are out to help you, but once again only within the framework of Service requirements; for to them, as to all of you, the Service you are in must come first. And the interest in you continues: it does not stop when you leave A.C.A.C. For not only is your immediate posting from there made on what they find out about you, but all your future postings are governed by the information which the boards and interviewers have pieced together about your aspirations and capabilities, and which is subsequently kept at the Air Ministry for future reference.

Now if you realise these facts, now that we've repeated and expanded them, you will also have realised that while personal wishes are given the utmost consideration, Air Force requirements may prevent their being given either the fullest expression, or the most immediate expression. Do try to realise this, and you'll save yourself a lot of possible—we say only *possible*—disappointment.

Look at it this way! The mere existence of an A.C.A.C. is a very definite inch. Without it you might have been sent anywhere, regardless of your private wishes or personal qualifications, and being in the Service you wouldn't have had the chance or the right to complain. But, no! Consideration *is* given to what you want, and a definite attempt *is* being made to see that you get it, or as near as possible to it, as soon as possible.

Be grateful, therefore, for small mercies. Accept that inch in the spirit in which it is given and don't run the risk of becoming one of those rather unpleasant types who think that nothing less than the complete ell is their due and their right. In short, try to help make the A.C.A.C. justify itself as a small but useful step in the right direction.

W HOOPER

"But I put in for a place on the Air Council and you've given me a gunnery instructorship."

BOOBS COST LIVES

"Did I boob?"

WITH apologies to the late Lord Dewar, we'll start off this piece by quoting one of his epigrams. It runs: "If a plumber makes a mistake, he charges twice for it; if a doctor makes a mistake, he buries it."

Which brings us —as we meant it to— to the subject of our article, namely, BOOBS. And by boobs we mean mistakes, errors due to forgetfulness, carelessness, lack of efficiency, or the "I know it all" attitude.

Have you ever given a thought to that phrase, "Thirty of our aircraft are missing"? *Why* exactly are they missing? What happened to them? Did the weather let them down? Were the fighters up in strength? Was the flak very heavy? How many were unavoidably lost through enemy action, and how many might have been saved if mistakes had not been made by their crews?

Possibly you have seen one of our aircraft approaching the enemy coast with the Nav. lights burning gaily away. And soon after you have seen the familiar tracer streaking across the sky, and logged "Aircraft going down in flames, port bow, six miles"? A few minutes later, when that crew have baled out—if they were able to—one of them probably notices that his falling aircraft is still burning Nav. lights. What must his thoughts be then?

Again, how many Navigators have given their pilots a ground speed to steer instead of a course, and worse still how many pilots have steered those "ground speeds"? How many Pilots during five years of war have put "pink on blue," got lost and have had to abandon their aircraft? How many Wireless Operators have given a true bearing from a station to their captains to steer as a Q.D.M. and eventually found themselves over enemy territory with no petrol left?

Good crew co-operation, as you know, is essential and one part of it is the banding together in a mutual effort to avoid mistakes. But what sort of co-operation is the following? "Hello, skip., are the Nav. lights out?" "Mind your own —— business, what's it got to do with you?" says the Captain— and promptly puts them out. Or the Flight Engineer calls out "Hello, Air Bomber, got those bombs fuzed yet?" and the Air Bomber replies, "Come

down and fuze the ruddy things yourself." That crew would in time keep mum—and eventually go missing.

When a doctor (according to Lord Dewar) makes a mistake he buries it. Let us consider the effect of mistakes made by the members of a heavy bomber crew.

First the Pilot. If he makes a mistake—a really bad one—he not only buries six members of his crew, but himself as well. And that's saying nothing of a valuable and expensive aircraft.

If a Navigator makes a mistake, it will probably mean he wanders off track—a prey to watchful night fighters. Again, one crew and one aircraft are missing.

If a Wireless Operator makes a mistake, it may lead to the aircraft steering a reciprocal instead of a course for home. Result: no petrol left, and the crew, at best, probably prisoners of war.

If an Air Bomber makes a mistake, he may bomb the wrong target, or he may put down a T.I. in the wrong place and so send the whole raid "wrong." On the other hand, it is not often that the risk of going missing can be directly attributed to the Air Bomber. *But* does that mean that he should take less care over his job? Far from it; rather should he be even more keen to assimilate every word ever uttered by an instructor.

And if a Gunner makes a mistake—well, need we say more?

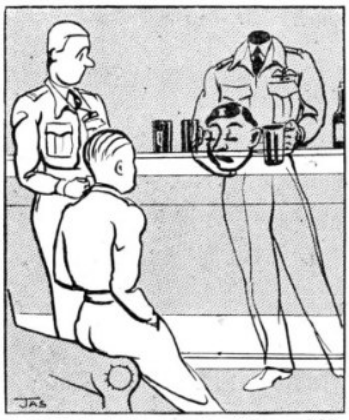
How many air crew members have said, after a tour of ops. and a tour of instruction, "How I wish I knew *then*, what I know *now!* How much more successful I could have made my tour!"

Remember one of the oldest and truest proverbs—"You are never too old to learn." If you doubt this, ask some of the veterans of this war: "To what do you attribute your success?" Ten times out of ten the answer will be on these lines: "I always treated every op. as my first, I always listened to advice, and I never deliberately missed a lecture, however many times I'd heard it before."

The war isn't over yet, even the Hun part of it, and many mistakes can and undoubtedly will still be made. Are *you* going to commit one—which might lose an aircraft and even cost you and your crew their lives?

Remember that the powers that be *have* "given us the tools." Let us play our part and really finish the job.

THE MAN WHO KNEW



"Why bother to listen to lectures? I never did."

LIFE IN INDIA

Prune in India takes life as he finds it.

ONE or two people have written to us saying they've been posted to India, and how can they find out more about the life there? Well, first of all, we advise you to get hold of any books or pamphlets you can on the subject; meanwhile, here's a brief general article we have had written by a type with considerable Indian experience.

The first thing (he says) which will affect you is the job you are going out to do, because your way of life will be decided by the work you are doing even more definitely in India and Ceylon than it is at home.

For Coastal Air Crews, for instance, the job out there is much the same as it is here, and the localities similar, at least in that they are on or near the sea. Having said that, there are qualifications. You might be on the north-west coast of India, which is fairly pleasant: not violent climatically, having its regular monsoon seasons, and being reasonably well provided with centres of rest and recreation. You might be still in the west, but further south, on the curious indented coast, with its green-shaded waterways, of Cochin. You might be on the east or north-east coast, where there is less jungle and more dust; or—perhaps most agreeable of all—in Ceylon. But wherever you were, no one station would resemble, save superficially, any other, and you would find that the pleasantness or otherwise of each is exactly what you care to make it.

Bomber crews will almost certainly find themselves stationed somewhere in Eastern India, probably in Bengal; possibly further eastwards—in Assam, S.E. Bengal, or even in Burma itself. For them the airfield will always consist of great runways laid on some stretch of plain, or cut out of the forest and paddy-fields of a more fertile area. One's most lasting impression of Indian airfields is one of red earth, and dust, a lot of dust which is only laid (and turned to mud) when the monsoon rains come down at their appointed season. But this impression is gained chiefly from the airfields in Northern and Central India and Bengal. There are many further "forward," or in coastal areas, which are green all the year round, and where dust, at least, is not the major trouble.

Each airfield will have its collection

of domestic and administrative buildings, just like home even down to the D.P's. hut; except that they will be built of mud and bamboo (in Bengal), of bamboo "basha" (in Arakan), of plaited coco-palm leaves called "cadjan" (in Ceylon), and in one or two other places of brick with a shingle roof. The two or three established R.A.F. stations in India are dreams of comfort and convenience, but they are peace-time jobs, remote from the forward areas, and devoted in these days to E.F.T.S.'s and O.T.U.'s. Still, there is always the chance that you may go to instruct in one of these, in which event you will be extremely well looked after.

Fighter pilots do not nowadays remain static for long; and, as we move forward through Burma and on into other countries, they will find themselves operating from all kinds of curious landing-strips, hastily prepared for the next hop forward. Some fighter squadrons on defensive work will, of course, be stationed on regular organised airfields, with all the comforts and amenities that three years' experience has enabled the Air Force to devise. But the majority of fighter squadrons will live on their own landing-strips, which may be tarmac, though more likely beaten earth or levelled paddy-fields, with Summerfield track laid down to keep them serviceable during the rains.

Their living quarters will be the native-built hutments which, though they may not sound inviting, are in fact extremely sensibly made with a view to maximum coolness by means of shade and ventilation, and which are, in the hot weather, worth ten of anything more solid.

The "Job," of course, will be your chief pre-occupation. But in your off hours you will see something of India, and note how the life of the inhabitants goes on through and around your own concerns. It is a little like putting your foot on a train of marching ants. Momentarily disconcerted, they will soon take another route, branch out in all directions, or climb over your shoe. You may plank an airfield down in the middle of India, surround it with barbed wire, and fill it with Englishmen, but before very long you will find you have a large establishment of Indians right inside your camp, performing every kind of useful service.

There will be coolies working on the runway; waiters and personal servants in the Mess; laundrymen and tailors and shoemakers; "char-wallahs" who appear at dispersal in the middle of the morning with tea and cakes; and the contractor who runs the officers' and sergeants' messes, the canteen and the cinema. Take an interest in these people: it is worth while. For the most part they are friendly, obliging and good-natured; and they will do all manner of jobs for you for very modest rewards.

You will come, as time goes on, to prize certain things very highly: a cold shower to wash off the dust; clean clothes, and a drink at sundown; your hour of relaxation, in the cool of the day; trips to other stations or to some of the many "places of interest"; your leave in the hills, or the odd forty-eight to one of the big towns. And, of course, your mail from home.

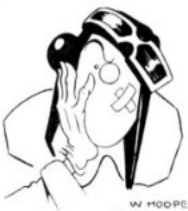
The best way to be really miserable in India is to resist your environment—that is, to refuse to take the smallest interest

in anything Indian—places, people, customs, ideas—and to spend all your time cursing them for not being what you are used to. Fortunately, few people keep up this attitude for long: India has its own fascinations, and most people discover them sooner or later.

India has, in fact, much to offer you, and when your turn for leave comes round, you will be able to spend it in a way which will be a unique experience—something to tell about when you come home. For example, there are the hill stations: Darjeeling, from which you see the snows of the Himalayas, and Shillong, in Assam (both quite easily reached from Bengal or from further forward); the Nilgiri Hills, easiest to get to if you are at Madras; Nuwara Eliya, in Ceylon, 7,000 feet up among the tea plantations; and, perhaps most spectacular of all, Kashmir.

In all these places you will find the comfortable, healthy living which Englishmen have built up over years as an antidote to the heat of the Plains, with good food (and drink) and all the sports you want from golf to big-game hunting. And there is no better way of making up to yourself for a long period of hard work in the heat.

TO STRAP OR NOT TO STRAP?



Prune says he'll know which—next time.

We published some while ago a photo of a pilot's seat completely undamaged in a crashed aircraft. The Sutton harness, however, showed that the pilot had not been strapped in, and as a result he was killed—when he ought to be still alive.

We'd like to emphasise the point a little further. If you're not strapped in you may be killed, even in a minor crash in which you would otherwise escape. If you *are* strapped in, even in a major crash you still have a very good chance of getting away with it, though possibly with a few chips knocked off here and there. And in moderate crashes where the aircraft is not completely broken up or burnt out, the crew are often quite uninjured, *if correctly strapped in*, or in correct positions.

A short time after the accident of which we published that photograph, another Halifax broke up in a big way in a crash due to an inexperienced pilot trying to go round again on three engines. In this case the pilot was strapped in and all the crew were in the correct positions.

The aircraft ended up in small pieces, the crew except for one who collected a few bad bruises were *completely unhurt*. So *verb. sap.*

(*Who's* a sap, asks Prune indignantly!)

LIVE TO FIGHT ANOTHER DAY

IN our January issue we gave you some valuable hints on how to survive after a crash—with especial reference to survival in tropical seas.

Here is the second of our series.

II. Jungle Survival

The first thing you must do if you wish to survive in the jungle is to be prepared for the fact that you may at any moment find yourself in the jungle trying to survive. In other words, it's no use adopting an " it-won't happen-to-me " attitude and then, when it does happen, finding that you have to start from scratch with no one around to give you advice.

You should, therefore, at the earliest opportunity after arriving on an Eastern Station, get in touch with the Intelligence Officer and find out from him what the country is like over which you have to operate. (We covered a good deal of this in our series of six articles called *Flying in the East*, which ran from February to July, 1944.) For instance, it is most important to know where are friendly tribes, in what direction to walk, and how to walk ; *e.g.*, in North Burma you should make for the foothills and then travel north or south. All this your Intelligence Officer will know.

Next, learn all you can about what plants and fruits are safe to eat, and how to recognise which are which by other methods than that of eating them and seeing whether you drop dead.

Go over your escape equipment—food, medicines, signals and so on ; note what it contains and what it is for. See that it has everything which you consider essential. A machete, or stout knife, for example, is an absolute necessity, no matter how difficult it may be to hump around. See, too, that your boots are completely serviceable ; you'll probably have plenty of walking to do. These two things—boots and knife—are both absolute essentials.

In short, *be prepared* for a jungle crash, even though it may never come. Don't be taken by surprise, or you halve your chances.

Well, assuming you've been unlucky and have crashed you've now got to keep alive. The limiting factor in jungle survival is not water, as in tropical seas survival. Water should be fairly plentiful

and animal and fish foods available. It is your physical condition which counts most in your endeavour to live to fight another day. Provided you can keep fit and well, you should also be able to keep alive for quite a time—time enough anyway to get back to your ain folks.

The science of keeping fit in the jungle has several angles, and you'll probably come up against one of them right at the start. For injuries are not unusual in any crash landing or bale-out; so prompt first aid—even for minor hurts—is of terrific importance.

Next comes the care of your skin, for cuts, scratches, insect bites and so on get infected very quickly if not looked after. You may say "It's only a scratch" one day, yet two days later you may be completely disabled by it—unless, of course, you take it in hand promptly.

Apart from this sort of accident, there are two diseases you will have to guard against. The first is diarrhœa, usually started off by impure water. Sterilise all the water you drink, either by using sterilising tablets or by boiling. The second disease is malaria, and giving you this is, as you know, the mosquito's life work. You can generally baffle him by using, between sunset and sunrise, the repellent ointments or lotions issued; and take your daily dose of mepacrine to keep fever down, should he get past your guard, whether you think you want it or not.

Your physical fitness is also vastly improved if you can keep moderately dry which, owing to sweating, the general humidity, and rain, is often difficult to do. Try to keep your spare socks dry and change them frequently for your wet ones. Dry your clothes by means of a fire each night, and don't forget at the same time to dry your compass, watch, ammunition and so on.

Now come those all-important adjuncts to your safety—your feet. You are unlikely to be rescued if you sit down and wait for it to happen; you'll have to walk to safety, and your feet have got to take you. Wear the heaviest footgear you've got, over two pairs of socks. Nip blisters in the bud, by putting adhesive tape on the dry skin at any place where shoes are tight or chafe, *before* a blister gets a chance to start. Have a look for any reddened areas of skin after the first fifteen minutes walking and have periodical inspections thereafter. Keep your boots as dry as possible.

Finally, it is most important to maintain your reserves of strength by adequate rest and sufficient sleep. Plan your activity; don't go at it bald-headed and so use up your energy in thoughtless working or walking.

Prune likes to make proper provision for his comfort.

Start your preparations for the night in the afternoon—for night falls with a bang in the tropics—so that you can make proper provision for your comfort—or rather what comfort you can get. Whatever kind of bed you make should be raised off the actual ground, and kept away from streams and rivers.

And remember all the time that if only you can keep yourself in condition you can last for a very long time. Men have spent months in getting back—and have got back safe and sound.

THE SEVEN DEADLY SINS OF A.G's. No. 3.

Inability to Clear Stoppages.

WHAT ARE PILOT'S NOTES?

In the article on the above subject on page 260 of our February issue, reference was made to A.P's 1732 A. and B. To prevent any misunderstanding, it is pointed out that A.P's 1732 A. and B. are flying instructors handbooks and stocks are not sufficient to permit a general issue.

WARNING

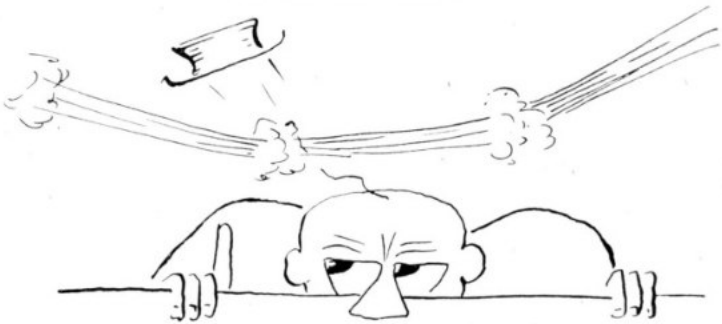
Sergt. Straddle was afraid of it all along.

If or when you get posted overseas, say, to join in the Eastern battle, some air crew members may get a bit of a shock. You may think you're going to have a grand time lounging about on the boat, but we're afraid we have to tell you you'll be required to do a bit of revision training on board.

This hasn't been thought up just to annoy you, or even keep you out of mischief. It really is important. For conditions in Burma are very different from those here, particularly as they affect navigation. If you go astray in the U.K. very little will happen to you, because there's always an airfield within a few minutes' flying and a whole system of safety aids. But in Burma airfields are comparatively few and far between, and missing one of them may mean a jungle forced landing and possibly your life.

So don't neglect this chance to gen up during the journey out, should you be posted. The training is in the hands of an experienced Draft Conducting Officer who has supplies of necessary navigation and signals revision equipment and books. It's up to you to get the best out of him and them.

DOOMIE SAYS—



DON'T go in for unauthorised low-flying!

OLD FATHER FIXE

F.O. Fixe, back from India, expounds on matters navigational and Indian.

FLYING OFFICER FIXE has been to India and the East. He has come back. He is full of importance and knowledge about matters navigational and Indian and Eastern. He is never tired of expounding over a can of beer to young navigators still in England—provided they pay for the beer. And if they listen they can learn something which may be of considerable use to them when, or if, they are posted to India.

We went along one day to "*The* . . ." well, to wherever it was that Old Father Fixe was improving the young mind and sat in a corner and listened. Since we think that Old Father Fixe has definitely got something we'll report the substance of his talk, leaving out the many "Thanks-old-man - I'll-have - the-same - again's" with which the talk was interlarded.

"Some of the small islands," said O.F.F., "which serve as detachment bases are a constant challenge to your navigational accuracy. Most experienced G.R. navigators, probably having once given themselves heart failure by thinking they had failed to find a two-by-four strip of coral at night, now run down a position line on to it. All the gen on how to do this is in the nav. books, and out there, believe me, it is *essential* knowledge. Nothing is more shattering than flying on at night, not knowing if you have passed your objective with the nearest land ahead now the South Pole. For this Astro is the only cure.

"Don't think Astro's only for night time. You frequently get bad visibility in day time—especially in the inter-tropical rain belt. The answer is : Climb up and use the sun. And let me warn you fellows that the navigation standard out East is high. Many long flights are done entirely on Astro, and the W/V is obtained from three-star fixes all night. Astro compass is used all the time, and it's relatively easy to train all members of your crew to use it.

"Since carefully kept D.R. air and track plots are the essential basis of *all*

work out there, drifts must be taken repeatedly when in sight of the sea. It's a good thing therefore for captains to train all members of their crews to take drifts and to report constantly over the intercom to the navigator. They don't mind it, and he likes it. In Catalinas many navigators have rigged simple drift sights in the blisters where the gunners on watch can take drifts. This takes some of the burden of a twenty-hour flight from the captain and navigator. It's also good for team work and helps to keep the gunners from getting bored. As a matter of fact, I've found most G.R. gunners and W/Ops very interested in navigation, and this is a thing to be encouraged, as long as they don't get too good and try to gate-crash our Union.

" Beware of ' drift and wind lane ' W/V's. These can lead you well astray even at 1,000 feet. The winds chop about a lot out there and a steady surface wind lane from 225 degrees can well turn to 200 degrees or 250 degrees at 2,000 feet. This would give you a pretty large error after a few hours.

" Get a three-course wind every hour as a check on any cumulative drift reading error, and keep applying this three-course wind to your air plot to check your D.R. position on the track plot. It's amazing the number of plotting and measuring errors which this system brings to light, —present company, of course, excepted.

" All you fellows should make absolutely certain you know your ' met ' gen. The pilot will then have some indication as to which way to turn to avoid the worst of a tropical storm—and these are well worth avoiding. He will also know what to do if ever he meets a cyclone—which quarter of the cyclone he is in, for instance.

" One of the big problems is, when you are far out, to know whether to come home above or below cloud—*i.e.*, on Astro or D.R. There are plenty of arguments both ways. On the whole, most people prefer to come home at 800 to 1,000 feet below tropical thunderheads, as there is no future inside such clouds, and they may well go up higher than your aircraft can climb. Normally, there are reasonable breaks in the cloud so that you can get Astro shots as well. The other school of thought says, stay up, live on star fixes, and dodge round the thunderheads by the ' low star ' method. The idea of this is to pick a star low on the horizon ahead and keep it in view. If it is blotted out, then there is a big cloud in the way, so you alter course until another low star can be seen and carry on. This involves a careful air plot, but it works. I have tried both, and I prefer the ' 800 feet ' method. But this, of course, is purely my personal preference : the matter is still the standard debating subject in Eastern G.R. messes. It can go on for hours and hours —and often does.

" Pilots and navigators, by the way, must know their ' miles per gallon ' as against ' gallons per hour ' economic consumption data—and also know when it pays to open the taps against a head-wind.

" Squadron Nav. officers must check all logs and charts after each trip and should always have some bodies detailed for this daily chore. It's surprising how much information comes out of a properly analysed nav. log and chart. Many lovely ' dead on ' landfalls often prove to have been acts of God rather than good

navigation, as a 30-mile plotting error has subsequently been cancelled out by a 30-mile error the other way. But had these errors *added*, instead of *cancelling*, the error would have been 60 miles, plus a missed objective.

" Lastly, chaps, you *must* know your thunder-clouds. The white ones you can risk ; the black ones you can risk in an emergency. But the brown ones spell suicide ; you'll get your wings torn off. . . . Thanks, I don't mind just one more for the road."

* * * *

Bear in mind what Old Father Fixe has said. There's a lot in it—and he's been there and had some.



ANOTHER PLOTTING TIP

IN November, 1944, TEE EMM we published, under the title " Some Plotting Tips," three ideas which we had been sent by a correspondent. They were useful and simple " short cuts " to certain navigational problems.

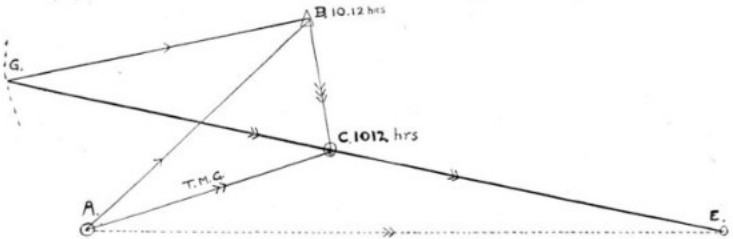
The first one, you may remember, required the navigator to give an immediate accurate new course to his destination, having received a pin-point at 1012 hours.

We have now been sent by another correspondent what he describes as an " even shorter short cut " for this problem and publish it herewith, together with pretty picture.

AE = Required Track.
AB = Air Distance in 12 minutes.
AC = Track made good.
BC = Wind Vector for 12 minutes.

Method :—

(i) Plot new required track CE and produce it back.
(ii) With centre B and radius BA describe an arc to cut EC produced at G.
(iii) Then GB is the new course to steer to make good the required track CE.



ENGINE HANDLING

THE following article is reprinted from No. 5 Group News, but as it is of value to Flight Engineers in other Groups who have to deal with Merlin engines we are publishing it in TEE EMM.

Much controversy has taken place since Air Ministry has cleared Merlin 22's, 24's, 28's and 38's at + 7 lbs. boost for cruising. It is thought by so many pilots that this extra 3 lbs. boost is something for nothing, that petrol consumption at 2,650 r.p.m. and + 7 lbs. boost will be the same as 2,650 r.p.m. and 4 lbs. boost ; this is not the case. This is what has taken place—before the modification was incorporated, the S.U. carburettor richened when the boost was increased above + 4 lbs. and the Stromberg carburettors richened with boost above + 3½ lbs. With Mod. 582 both these carburettors will now be progressively weak throughout their range up to + 7 lbs. boost.

In all cases for economical flying it is necessary to fly at a given optimum R.A.S. This is governed by the all-up weight of the aircraft, so crews should always attempt to obtain the I.A.S. for which they are briefed.

Boost of + 7 lbs. will only be obtained up to rated altitude, this will be approximately 9,000 feet in " M " gear and 17,000 feet in " S " gear. Therefore if an I.A.S. of 170 m.p.h. is required at 8,000 feet, to fly economically the boost would be increased to + 5 or 6 lbs., but the revs. must be reduced below 2,650 ; the only advantage in this case is the throttles would be fully open. If, however, the revs. were left at 2,650, using + 5 or 6 lbs. boost, petrol consumption would increase. A case in point—a Lancaster in this Group was fitted with flowmeters ; at 10,000 feet using 2,650 + 4 the R.A.S. obtained was 200 m.p.h. and petrol consumption 228 gallons/hour. The same aircraft, when using 2,650 + 6 at the same altitude, obtained an R.A.S. of 215 m.p.h., but the petrol consumption increased to 271·2 gallons/hour. As can be seen, for the extra 15 m.p.h. the consumption was out of all proportion.

The advantage of + 7 lbs. boost will be found in the climb. When climbing at 2,650 + 4 with a fully laden aircraft, the R.A.S. should be 157 m.p.h. ; if this cannot be maintained or the aircraft becomes " heavy " to handle, the boost can be increased over the + 4 lbs. to obtain the optimum R.A.S. of 157 m.p.h.

If the general rule of high boost and low revs., together with the optimum R.A.S., is carried out on all flights, the petrol consumption will always be good.

LANC. PANIC

Prune never panics—

A Lancaster was taxying round the perimeter preparatory to taking off on a sortie against Hunland, when the W/Op. thought he'd load the Signal pistol. Some clot, however, had left it loaded, and the W/Op., instead of " proving " it, managed somehow to pull the trigger.

Naturally it went off and the interior of the aircraft was filled with smoke. The burning light came to rest near the Navigator, who shoved his foot on it in order to put it out.

Mark what happened then.

The Captain hearing the noise and seeing the smoke asked the Flight Engineer what was the matter. The latter, instead of attempting to find out, at once yelled back that the aircraft was on fire, seized an extinguisher and, in the smoke, started to spray the Navigator with it instead of the cartridge, thus considerably hampering him in his job of stamping it out.

The Captain meanwhile had decided that all was lost and gave the somewhat unorthodox order, " Emergency—out ! "

The Flight Engineer dropped the extinguisher and left the aircraft, together with the Air Bomber, *via* the nose escape hatch, while the W/Op. and both Gunners fled through the rear door. The Navigator, who had disconnected his intercom, did not hear the order and so stayed behind. Being no longer sprayed at short range by the Flight Engineer, he was at last able to carry on successfully with putting the signal light out.

—except when. . .

And here's the sequel. After a brief inspection by the Engineer Officer the aircraft was found to be completely serviceable, a reserve crew was rushed out on a bus and the aircraft set off on its detailed mission only fifteen minutes later.

Moral : Don't lose your head in an emergency ; it sometimes makes you look a bit of a fool.

Threadbare moral : Don't leave firearms of any kind, *including* Signal pistols, loaded ; and never pick up firearms of any kind, still including Signal pistols, without proving them to see if they are safe.

THE HIGHER THE FEWER

THE higher the fewer—interceptions: this is a wise maxim for P.R.U. types. "And nice work if you can get it," says Prune, remembering a recent sortie on which a low cloud base and operational necessity had entailed his stooging over a really hot target at nought feet. Whatever the height of the sorties, however, the most important consideration for the P.R. pilot is to bring back pictures of the target.

To the pilot of a P.R. aircraft, the completion of a successful sortie is an exhilarating achievement. Unarmed, alone, often for many hours over enemy territory and in bad weather, there are many difficulties to contend with. Over the target he must rely implicitly on the correct functioning of his cameras, the only indication of which are the warning lights on the camera controls. The steady winking of these lights during photography is to him as welcome a sight as the winking of a blonde is to Prune when engaged on a prowl. But (as Prune confirms) if you don't get the wink it's no go. You then have to ask yourself why you don't get it.

Well, of course the cameras will not go, if not switched on, or selected; nor will they go if a fuse has "blown," as often happens even in the best regulated families. The good P.R. type, however—and they have to be good—knows all the answers. The load of cameras cunningly dispersed over the aircraft and prepared so carefully before take-off by the camera boys are all known to him. He has studied their idiosyncrasies and checked them carefully before take-off. Should they develop a fault when on the job he will immediately recognise the symptoms and apply corrective measures—if humanly possible—to ensure complete cover of the target.

Details of photography, also, are carefully noted by the good pilot for subsequent use when filling in the photographic reconnaissance report, and during the preparation of the trace of runs made, all of which will be wanted by the Intelligence Officer at interrogation. Since, too, a number of targets may have to be photographed on the one sortie, a check must also be made of the exposures taken; and the cameras must be switched off after each area has been satisfactorily covered, in order to economise in film. Moreover, since to the photographic interpreter any picture is better than no picture, photographs must often be taken in anything but good weather and perhaps at a much lower altitude than normally desirable.

In addition to watching the various controls, counters, etc., and concentrating on adequate cover of the target, the pilot must also be continually rubbernecking to spot unfriendly natives. There is no future in being bounced by a Hun whilst engaged on a straight and level photographic run. An early indication of said Hun's presence is essential if a later return to the job; or to any job, is to be made.

The photographs taken, it may happen that the pilot will have to land at an aerodrome other than his own. He must, therefore, know how to remove the magazines from the cameras himself, for it may be necessary to get them back to base by road for processing. Further-

more, if weather over the target necessitates a change of height from that planned, the pilot must know how to alter the time interval, for the photographer will not be there to do it for him.

Finally, the P.R. pilot must always remember that a target avoidably missed means another sortie with all its attendant risk and resultant delay. Nothing, therefore, must be left to chance and every hazard must be overcome if at all possible. Satisfactory cover and satisfactory photos can only be achieved by good flying and good navigation.

Prune, as a P.R. Pilot, likes to make certain his photos are all right before taking them back.

WEAR THAT ONE

A YOUNGISH Instructor we know, testing out a pupil's knowledge, asked him, with a certain amount of low cunning, how many engines a Hotspur had—a Hotspur, of course, being an unpowered glider.

The pupil replied " One," but when the Instructor started to laugh raucously at him, the pupil produced from his pocket a copy of *The Aeroplane Spotter* for August 15th, 1942, and directed his attention to page 204.

There at the top was a picture of a Hawker Hotspur—the original two-seat turret fighter of 1938, its one engine being clearly shown.

(*Collapse of would-be deceitful Instructor who, not having paid attention to the Vicar's sermon, had thought that the " Aeroplane Spotter " was the Parish Magazine.*) Or words to that effect.

THERE'S BEEN AN ACCIDENT!

Being a short record of various points from recent accidents—from which something might be learnt by our readers.

There's a Good Reason for it—Use the Correct Phrases—Form 700 Has a Meaning—Faulty Cockpit Drill Kills Five

THERE is a pretty good reason for all the orders concerning the handling and flying of aircraft, though some of them may seem unnecessary to you. Take for instance the verbal instructions which a captain has to give his crew. Most of them are couched in set official phraseology, but crews who are experienced at working together often think they can dispense with this and talk " natural-like " because they all understand one another.

Well perhaps they can till one day there *is* a slight misunderstanding—and an accident. For remember these set phrases are designed to prevent *any* misunderstanding and, even though they may be unnecessary in ninety-nine cases out of a hundred, yet if the hundredth comes it catches you out.

Here's the story of a Flying Officer, a pilot under instruction in a Lancaster, doing solo circuits and landings for the first time—a business which needed all his concentration. He did two all right and started a third. He told his crew he was taking off, opened up his throttles gradually, released brakes, checked swing and in general was doing pretty well till at about 95 m.p.h. he needed his full attention on the aircraft and ordered the Flight Engineer to continue moving the throttles up. This is where he went wrong, for instead of calling for " full power " in the prescribed manner, he gave the verbal order " Move them up ". The Flight Engineer, who, had he been a little brighter, might have guessed what was required, misinterpreted the words to mean move the *wheels* up. He thereupon retracted the undercarriage during take-off and the aircraft collapsed on its belly.

Result one perfectly good aircraft badly damaged, simply and solely because one fellow " thought the other fellow would understand."

Almost on all fours with the previous case is this one. A Flight Sergeant, pilot of a Wellington which was about to take off, was having his tyres and brakes checked by the ground crew when he noticed his brake-pressure was low. Instead of calling "Hydro" to control, which is the formula laid down when brake-pressure is wanted, he tried to draw the airman's attention by waving to him out of the window. The propeller caught his hand and took off the tops of two fingers.

All so unnecessary. Follow the proper procedure which is designed to *prevent* accidents—and will do so, if you give it a chance.

A Martinet had to make a forced landing in a ploughed field, only a few minutes after take-off, owing to engine failure. This was due entirely to shortage of fuel in the inner tanks. Why were they empty? The answer is: Finger trouble by quite a number of persons. First, someone had apparently fitted the aircraft with faulty fuel gauges. They gave readings of twenty gallons for one inner tank and thirty-seven for the other, when in point of fact both were empty. Second, this had not yet been spotted by anyone else, though the aircraft had flown twenty-eight hours with the faulty gauges. Third, the aircraft had been left at a satellite the previous night and next morning another pilot decided to fly it back, *before* daily inspection or refuelling had been carried out. Fourth, the pilot had not even consulted, nor signed, Form 700.

This last alone, as you all know, has destroyed many aircraft even without the help of other people's errors, upon which it is largely designed to check.

Talking of checking on other people's errors as we were in the previous paragraph, here's another case. This time the accident (to a Halifax) was due to faulty cockpit drill by a pilot; and one of the main purposes of cockpit drill is to see for yourself that other people have done their job—instead of trying to put the blame on them as you personally approach the Pearly Gates.

This Halifax took off, promptly commenced a steep climb to port and continued to execute steep turns. Contacted by Flying Control the pilot stated his ailerons appeared to be jammed and he couldn't get above 500 feet. He then tried to crash land and failed. The aircraft was totally destroyed, five of his crew were killed, and he himself was very seriously injured.

What had happened was that the Halifax had no aileron control because the locking device had not been removed. To do this was the initial responsibility of the rigger who should have seen that it was removed and stowed. He did not do so. Nevertheless he did tell the Flight Engineer that the aileron was locked and the latter acknowledged it; so he too was not absolved from blame.

But it was the ultimate responsibility of the *pilot* to ensure "that all controls are unlocked and locking gear stowed," by visual check and movement of the controls. In other words, by carrying out his cockpit drill which as we said before is designed to check up on other people as well as himself. It's no good thinking cockpit drill doesn't really matter. Failure to do it costs lives, as is proved by this case.

THIS MONTH'S PRUNERY

THE MOST HIGHLY DEROGATORY ORDER OF THE IRREMOVABLE FINGER (Patron : Pilot Officer Prune) has this month been awarded to Wing Commander —— for At Least Knowing *Who* He Was.

Seeing a Martinet land and taxi round to take off again the Airfield Controller of Station " A " questioned W/Cdr. ——, the pilot, on the R.T. as to his identity. He replied, " It's all right, I'm the C.I. here," and took off again. Knowing, however, that the C.I. of Station " A " had recently gone home with a bad cold, the Airfield Controller made some enquiries and finally ascertained that it was the C.I. of Station " B," some six miles away, who was out flying in the Martinet concerned.

A Joint to the Order is also awarded W/Cdr. —— for Putting Things Right, But in the Wrong Direction.

He made a final landing at Station " A " and, before returning to his own Station, taxied up to the Watch Office and apologised for having inadvertently used their runway, but referred to them as Station " C," a third Station six miles away in yet another direction.

The M.H.D.O.I.F. has also been awarded to Flying Officer —— for Keeping One Thing in His Head at a Time.

This officer was detailed—out East—to fly some urgently required medical stores from a H.Q. to a Station. He was also told to pick up two passengers at the Station who were due to return to H.Q.

He flew out to the Station, and later returned to H.Q. with the two passengers. When asked for the receipt for the medical stores delivered, he realised for the first time that they were still in the aircraft, as in the excitement of picking up the passengers he had omitted to deliver them.

The M.H.D.O.I.F. has also been awarded to Flying Officer —— for Knowing Just What He Wanted.

As Flying Control Officer bringing in aircraft on the Aldis, he was about to bring one in when it was reported that there was an obstruction on the runway. He turned to a Sergeant Airfield Controller at his side and said urgently : " Get me an Aldis lamp with a red glass : this has a green one ! "

A Joint to the Order is further awarded him for Brilliant Improvisation.

The Sergeant being too bewildered to do anything, Flying Officer —— flashed a quick series of greens to the incoming aircraft. It landed—luckily seeing and avoiding the obstruction. When the Pilot said afterwards : " But why on earth did you give a me a green ? " Flying Officer —— replied, " Because I hadn't got a red and I thought you'd know what I meant."

THREE AND THREE-QUARTER YEARS AGO

Since many of you were not in the Air Force when TEE EMM *started and possibly have never seen our earlier issues, it has occurred to us that it might be a good thing to print some of the less dated articles from these issues. Each month therefore we are publishing a selected article from the corresponding issue of three and three-quarter years ago.*

We carry on this month with one from our third number, June, 1941 :

MAKE AN AIRCRAFT IN YOUR SPARE TIME

THIS title, of course, does not mean that we are giving away free with this issue a Model Aeroplane Cut-out, Full Instructions Enclosed, Only a Sharp Knife Needed. We simply want to bring to your notice that not all the aircraft engines used in the Air Force come straight from the factory, brand new and neatly packed in cardboard box. In point of fact, for every hundred engines so produced a further sixty come from the Repair Organisation, where engines that cannot be repaired are taken apart and the pieces used to make good those that can.

Now the repairable engines, you can see, need a constant supply of spares. If they are not forthcoming the output from the Repair Organisation is slowed up. This is a thing you can all help to prevent, but, mind you, go the right way about it. An excuse like that of our P.O. Prune, who, when he failed to select his undercarriage down and crashed his kite, said he was really providing sorely needed salvage, is unlikely to be received in the proper spirit. Remember what may be to you "something that'll come in useful some time" is to the Repair Organisation probably "just the bit he's looking for." So don't *hoard* bits and pieces ; get them back into circulation.

P.O. Prune has no spare time.

Now for a more personal talk ! First to N.C.O.'s i/c Flight :

Clear that load of "gash" spares out of the flight lock-up. They are probably causing a shortage somewhere. Don't order any more till your present stock is used up. Another thing : an unserviceable item is not necessarily scrap, so get it back to stores, who will get it out to the Repair Organisation, where it will be salvaged by the fitment of non-standard parts. When returning spares such as sparking plugs, give them some protection, so that threads don't get damaged : in other words—"Use your loaf !" And keep an eye on the airmen. Get their kit boxes cleared of that private store of nuts and bolts. If serviceable,

they should be in the store ; if not, there are boxes for old metal in the workshops.

Now to N.C.O.'s i/c Workshops :

Your junk-box is not the place for keeping blanking plates and plugs. If you are not going to use them, return them to the stores and give someone else the benefit. Don't throw unserviceable " C " stores into the dustbin : Sort them all out and return them as old metal, along with the swarf from your machine shop. And don't break up unserviceable items you have saved from crashes. It is surprising what the salvage section of the Repair Organisation can do. Their motto is : " No matter what it is like, we'll put it right."

To Equipment Officers :

Don't hang on to those repairable stores, get them back to U.E.D.'s so that they may be put back into service. You've sworn when the Station Commander has been chasing you for a spare which you've had on demand for a month. If you and your brother E.O.'s would only chase the unserviceable components out as soon as the arisings occur you'd get replacements more quickly. Don't wait for " Boards of Survey." Get repairable stuff back to the Repair Organisation right away.

To Station Commanding Officers :

See that *everyone* in your command helps in this good work !

Lastly, to whom it may concern :

Bring in those souvenirs you have swiped off various crashes at your unit. Although they may look very nice on the mantelpiece or may even be converted at some future date to very useful ash trays, they could be put to far better use if returned to stores ; then, if they were repairable, they'd soon be back in service. If they are *not* repairable, they are worth their weight in gold to the country as scrap. Either way you're helping to build an aircraft in your spare time.

Or would you really prefer *Tee Emm's* Model Cut-Out ?

HOW ARE YOU OFF FOR TEE EMM ?

DO you see TEE EMM regularly at your Station ? If not, try tackling the Adjutant, or whoever deals with it, and if he says he doesn't get enough copies he has only to write to us and we'll increase his distribution. The Air Ministry has laid down that all officers, air crew members and instructors are entitled to see TEE EMM and that allocations sufficient to ensure this must be demanded. If you have any genuine grouse about not being able to see it, write to us and we'll try to sort out why.

In the case of S.E.A.C., South Africa, Middle East and Australia, printing and distribution are both arranged locally, so it's no use contacting us. The people to ask are your Adjutant and upwards, and make yourself a nuisance till you *do* get it. You are *entitled* to see it, and it is produced primarily for air crew and instructors.

GUIDE TO PRINCIPAL MATERIAL IN VOLUME IV

GUIDE TO PRINCIPAL MATERIAL IN VOLUME IV

He flew too near the Drogue.

TEE EMM is an O.U.O. publication, which means it is for Official Use Only. And 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 and issued *by* the Service in the person of the Air Member for Training.

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