TEE EMM

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CONTENTS

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

"BINDER" says 'WHY NOT BIND IT?'

This is the last issue of Volume II of TEE EMM. Why not get the complete Volume bound up? It costs a few shillings and once bound you can't lose stray copies.

I hope that these Training Memoranda will be widely read and studied, since I am certain that they will help us all to improve our efficiency, not only in our training but also in operations against the enemy.

Air Chief Marshal, Chief of the Air Staff.

THE ART OF INSTRUCTING

II

PRACTICALLY all Service teaching, it will be found, comes under one of the four following heads: (*a*) Theory; (*b*) Demonstration; (*c*) Manipulation of Apparatus; (*d*) Practical Exercise. But whatever type of instruction you are concerned with, there are two cardinal points to remember if you want to be successful. These are PREPARATION and PRESENTATION.

First, a few words about Preparation. It's not enough to have merely a thorough knowledge of the subject. Most instructors have this, but if they haven't thought out beforehand exactly what they intend to say, how they are going to say it, and in what order it is to be said, then much of their effort will be wasted. When preparing a lesson remember, too, to make a précis containing just the main headings in the order in which you intend to deal with them, and have this précis in front of you when instructing. It is very easy to lose your train of thought when standing before a class, particularly if—as is more than likely—the class contains a "Side Tracker," the type who, as we mentioned in our last issue, takes a mischievous delight in trying to put the instructor off his subject. Often he succeeds, but if you have your précis, then it is easy to come back to the point where you left off. If the standard of your

class is up to it, it is also well worth considering whether you should not issue (as is done at the Staff College) copies of the précis with wide spacing so that your pupils can jot down their notes in the proper places.

Present your instruction on the following lines :—

I. *Introduction.*

A secret of good instruction is a good introduction. It has been called the soul of a lesson, and it certainly can make or mar your efforts. It is therefore worthy of a great deal of thought, and will probably take up the bulk of the time of preparation. It can be in various forms, but its chief aim is always to *arouse interest in the subject at the beginning*. You don't want some of your class to wake up half-way through the lesson and murmur sleepily to one another, " What on earth is he nattering about ? " You want them all, even the somnolent " Back-bencher," to be as much agog from the word " Go " as if you had exploded a bomb.

Your introduction, therefore, should be this bomb, and if it explodes properly, then half the battle of instructing is over. One of the best ways of doing this is to tell a good story or personal experience which has some bearing on the subject. We recall having to listen long ago to a lecture on " Fossils," to us a most deadly, dull subject. The lecturer, however, started by telling some funny stories about some fossils he and we knew, including our old professor, which went down very well and certainly aroused our interest in the subject.

If your instruction is of the theory type, see that your introduction also brings out the need for the theory. So many present-day pupils are apt to look upon theory as so much mystery and unnecessary brain-fag. The instructor is largely to blame for this attitude. Try and make the pupil see that if he can really understand the principle on which some mechanism works, he will treat it with some of the respect due to it, and will be able to use it intelligently. Further, in the introduction of your theory lesson, deal with any essential knowledge the pupil must have, in order to grasp the theory you intend to put over. If your lesson is well prepared, you will know exactly what this is. There is nothing more annoying than to be well into a lesson and then suddenly find that something you mention, which is vital to the understanding of the theory, is above the pupils' heads. You have to break the sequence of your lesson and go over this stuff, which could easily have been done before you started if you'd thought of possible difficulties. Many otherwise good lessons have been spoilt because of this.

We've dealt with the introduction at some length because to our mind it is vitally important. Now we come to the next part which may be called the Main Body of the Lesson.

II. *Main Body.*

This is the bulk of the lesson—the meaty part. If it is, say, a demonstration lesson, deal with the principle of the mechanism first, then go on to the main parts and purpose of each. Introduce the names of each part as they occur. Don't develop

into a " Names-of-Parts " merchant, *i.e.*, one who makes his pupils learn off all the names before explaining anything of the mechanism. This is a certain way to kill interest. Next go on to the action of the mechanism. If the lesson is of the theory kind, the main body will consist of the development of the theory ; for example, it may be the deduction of a formula.

III. *Additional Detail.*

Don't clutter up the essential part of your lesson with a lot of unnecessary detail, *e.g.*, lengths and weights of guns, etc. If you have some facts and figures which may be of interest, but are not vital to the understanding, then they should be given as such after dealing with the main body, or given out as an appendix to your précis for subsequent study.

Your lesson is now practically over. All that remains is to bring your efforts to a close with recapitulation and revision.

IV. *Revision.*

Always leave about ten minutes at the end of your lesson to go over thoroughly but rapidly what you have just done. Deal with any questions which may arise—and ask some well prepared questions yourself to test the understanding of the pupils. One further point : a class likes, and should always have, a permanent, personal record of instruction received ; so see that they are given some brief notes for their note-books. But these must be issued as notes : they must *not* be dictated. Dictation in instruction is *verboten*.

These, then, are the lines on which to present your instruction. It is known as the Synthetic method, but might better be called the Common-Sense Method, because you start by arousing interest at the beginning, and then build up your subject in easy stages. It is the natural way of learning.

To remember the sections into which a lesson should be divided, think of a human organism—let's say yourself ! A good lesson should be built up, like a good instructor, on the following lines :—

1. Introduction	Soul
2. Essence of Lesson	Body
3. Additional Detail	Limbs
4. Revision and Recapitulation . . .	Head

That is the order in which they should come in a lesson, but whether that is the order of importance in the organism—yourself—we wouldn't like to say !




much assistance to the Gunner during the Battle ?

" And yet again, cannot the Gunner by suitable comment, help with Getting into Formation by day or Beacon-Reading by night ?

" But to do this, surely, must not all take an intelligent interest in what goeth forward about them ?

" Verily, verily, I say unto you, be not as that clot, Sergeant Winde, who sitteth and gazeth into vacancy, for of such stuff are fools made and the earth shall soon have their bones."

And he departed from their midst. And they pondered his words, saying among themselves, " Indeed, is he not blinking well right."

NO. 8. WAS IT NECESSARY?

Returning from a recent raid on Genoa, the Captain of a Halifax discovered that his D/R compass repeater was not in agreement with the P.4 compass. Without telling his navigator to check the D/R Master Unit he decided to trust the D/R compass in preference to the P.4 compass.

The sextant illumination was u/s and no radio aids were available. Apart from efforts to obtain a fix from P——, for which a bearing from L—— was received, no check on the position was made until after ten hours flying, when a first-class fix was obtained. This gave the position as 150 miles east of the Yorkshire coast, so that they had flown well to the east of the track. By this time, however, the aircraft was near the limit of its endurance and the Captain had to make a descent in the sea. All the crew were picked up by the Air/Sea Rescue Service.

From this there are several lessons to be learnt.

First, the Captain should not have trusted his D/R compass in preference to the P.4 compass. In any case he should have instructed the navigator to check the D/R Master Unit.

Secondly, the navigator made no apparent effort to check his course by Astro compass.

Thirdly, the navigator made no use of the line bearing received from L——.

The crew of this aircraft were not inexperienced, having done on an average seventeen sorties each. Enough has been said. . . .

THE PARABLE OF SERGEANT WINDE

NOW it came to pass that upon a certain Airfield (they which were aforetime known as Aero-Dromes) an Air Craft did seek to alight. And the Pilot had turned in, as was the Law, to make his final landing.

Now he had descended to nigh upon two hundred cubits, when, lo! he did behold, to his horror and amaze, another Air Craft slide out, verily from under his nose, and land upon the place he had selected.

Whereat he was much put about, the more so as in the close passing he did remark, seated within the interloper in that place known as the rear turret, a fellow of the baser sort called Sergeant Winde. And this Sergeant Winde was in no wise put about; nay, rather was he smoking at his pipe and calmly gazing at naught, as was his usual habit.

So, in two wags of the hinder end of a feathered fowl, as the prophet sayeth, did the first descending Air Craft pull away and make that manœuvre which men call Going Round Again. And thereafter did the pilot land. And thereafter did he stride up in his wrath to the aforesaid Sergeant Winde and his pilot, who, being apart in his forward place, had known naught of other Air Craft near by. And he opened his mouth and spake words of contumely to Sergeant Winde.

And Sergeant Winde did answer and say, "Oh, sir, I did not tell my Pilot of your near approach, for I knew that the Kites would miss. And, moreover, landing an Air Craft is verily *his* job and none of mine, for I am but a Gunner of the Rear. Who am I that I should, in the words of the Prophet, shove my oar in? Selah."

And the Pilot spake again, "Oh, Sergeant Winde, thou man of little understanding, thou man of . . ." But his words failed him in his mouth till he could but say heatedly "Selah to you!" and did stride away to his own Crew, and gathered them unto him and spake much wisdom.

"All ye are men of one Crew, and what one doeth is not his own work entirely but pertaineth in part to all. Ye must work together and your jobs must run the one into the other. And to achieve this is it not meet that each one of you should know somewhat of the job of the other fellow?

"Is not a word from the Gunner of the Rear regarding the position of other Air Craft when Landing or Taxying, of much assistance to the Pilot?

"And again, is not a word concerning targets from the Pilot or Navigator of

day, and though they then flew nine hours daily, they were not working on a properly co-ordinated plan. The first proper navigationally-planned search was successful within five hours.

Now what were the causes of this ghastly and unnecessary loss of life, this loss, too, of all the time and money expended on the crews' training, and this wasted war-effort of six searching aircraft and crews which might have been operationally employed ?

Primarily it was bad navigation. It was basically due, as was afterwards proved, to the inability or slackness of any of the three navigators to keep a proper log. As a result they had completely lost themselves half an hour's flying time from base. So completely were they lost is shown by the fact that they searched towards all four points of the compass for the base they had left but thirty minutes before. Blame also attaches to the Wireless Operators/Air Gunners who did not correctly work their D/F and so keep in touch.

Then when on the ground the crews, knowing they were lost, failed utterly to take their plight seriously, as anyone should who is engaged on desert flying. They did not ration water till it was too late. They made foolish use of the compass alcohol and the fire extinguishers. They failed to lay out any strips or make smudge fires, which might have guided the searching aircraft.

Even so, they might have been saved if the searching aircraft had co-operated promptly and methodically. For various reasons no search was made on the second day, and on the third and fourth days weather made proper search impossible. And for three days after that only vague sweeps were made, instead of navigationally planned searches.

Finally, it would seem that the tragedy was in great part due to poor leadership. A good Flight Commander would almost certainly not have allowed much of what did happen to occur. One gets the impression that the stranded men did more or less as fancy dictated or as they thought best after general consultation, instead of being made to work under the strict orders of their leader. In fact, the whole sad business might easily have been avoided in the first place if the Flight Commander had obeyed a standing order that during desert reconnaissance by a flight, one aircraft at least should remain on the ground ; and again if, after carrying out the reconnaissance, he had landed his aircraft safely and not taken them off for half an hour on a completely unauthorised flight. But orders were not obeyed.

* * *

There, in sum, is the story. It is for all of you who read this to study its lessons.

For if even one life is saved in the future from knowledge and understanding of what happened, and why it happened, then those eleven unhappy men will not have died quite in vain.

ELEVEN DIED—WHY?

HERE is the tale of how eleven Air Force men died.

They did not die fighting against the enemy. Their deaths were not even remotely caused by enemy action. Yet they died one of the most horrible deaths known to human beings—slowly, by thirst.

And it was their own fault.

We are not telling this unhappy story in TEE EMM for any other reason but that you all may understand just what happened.

And, above all, that you may remember *why* it happened.

* * *

Three Blenheim aircraft, each with a crew of four, took off from Kufra Oasis in the Libyan desert on a reconnaissance patrol. They carried out the patrol successfully and returned to base two and a half hours later. For some reason, however, they did not land, but flew away from Kufra again.

After half an hour one Blenheim force-landed with engine trouble and the other two followed.

Discussion of their position showed that they were lost, and one pilot took off and flew between south and west to look for base. He returned after half an hour having found nothing, and in the afternoon he took off again, this time flying south and east, but again unsuccessfully. During this time all three aircraft were transmitting by W/T but got no answer.

According to the only survivor of the twelve, they had been so confident of being soon picked up that they did not ration their water. Thus as much as twenty gallons had been drunk by the following morning, when they started rationing. During the second day another pilot took off and flew north. Once more the flight was unsuccessful, as were all attempts to receive wireless messages.

On the third day another pilot tried flying west, this being the only direction unsearched. He did not return.

The water had given out that morning, and during the afternoon they broke open the compasses and drank the alcohol. They also used the fire extinguishers to keep themselves cool. As a result they broke out in terrible blisters and sores.

Next morning the first man died. During the following four days, after suffering agonies of thirst and torment from having drunk the alcohol, which led one man to shoot himself, all the men had died but one, when at last the missing aircraft were located on the eighth day after they had been lost.

The search had been hampered by two things. First of these was lack of accurate information. The transmissions from the aircraft were very weak but the D/F procedure of the three Wireless Operators/Air Gunners was poor throughout and they evidently were not properly aware of the D/F procedure at Kufra.

The second thing was the bad terrain coupled with sandstorms which prevented accurate observation from the air. On the other hand, the searching aircraft did not start operating till the fourth

EACH CUSTOMER DEPARTS UNCONSCIOUS!

P.O. Prune was unconscious before he started.

At least that's what P.O. Prune thought the letters E.C.D.U. stood for; but actually they mean Engine Control Demonstration Unit. And No. 1 E.C.D.U., not so very far from London, is running a short but valuable course about which so many enquiries have been received from pilots that we're telling you a little more about it in these pages.

The course is primarily for Bomber Command pilots who are Flight Commanders or O.T.U. Instructors, but there are a few vacancies for Coastal Command. It lasts only three days (but what a three days !) during which the hidden secrets of your engine, carburettor, propeller, supercharger and other doodinkuses are revealed to you. The working of all these is, of course, practically a closed book to Prune, but if you—even you—really think you know all about these things, go on one of the courses and see what you can still learn.

The stuff is not, we assure you, too highly technical: it is entirely for the average bloke, and in addition to delving into the finer points of engine handling, the mysteries of fuel economy for range and endurance flying are unravelled before your eyes. At the end of it all, just in case you are still an unbeliever, it will be all proved in a flight demonstration, by means of that ingenious instrument, the flow-meter; so don't forget to take your flying helmet with you.

There are only six pilots on each course. This means you get individual attention; so bring your own pet theory along and trot it out for vetting. It may be so much bull, in which case you'll be enlightened; but you never know—it may give birth to something new, as the girl said to the sailor.

You may find yourself detailed for the course, or you may be an enthusiast who has volunteered through your unit, but either way, No. 1 E.C.D.U. guarantees you won't go away disappointed. And in any case your engine-handling and fuel economy will be almost certainly improved—for the benefit, we hope, of all except the Hun.

A last word: it is, as usual, not the thing to turn up half-way through the first day. Oh-nine-oh-oh hours is the kick-off and that's the time to be there. There's another course panting to start as soon as yours finishes—so no one's going to wait for you.

And—Every Customer Departs Understanding.



A PILOT BOWS TO HIS NAVIGATOR

P.O. Prune is pleased to pay his navigator a compliment.

Some while ago, in one of our " Navigation Pointers " (No. 5 in December TEE EMM) we dealt with certain little ways in which a pilot can help his navigator. It ended by asking pilots who didn't believe that a Navigator was worth helping, to hand over to their second pilot and try taking a few astro-compass shots themselves. And now —arising out of that!—we have just had a letter from a pilot which we think worth publishing. We're sure all members of the Navigators' Union will heartily agree.

Flying Officer Fixe is pleased to receive it.

This pilot it seems was detailed by his O.C. to go on a course, and a short while later was staggered to find himself with eleven other bewildered Bomber Pilots at a " Captains of Aircraft Navigation Course." He tells us his first reaction was to ask himself why should he, an operational pilot with a fully trained navigator in his crew, study Astro, D.R. Navigation, Meteorology, Maps and Charts. He goes on :— " The question did not remain long unanswered. Three days later with a Staff Pilot in an Anson, I found myself keeping a log and an air plot, getting drifts, finding winds, map reading, and trying to maintain track on a simple daylight cross-country. The experience was illuminating. I found it a real battle to get out a course and an E.T.A. for each turning point, work out course alterations from D.R. positions, keep the air plot going, etc. In response to my request for a pin-point on the last leg the pilot held up his thumb—we were dead on track—and I relaxed long enough to look for my dividers and protractor at the back of the fuselage!

" One fact emerged clearly from that first flight. I could remember many occasions when my own navigator would have achieved better results if I had flown more accurately. I had already found a dozen small ways in which I could help my navigator when next we flew together. Afterwards I learned from experience how vital it is to provide him with a steady platform when taking astro sights, to hold a steady course for drifts and loop bearings, to give him accurate pinpoints and not to deviate from a pre-arranged flight plan without a good reason. Above all, to be absolutely honest about the small details of height, course and airspeed if you have wandered off. I realised that I had heretofore asked my navigator to cope with the impossible—and, moreover, he had done it.

" Our Instructors were specialists in their particular subjects. Much that they taught us was new because it was up to date and more advanced than we had received at S.F.T.S. or O.T.U. The great variety of my fellow students' operational experience and their well-informed and practical outlook, not only enlivened our class discussions but stimulated the tarmac flying between classes and in the Mess.

" So my apologies to all navigators who have suffered at my hands and my advice to fellow-pilots is, brush up your navigation and met. so that you won't have to use a Course of 295°, and a prayer, from Happy Valley."

[*Original letter to be seen at* TEE EMM *Office during their office hours*, i.e., *between* 10.30 *a.m. and* 11.30 *a.m. and* 3.30 *p.m. to* 4.0 *p.m.*]

TEE EMM'S Brains Trust

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

LETTER. " SIR :—While reading the December 1942 TEE EMM, I was very interested in the information concerning the new 1 : 2,000,000 chart. Once more, however, I perceive that heights are given in metres. Since, as far as I know, all R.A.F. altimeters are calibrated in feet, it really seems to be an unnecessary complication to print maps and charts thus. I should be very glad, therefore, if you would find the time to elucidate this problem for me."

REPLY. All maps of the Continent, which are the " raw material " for the preparation of our own maps, show heights in metres. Although it is true that many areas of the Continent have been specially redrawn for our own use, it has not been possible to do this in many other places, and the best we can do is to reproduce the existing maps of the country. A case in point is the 1/250,000 series of North-West Africa.

This situation was well understood before the war and for that reason it was decided that metric heights should be shown on *all* air maps. At the same time it was proposed to alter all altimeters, calculating scales and so forth from feet to metres, and many of our maps were drawn with this idea ultimately in mind. For example, the 1/500,000 map of Great Britain shows the contours in metre intervals and the spot heights in feet, the spot heights being relegated to a separate plate so that a swift change-over could be made without re-drawing the entire black plate.

The outbreak of the war prevented the change-over of instruments, and it has never since been possible even to contemplate it. The result is the anomalous position referred to by our correspondent, in that all maps of the Continent the heights are shown in metres and our height calculations are carried out in feet. We do the best we can by putting a metres/feet conversion scale in the margin of every map, or in the reference card which is supplied for series which have no margins.

It is just one of the things that, had we, like Hitler, prepared for war for twelve years, would have been avoided. We hope this will suffice to elucidate the problem.

(A.P.) 1086 AND ALL THAT

AN article in TEE EMM for November was headed "Equipment is Dull." It occurred to us that some people might add "and the paper work connected with it is unbelievable." (P.O. Prune has another word for it.) Well, what is it all about? Are all these Forms and Inventories just to make things more difficult, or possibly with the idea of trying to catch people out? We will try and explain.

Every bit of equipment has to be ordered by somebody, made by somebody else (who wants to be paid for it), stored where it can be got at when it is wanted, and finally used by you. Now all the people who handle it (and a few who don't), want a certain amount of information. The chap who is ordering equipment wants to know how many to order; the bloke who makes it wants to know how many he has made and whether they got there safely, so that he can collect his money; the man who stores it wants to know how many to hold, how many he has got coming in, and how many people are screaming for it; and the users (that's you) want to know . . . but you see the idea? Well, that (as the girl said in the cinema) is where we came in.

Let's follow up a case. P.O. Prune wants (we can't for the life of us think why) Eggs, Pigeon, Dummy. What does he do? He turns up the R.A.F. Vocabulary (A.P.1086) and finds that they are Section 4B, Reference 574 (try it yourself). He fills in Form 674 and presents it to the Equipment Section. There it is registered and transferred to an external demand which goes to a Maintenance Unit. The Maintenance Unit, if they have none in stock, will order them off contract, and in due course will receive the eggs, and send them off. They arrive on the Station, are issued, and put on P.O. Prune's inventory by means of the Form 674 he made out to start with. All through filling up one simple form! Nothing up the sleeve!

Now the point is this: The equipment officer's records will tell him how many eggs, pigeon, dummy were ordered, and by whom, and eventually how many are being used every three months so that he will know what stock to hold in future, and the Maintenance Unit likewise. By use of other Forms the maker has been paid for his eggs; the chap who controls the contracts knows that so many have been delivered; and P.O. Prune has his eggs. And if he doesn't want to count them every day, his inventory will tell him how many there are, or should be.

There is just as good a reason for every other form used for Equipment Accounting, but we do not want to weary you with all the ramifications of the system; the Accountant Officer will tell you all that if you ask him. Here are, however, a few suggestions which will make the thing far easier for all parties:—

Don't sign any voucher unless you know what it is about. If it is a demand, be sure it is within the scale laid down (there's one for most things); that it really is essential; and that you haven't got one already. If it is a receipt for equipment issued, don't sign unless you are sure you have had it.

Do make sure the Section and Reference Number is right; or if none, that the part number or maker's number is given. Also that the description is correct.

Do (if you are an inventory holder) make sure you know what the scale of each item is ; that you " farm out " the bits and pieces to the people using them on loan cards and thus give them an interest in safeguarding them ; and also that you check one or two things every time you get a few moments to spare.

Don't short-circuit the Equipment Officer, if you happen to see something you badly need arriving, by taking it without his knowing. It will upset all his records and those of the Accountant Officer, and result in many unnecessary letters. And if it has come direct from a manufacturer, it will also prevent him getting paid.

Do see that all demand and return vouchers are entered on your inventory.

We often hear people say " my section is much more efficient than his "—but we'd much rather hear " my section is 100% efficient and I run it on less equipment than anyone." Proper use of equipment accounts will help you to do it.

Prune did it just to play a joke on a poor pigeon.

THIS MONTH'S PRUNERY

THE MOST HIGHLY DEROGATORY ORDER OF THE IRREMOVABLE FINGER (Patron : Pilot Officer Prune) is this month awarded to F/Sgt. Instructor —— for Exceptionally Quick Witted Resourcefulness.

On telling a pupil to go and practise Instrument Flying he was informed by the pupil that his aircraft had no hood. To which the F/Sgt. replied, " Well, then close your eyes or something ! "

The Order is also awarded to Flight Lieutenant Hyebrow for Ignorance of the Most Elementary Rules.

In his letter to TEE EMM last month concerning rimless cartridges he stated that if, while stooging around the armoury, " you put an unfired round of Hispano ammunition into a Hispano barrel, it won't go right in." Rather should he have said, " it shouldn't go *any way in at all*." Because it ought not to be *there*. To take live ammunition into an armoury is a flagrant breach of the regulations.

Service Terms Illustrated

by

Well-known Newspaper Cartoonists

No. 2. ILLINGWORTH of the *Daily Mail.*

CIRCUITS AND BUMPS

ABRACADABRA

Abracawhatabra, says P.O. Prune

HTMPFFGS is not, as you might imagine, part of the currency of the Greater Reich, nor is BUMPF necessarily what you think it is. Actually what we want to talk about is Cockpit Drills. Not the complicated sessions before taxying out—we've talked about those before, and as a matter of fact it landed us in lengthy and acrimonious correspondence lasting almost to this day—but in particular the VITAL ACTIONS.

The drills of VITAL ACTIONS were devised to make things *easier* and *safer* for all poor harassed pilots. In the days when retractable undercarts, flaps, and two-pitch props. were novelties the odd chap would scramble off the ground and stagger over the tree tops, sweating heavily, and then find he was in coarse pitch or had left the flaps fully down. We even know someone who landed with his wheels up—not *me*, says P.O. Prune—spectacular to watch, but with spectacular interviews afterwards and hideous additions to the Log Book.

Nowadays there are many more vital taps and levers and so forth ; and unfortunately many more similar mistakes, too often ending in personal injuries, not to say the Morgue, as well as in wrecked aircraft. We cannot, therefore, stress enough that *YOU MUST HAVE A SYSTEM*, if unnecessary accidents are to be avoided.

Are you in the habit of casting a hunted look around the cockpit before taking off ?

Are you most unhappy in a new type ?

Have you ever pranged through forgetting something ?

Yes ? Then heed well our words of wisdom—at least wisdom's what we think they *are* words of !

The official basic checks of VITAL ACTIONS as given in Pilot's Handling Notes and as taught at E.C.F.S. and the A.F.U.'s are :—

BEFORE TAKE OFF		HYDRAULICS (if applicable)
	T	TRIM
	M	MIXTURE
	P	PROPELLER
	F	FUEL
	F	FLAPS
		GILLS
		SUPERCHARGER (if applicable)
AFTER TAKE OFF		BRAKES
	U	UNDERCARRIAGE
	M	MANIFOLD PRESSURE (BOOST)
	P	PROPELLER
	F	FLAPS
BEFORE LANDING		BRAKES
	U	UNDERCARRIAGE
	M	MIXTURE
	P	PROPELLER
	F	FLAPS

We have put B. for Brakes in front of the last two, though it is not always done ; but on many types nowadays it is essential after taking off to brake the wheels to a standstill before retracting them. And before landing it is obviously wise to check the brake pressure and the operation of the brakes—as far as is possible in the air ; most modern types rely so much on their brakes for pulling up, tricycles especially so.

Now while these drills were excellent on earlier aircraft with few ancillary controls—and can still be applied successfully to the latest types, don't forget that the average cockpit becomes more complicated every day. The bright boys in the back room are always thinking up new knobs and switches to confuse the pilot. Indeed, the following list will show you what a good memory and excellent grasp of the situation you must have if you want to cope successfully, using the normal mnemonics or "catch phrases." Look out! Here it comes!

HYDRAULICS .	Selector Knob or Lever ? Pressure Gauge ?
T TRIM . .	Elevator? Rudder? Aileron ? Tighten Throttle Nut ?
M MIXTURE OR MANIFOLD PRESSURE .	Control ? Carburettor Air ?
P PROPELLER .	Main Lever — Increase Revs. ? If Electrical— Master Switch ON ? Selector Switch AUTO ?
F FUEL . .	Main Cocks ? Pilot's Master Cocks ? Balance Cocks ? Contents and Gauges ? Booster Pumps ? Pressure ?
F FLAPS . .	Position ? Locked by Selector Lever ?
GILLS OR RADIATOR .	Position ? Oil Coolers ?
SUPERCHARGER	MOD. or LOW ? If Turbos—Position ? Intercoolers ?
U UNDERCARRIAGE	Lever Position ? Mechanical Indicators ? Lights ? Horn ? Have a LOOK as well !

Well, there it is. We might as well admit that we aren't writing them down from memory; we're copying them out.

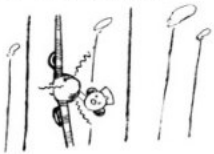
Which brings us to the point: You may be pleased to hear that CHECK OFF LISTS of VITAL ACTIONS are being introduced into Pilot's Handling Notes. And we suggest that you reproduce, or get someone to reproduce them on a card for use in the cockpit. It'll be well worth the slight trouble, and a covering of celluloid or varnish should make them last well.

However, your memory will still have to function a little: rather tricky to try to refer to the gen when the Gremlins have launched a mass attack!

P.O. Prune still can't follow a word of it.

LINES FROM PRUNE'S SHOOTING GALLERY

I can fly through any balloon barrage: I bank over vertically and fly through on the wing tip.



YOU WOULDN'T DO THAT

DID we hear you say you never make a mistake with your bomb panel, camera, or bomb sight? In that case, don't read this! But if on the other hand . .

We'll skip—though *you* should not—the checking of instruments on the ground, the complete overhaul of everything when you cross the coast, and the hasty check before you run up to bomb. You've heard all that before too many times. But let's consider the errors you may still make in spite of everything you've learned and practised.

There's the error of the height-bar. You check it with your bombing gen, slip it into the bomb sight, set your T.V. from it, and when you get home you discover you have put it in with the wrong side to the front—and you've missed by more than you care to admit. But *you* wouldn't do that, would you? . . .

Then there's leaving the distributor drum at SINGLE and SALVO instead of Distributor. You had it on DISTRIBUTOR, but it showed such a bright light in the compartment that, instead of blacking it out with a piece of gum, you pushed it up again. Of course, only the pilot would know about that, and even he might not guess. . . . Still, you wouldn't do *that*, would you? . . .

The Crew remain calm in a crisis.

And when you select the flash and happen to push the switch down instead of up (air-bumps, maybe)—or when you go to release a flare and mistake the switch. . . . Well, no one will know the difference but you, a lot of flashes don't go off—but, of course, you wouldn't do *that*. . . .

And if you're doing a lot of stooging around the target and the second dickie shuts the bomb-doors and you make a

quick run-up and press the tit with the bomb-doors closed, and then notice they're shut, and yell frantically to have them opened, after which you notice that the distributor arm is at " H," so you correct it and press the firing tit and —well, though your pictures will show the aiming point, your bombs will be three stations down the line . . . but you wouldn't do *that*, would you ? . . .

Nor would you go drifting into the target, congratulating yourself that your crew have at last remained quiet in a crisis, only to discover, when you call for the bomb-doors to be opened, or an urgent alteration of course, that your plug has come out—and when you plug in everyone is making such an uproar that no one listens to you. . . .

But, of course, YOU couldn't possibly make any of those stupid mistakes ? Of course not.

But others have, brother, others have.

THE GYPSY'S WARNING

AVIATOR, ponder deeply
On the many risks of flight ;
Do not fly without a routeing !
Do not fly at all when tight !

Captains of the Clouds courageous,
It's not brave to be a fool ;
It's not clever to be crazy,
Breaking every flying rule !

Young men, fond of crazy flying,
Heed this good and sage advice ;
Do not fly 'neath low-pitched arches,
Even though the feeling's nice !

Old men, " dead beats," stiff and surly,
Don't rely on bygone skill !
Though it's true your days are numbered:
Do not make them shorter still !

Captains of the Clouds courageous,
Real or would-be heroes all,
Don't forget, in all your glory
Pride precedes a nasty fall !

I see pitfalls ahead of you . . . You will take a long journey on a stretcher.

IT'S YOUR LIFE, NOT HIS

ARMOURERS are very often oily. They can't help it: it's due to their job. You can't blame a sweep for having soot on his face or a publican for possessing an aroma of beer. It's a sort of occupational shortcoming.

But you can, if you are an air gunner, make certain that the armourer does not, in an excess of zeal, treat your guns to an excess of oil—whether it's by inadvertent transference from his oily overalls, or just sheer enthusiasm.

For as you know—or should know—over-oiled guns are very apt to freeze up at high altitudes. And if that happens when you're in a tight corner—well, the chances are that you've had it.

The golden rule for airborne guns is "Lubricate Sparingly," using a fifty-fifty mixture of anti-freezing lubricating oil and paraffin, applied so as to leave only the thinnest film on the moving parts and working surfaces—so thin, in fact, that they should seem to be almost bone-dry. Any more than that is too much and liable to result in a failure.

And since it's up to you to make sure that your guns will fire when the need arises, keep your eyes open for that oily and enthusiastic armourer. Look your guns over before you take off and, if they have been over-oiled, see that the culprit is made to remove the surplus, in the hope that he'll remember not to do it next time.

For if your guns don't fire when you want them to, and your aircraft becomes just a piece of cake for the other fellow, it's not the armourer, safe on the ground, who suffers: it's you. It may have been his fault in the first place; but it's certainly yours for not discovering the mistake. And, more important from your point of view, it's your life at stake, not his. More important still, others may suffer along with you.

ALL ABOUT MET.

THE first edition having been completely exhausted, a new and revised *Meteorological Handbook for Pilots and Navigators* has now been issued (A.P. 1931). This is the last word on the subject and tells you everything a young man ought to know about Met., from wind, clouds and ice to how to forecast or be forecast to. Including glossary and index it runs to 104 pages, so, in the interests of paper economy, a personal issue cannot be made. All Met. Instructors in the flying training organisation, however, get a copy each, and every Unit in other Commands is entitled to library copies for issue on loan to air crews. It has also been produced in the form of printed lecture notes, and a personal copy of these is given to every pilot and navigator passing through the flying training organisation.

THE PERFECT BALE OUT

THE following report has been received from a pilot. We don't know his name. All we know is that it certainly couldn't have been P.O. Prune !

" I was at about 5,000 feet and 10 miles out to sea when circumstances necessitated baling out ; it is most inadvisable to try to put a fighter of the Hurricane or Tomahawk variety down on the sea, unless, of course, the pilot has had plenty of experience in submarines. Having decided to bale out, I followed the rules to the letter. I made certain of locking the hood back, disconnected my oxygen tube and R/T wire, turned the 'plane on its back and completed the manœuvre by simultaneously pushing the stick hard forward and pulling at the sutton harness pin. My R/T was u/s or I should have announced the fact that I intended to become a member of the caterpillar club.

" The sensation was extremely pleasant : I left the aircraft at 4,000 feet and there was no fear of being hit on the head with the tail unit, as I seemed to be shot out of the aircraft very forcibly.

" I floated down to about 1,500 feet before pulling the ripcord. I say ' floated ' because my impression of speed wasn't great. When I judged myself at 2,000 feet I looked down for the ripcord (no need to fumble and panic !) and grasped it with my right hand. I didn't roll myself up in a ball as I knew my parachute straps were a shade on the loose side ; instead I straightened my back. The 'chute opened almost as soon as I had pulled the ripcord, and I suffered no inconvenience from the slight jerk of the straps. When descending on to the sea, the quick release box should be turned to RED when about 30 feet up, and should be banged hard just as the feet enter or are about to enter the water. This is easier to do than it sounds, but the great thing is not to do it too soon, as altitude is very difficult to judge when over the sea. Hold your nose with your left hand, elbow well into your side, and remember, keep your feet together. This is what I was once told, and it certainly paid to follow it out.

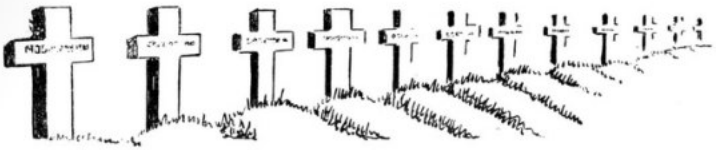
Prune doesn't bale out ; he is baled out.

" I was lucky in having a parachute dinghy, and I had put it on properly, the lanyard being attached to my Mae West. The parachute started to float away dragging the harness, but I was able, by using the lanyard, to reach the

dinghy and pull it out of its canvas case. I followed the instructions again and only turned the compressed air bottle valve very slowly ; if it is turned on like a tap it freezes up at once, and then there is only the hand pump, which may be broken. My dinghy inflated itself beautifully and I had no need to use the hand pump at all during the whole of my 4¼ hours at sea.

" If one rehearses in one's mind two or three times just what one will have to do if certain things happen, then, if the time ever comes, one finds that one's brain works at an unprecedented pace, and one remembers what to do and when. The man who has never thought about it may easily miss something which will inconvenience him.

" One excellent piece of advice given to me, which I must pass on. However hot it is, wear leather gauntlets. Shorts and short-sleeved shirts are hopeless if there is a fire, which is always a possibility. A pair of light overalls, or a long-sleeved golfing jacket and a pair of slacks fastened at the ankle or inside flying boots, would quite likely enable you to make a successful ' Bale out ' by giving you protection and confidence. It is not a bad idea to carry a full flask. I did, and I used it, too ! "



R.I.P.

He was a guy who could always get away with it.
He liked to bum around on his own.
He always relied on the A.A. to stop firing when he crossed their practice [range.
He didn't bother with Dinghy Drill.
He didn't bother with the " Amendments to Pilot's Notes."
He knew he had plenty of room to take off.
He thought it was pansy to take oxygen.
He was certain those bombers were unescorted.
He thought Red *was* on Red.
He beat up the convoy to show them who he was.
He didn't hold with wearing a Mae West.
He always liked plenty of oil on his guns.

GUIDE TO PRINCIPAL MATERIAL IN VOLUME II

GUIDE TO PRINCIPAL MATERIAL IN VOLUME II

He always liked plenty of oil
on his guns.

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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NOT to be taken into the air