TEE EMM

Vol. 2. No. 5 August 1942

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August, 1942

CONTENTS

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

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

WAR TIME COINAGE

MAN-HOURS are a kind of universal currency. Nearly everything in this world can be expressed in terms of man-hours from an aircraft in Libya to a speech in Parliament. In the latter case it is one man speaking for one hour : in the former it is the product of all the men who have worked, not only to make that aircraft but to get it out to Africa, and of all the hours they have taken to do it.

A country at war is run on man-hours, and the nearer to capacity that country is working, as it should be in total warfare, the more valuable the man-hours become ; for they are not inexhaustible. In peace time, of course, they are not so important in themselves : a factory that wants to produce more can take on more men, and can work more hours by the inducement of overtime pay, by the addition of round-the-clock shifts, or by the extension of factory space : for normally the real capacity limit is away off on the horizon.

But when the whole country is being combed for man-power (including, of course, woman-power) and when all the factories possible are working day and night, then that capacity limit is very close indeed. A human being is not constructed to work longer than a certain proportion of the day without breaking down, and you cannot get more than twenty-four hours into any day. In other words, there is a definite point when there are simply neither the men nor the hours for more than a

certain production, however vital that production may be to a country's very existence. It is then that consideration of man-hours is so important. They have become a sort of coinage of which there is only a *limited amount* in circulation and which must be husbanded carefully and spent to the best advantage, lest you go bankrupt before the other fellow.

Why are we writing all this guff, asks P.O. Prune, looking over our shoulder? For one reason only. To impress on him that aircraft don't grow on trees or breed like greenfly, but have to be made by *men* in very valuable *time*. To impress on him that, when he accidentally writes one off, even if it isn't his own fault, the supplying of another means an additional expenditure of man-hours. To impress on him that man-hours used in giving him a new aircraft here might instead go towards providing a new aircraft in Egypt. In other words, to make him think not so much of the finished product as such, but as something which is made by so many men in so many days, and to make him realise that shortage of aircraft on any front may well be due to avoidable accidents at home.

Maybe one day Prune himself will be somewhere out East and in dire need of that particular aircraft, the writing off of which seemed to matter so little at the time, because after all he had such a frightfully good excuse, and there are lots more, anyway. . . .

GRIDDED OBLIQUE PHOTOGRAPHY
OR
"MY ROOM IS MARKED WITH A 'X'"

AIR photographs are not only interesting but valuable. A "vertical of good definition" of Cologne, for instance, taken any time after May 31st last is interesting to all civilians—particularly those who have been bombed themselves. A panorama of the right bit of country taken at the right time is of great value to the Army in the field—particularly the Artillery. (P.O. Prune says, talking of photos, he personally is flat out for any snappy close-ups of his girl friend taken at the local swimming pool, but we have assured him that a panorama suitably decorated with an imposed "grid" has much the same effect upon a Gunner!)

Now these panoramic photos, which so delight the Gunners' hearts, are taken by Army Co-operation aircraft at heights of from 1,000 to 3,000 feet, depending upon the cloud base, with the normal F.24 8-inch camera set in a lateral oblique position. If Prune wants to know, this merely means that the camera is poked through the side of the aircraft at right angles to the line of flight and is depressed about 12° to the horizontal.

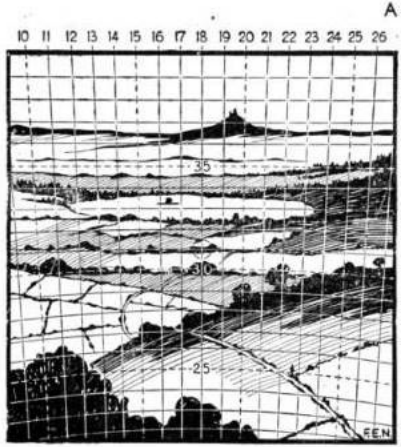
By flying then parallel to the area to be photographed, and about 2,000 yards away, the camera with this setting will take photographs to an effective depth of about

seven miles, but to get this the course flown must be straight, or on a slight curve towards the area to be photographed, and there must not be more than 5° roll in either direction. This means that for a short time evasive tactics should be cut out, but what the pilot does on his way home is nobody's business as long as he brings his camera back in good condition and without delay.

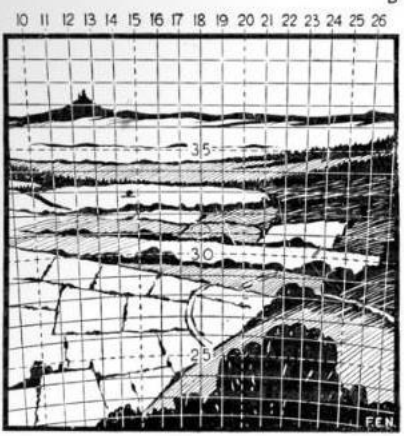
The time interval between successive photographs should be such as to produce a ground interval of about 500 yards, though if the flight is a long one this may be carried out in two halves. In every other respect it is an ordinary oblique line overlap cross-country run, but it is officially known as gridded oblique photography (Merton method), because when printing from the negatives a suitable grid of horizontal and vertical numbered lines about $\frac{1}{8}$-inch apart is put under the negative on the standard contact printer.

This, of course, means that the lines of the grid are reproduced on the finished prints. The prints are then distributed to Army Co-operation pilots, or Air Observation Post pilots, and to the artillery, and by means of the grid—quite arbitrary, nothing to do with a proper map grid—the panoramas can be used not only for making fire plans, surveying battery positions, and other definitely "Gunnery Ju Ju," but also for co-operation work between Gunners and R.A.F., such as picking out targets accurately without having to fly over them and locate their map positions. Targets found in this manner can then be quickly indicated by wireless to the Gunners in one of the two following ways :—

(i) The pilot can identify the target on any one of his set of photographs and send down an ordinary six-figure reference from the arbitrary grid. Taking, for example, the outstanding clump of trees in the centre of illustration "A", the pilot would send down A.164334. If the pilot used illustration "B" he would send down B.146329. Taking the same photograph, the Gunners can at once work out the necessary data to engage the target as simply as they find those same data from a map reference on an ordinary gridded map.



B



(ii) The pilot can send the target position on any two of his set of photographs in relation to the numbered vertical lines, *i.e.*, taking the same clump of trees on illustration "A", the target is almost midway between vertical lines 16 and 17, and on illustration "B" is almost midway between vertical lines 14 and 15. The pilot, therefore, sends down A 164, B 146. Each of these gives a half reference, as it were, made by a vertical line on each photograph, each photograph having been taken from a different position of the aircraft. From this intersection, so to speak, the Gunners can again easily work out the data or the target.

In either case the Gunners can soon get down to it—and pretty soon, we hope, are calling up for a new target, they've used up that one, please.

AN ARMAMENT OFFICER'S DIGEST

DAY by day the Royal Air Force is expanding, and its armaments, among other things, change as requirements demand. It is therefore inevitable that a considerable amount of gen must be issued telling the poor Armament Officer and others what these changes are, how the new guns, devices, and so forth work and why, and how to instruct people in their use. After nearly three years of war some of this becomes obsolete, but still more of it is amended and supplemented. An exceedingly helpful little booklet has consequently been produced under the title ARMAMENT PUBLICATIONS (A.P.2264.A) "for the instruction of personnel undergoing training, and as a digest for Armament Officers and Instructors." It shows how armament publications are issued and amended and guides the reader through the monumental maze of Armament Literature. With its help he should quickly master mysteries that have hitherto proved baffling and learn what there is, what it is for, how to use it, and how to tell other people its uses.

STRAP YOURSELF IN

THAT snappy little book, Flying Regulations for the Royal Air Force, has a Section E. Section E is all about Safety Belts. Para. 4 of Section E says that safety belts are to be " properly secured during take off . . . during landing, and in flying, except when carrying out duties which necessitate moving about the aircraft." So far so good.

Now regulations, as P.O. Prune knows only too well, are made to be broken—in fact, at the suggestion of his C.O. he refrained from going on a promised " forty-eight " only last week-end by way of helping himself to remember that oil bowsers are not mirages but solid material through which an aircraft cannot really taxi, and that he's supposed to look out for them. On the other hand, there is generally a good reason for regulations apart from that of just making things more difficult.

Now the reason for properly strapping yourself in. . . . Prune here interrupts to say, " Oh, I know *that !* It's to prevent you falling out if you start any aerobatics. But as long as I'm not intending. . . ." We here interrupt Prune to say that not only do you damage yourself irrevocably by falling out during aerobatics, but you can do it just as irrevocably by falling about *inside* the aircraft, particularly during a forced landing; or you can hastily leave the aircraft when *not* actually doing aerobatics; or you can lose control at a low altitude and not regain it till too late. And all of these things can happen if you are not properly strapped in.

But example is better than precept, as Prune says—or would say if he knew just what precept meant (he has just remarked that he was made a precept his last term at school)—so here are a few extracts from official reports on some last year's accidents, taken at random and covering many different types of aircraft. The same thing happened this year.

" *March*, 1941. Blenheim. Pilot . . . was accidentally thrown out. He was in the habit of flying with his harness unfastened and sliding roof open."

" *August*, 1941. Spitfire. Forced landing after engine-failure. Pilot thrown forward and killed. He had unstrapped himself despite regulation to the contrary."

" *August*, 1941. Magister. Parachute moved forward and prevented backward movement of control column. Sutton harness was not properly adjusted."

" *May*, 1941. Havoc. Stalled turning in cloud. Air gunner thrown out. Not secured to aircraft and not wearing parachute pack."

" *June*, 1941. Oxford. Bounced on landing. Thrown forward on to stick and throttle. Due to failing to strap himself in."

" *October*, 1941. Hampden. Lost control when cloud-flying. Pilot was not strapped in and was thrown forward on to the controls."

And this last accident cost four lives.

So you see it *is* worth while remembering to strap yourself in—even though it's only one of those regulations !

MEET PILOT OFFICER WELWYN

But much more stupid, says Prune.

Pilot Officer Welwyn is very obviously a cousin of Pilot Officer Prune's. He, too, thinks he knows it all and yet has accident after accident through his own damn foolishness.

It is unfortunate that he joins his Squadron from the O.T.U. just at the same time that the Squadron Commander decides to run a Debit and Credit board in the Dispersal Hut, with the idea of making the pilots more "accident conscious." For P/O. Welwyn almost immediately does a little piece of fancy taxying and opens his score with "1 Spit (damaged)—£300, 1 Bowser (confirmed)—£100." And from this he goes on from crash to crash, cross-wind landings, landing with undercarriage up, forgetting to check his petrol; he misses nothing. His score becomes a thing to marvel at; and Spit after Spit comes in to the repair shops till the workmen get to know—and curse—that well known crest—a finger rigid, irremovable, with the letters "P.Y.F.O." underneath. In the end Welwyn—called "Finger" by his friends, though he can never understand why—gets an Me.—but at what a cost. . . .

It's all in a short film just put out by the Air Ministry. If you want to see just what to do and just how carelessness can so effectively help the enemy's war effort ask to see it. Title: "Pilot Officer Welwyn Gets an Me." By the time this is, published it will almost certainly be available at all Fighter Stations.

FIGHTER NOTES

Don't forget to leave your cine camera gun switch ON, and the patch off the camera gun!

If the engine of a Spitfire cuts out, the best gliding speed is 132 A.S.I. with the propeller fully coarse.

Aim at 12 o'clock on your target, and use a head-on attack if possible against a formation. When using deflection always allow twice as much as you think necessary.

A three seconds' burst is normally sufficient to shoot a German down, so look behind you every three seconds.

If your aircraft has been hit, test the hydraulic system at a safe height. If it has broken you can nearly always get your wheels down by diving and pulling out quickly, or by rocking the aircraft with your rudder. If it still won't come down ask for orders over the R/T, since it might be possible to land with wheels up at your Maintenance Unit.

If you have been wounded and feel you may pass out before you get home, turn the oxygen full on—it will help you a lot.

TEN LITTLE PILOT BOYS

Ten little Pilot Boys, one shot a fancy line:
Fifth Columnists were listening and then there were nine.
Nine little Pilot Boys, one had a heavy date:
The girl was paid by Germany and then there were eight.
Eight little Pilot Boys, one used a 'phone to Devon:
The line was an open one and then there were seven.
Seven little Pilot Boys, one thought his drinks he'd mix:
He talked too much when he was right, then there were six.
Six little Pilot Boys, in a West End "dive":
One showed off to a new-found friend, then there were five.
Five little Pilot Boys, discussing fighter lore:
One discussed it much too loud, then there were four.
Four little Pilot Boys, one posted overseas,
Sent a p.c. to his home, then there were three.
Three little Pilot Boys, one talked about a 'do':
The news was passed across to France, then there were two.
Two little Pilot Boys, eager for some fun:
One spoke about his next day job, then there was one.
One little Pilot Boy, his mother's favourite son:
She showed his letters to her friends, then there were none.
Ten little Pilot Boys have gone into obscurity,
For paying no attention to that vital word Security.
All the little Pilot Boys are wiped clean off the map,
Because some people will not learn to shut their b·····y trap.

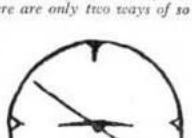
TEE EMM'S Brains Trust

Tee Emm, as you know, is an official Air Ministry Publication. Everything in it appears with the approval of the Air Member for Training, representing official views or policy. We get, however, a certain amount of correspondence—criticisms or comments on articles, queries, suggestions and so on—which cannot be published as official, and though we always dig out the answer, when we can, it only affects the writer, when it might well be more widely known. Others, who haven't written us, might have the same criticisms, queries or suggestions, and would also like to know the answer too.

Under the above title, therefore, we propose to give greater publicity to some (but by no means all!) of this type of correspondence, and in our turn will try to produce (from the experts here), and publish, any answer that may be needed.. In accordance with Tee Emm's policy, we won't print names (and in accordance with the Editor's own policy, no payment will be made!).

LETTER. "I would like to bring to your notice a suggestion which I think would undoubtedly help in the training of using panel instruments. A modification of the artificial horizon. Surely it would be of greater benefit to the pilot concerned were the artificial horizon the *fixed* line, while the actual movement of his plane was recorded by the model aircraft *moving?*"

REPLY. We agree that the existing artificial horizon instrument may be extremely confusing at first to an inexperienced pilot. The main point is, first, that whatever it may seem to be, it is actually correct; and secondly, that it can't really be altered, for there are only two ways of so doing. One is so obviously impossible as hardly to need comment. That is, to change the moving horizon bar into a model aircraft and to make the fixed model aircraft into a horizon bar. This would, of course, be of no use at all, for if you take a normal instrument, showing, for instance, the horizon tilted up to the left as here, it is obvious that your left wing ought to come up. If you merely reverse the symbols on the instrument, then while your real aircraft is in the same position, the dial now shows that you should put the left wing down—further *down, that is, and so good-bye!*



The only other way of getting over the difficulty is to devise an instrument which keeps the artificial horizon horizontal to the pilot at all times and shows the model aircraft moving as his aircraft

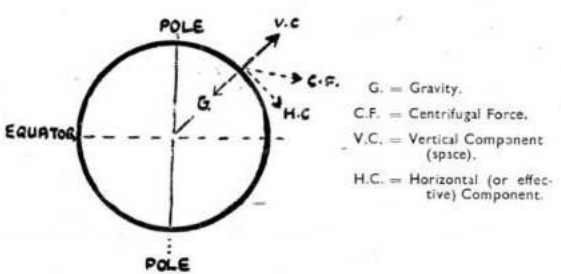
appears to him to move. But this is not practicable in a gyro-actuated instrument. For the real horizon is external and fixed, and your aircraft (with you in it) moves relatively to it, the dial having an aircraft and horizon to show in miniature these relative movements. The model plane represents your plane and so its horizontal axis through the wings must be aligned with your real horizontal axis, to conform with every position your aircraft takes up. It cannot be allowed to move relative to your aircraft or it won't represent your aircraft. Since, then, this line must be fixed on the instrument, which itself is fixed on the aircraft, the other line (the artificial horizon) must move as the real horizon relatively moves. This conforming movement is achieved by the gyro which, such is the nature of gyros, in effect aligns the model horizon dynamically with the external horizon, just as definitely as the model aircraft is aligned mechanically with the external aircraft. You cannot get away from these two limiting factors.

Possibly much of the trouble—where it exists—is that the model aircraft is shown as a complete one and not, say, just a windscreen and scuttle, and so it automatically suggests that you are outside *it (when of course you would expect to see the horizon stay still and the aircraft move), whereas in point of fact you are inside and moving with it. The best way to combat any confusion in your mind is to* imagine that you are actually inside the model aircraft and travelling through the instrument.

We should add, of course, that the authorities are experimenting with "artificial horizon" instruments designed to get over the difficulty, but none so far have proved entirely satisfactory.

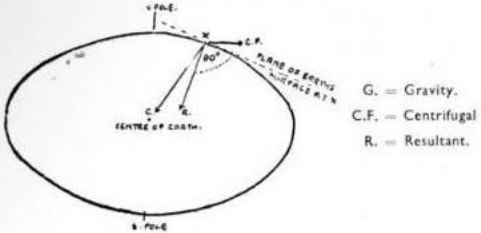
LETTER. "Thanks for the Gen on 'Coriolis' in your February issue; and thanks for all issues; TEE EMM is not only unique, but it is also useful. (We didn't really mean to print that bit of our correspondent's letter, but it just slipped out! But we think he's got something there!)

"There is, however, one point in the above article on which I do not agree. You talk about Centrifugal Force (on the earth's surface) and Gravity exactly counter balancing each other. I say this is impossible, because they do not act in opposite directions: and two forces which do not act in opposite directions *must* have a resultant. This resultant is in the plane of its meridian, and towards the equator—with a component outwards into space. I suggest, therefore, that the ball you speak of would roll towards the equator (along its meridian) by virtue of the earth's rotation only, *i.e.*, without any independent motion such as the a/c's track and G/s, were it not for friction. The diagram shows the relative directions of Gravity and Centrifugal Force."



REPLY. This argument would be perfectly correct if the earth was a sphere. Actually the earth isn't. It is flattened progressively from the equator towards the poles. The result of this

is to make the surface of the earth at any point " normal to the resultant of Gravity and Centrifugal Force." The picture (badly drawn!) will show you what this means.



That is why the ball referred to in the article will stay put in perfect equilibrium on the earth's surface until some external force moves it, and why the word " counter-balanced " was used to describe the state of affairs.

LETTER. " I have read the article in your May, 1942, TEE EMM called ' A Pupil sometimes Wonders,' in which a pupil finds fault with his Instructors. This type of pupil is quite often met with—indeed, if Gilbert and Sullivan had known him, they might have incorporated a new song into one of their operas, ' An Instructor's life is not a happy one.' I admit that the article was obviously written as a counterblast to a previous one, ' A Pupil Bows to his Instructors ' (October, 1941) in which the pupil actually praised those who had taught him, but even so there are a few things I, as an Instructor, would like to say to that pupil correspondent quoted in the May article, in answer to the points he makes.

" It is an essential part of an Instructor's job to create a spirit of co-operation with his pupils who are often shy like new boys at school, and, because of their shyness, a trifle slow in the uptake and too diffident to ask for a further explanation of something they have not fully grasped. Too rigid enforcement of discipline at lectures and demonstrations tends to increase this diffidence. An Instructor with a decent set of pupils will therefore try and create an atmosphere of friendly co-operation so that his pupils will learn easily and happily and consequently more quickly and thoroughly.

" The pupil such as your correspondent, who never bows, does much to defeat this object. He despises his ' Instructor who has only done 150 hours flying,' but he may be far better at imparting knowledge than one who had flown 3,000 hours ; and this defamatory criticism is bad for the other pupils. If (says the pupil) the Instructor unbends—then he is relaxing discipline and showing contempt for it. If he encourages the despondent man who ' thinks he's made a boob in the air ' by saying, ' Don't worry, lots of people do that ; you're getting on fine, you'll be solo in a few hours ' : then he's over-optimistic. If he tears a strip off him, he's a swine ; and, anyway, what does he know about flying.

" As for your unbowing pupil's last complaint,—that the Instructor does not personally do what he tells the pupil ought to be done—it is much too childish for words. You teach a child to walk, but that does not mean he must not see you run. You teach a pupil to fly, but surely he's not such a fool as to think he can immediately indulge in aerobatics. Complete mastery of aircraft, as of anything else, comes only with experience, and the intelligent pupil who really does bow to his Instructor and doesn't wonder *too* much and tries to co-operate with him in learning will always understand and appreciate this fact."

REPLY. We are glad to be able to publish the above, nor do we suppose the unbowing pupil

who criticised will mind. He is possibly only one in a hundred. Probably the Instructor he criticised was only one in a hundred too. On the other hand, if the article made even that one, as we said, "look into his heart through the pupil's eyes and see if there's anything wrong," then the article has done some good. Instructing is a hard, laborious and often thankless job, and those who carry it on deserve all the bows they can get. They can afford to ignore small criticisms because they have, visible to all, a fine record of achievement of men flying and fighting day and night—men whom they have trained to fly and fight.

DO YOU RE-READ YOUR PILOT'S NOTES?

IF so, we've been asked to draw your attention to the following important amendments to various Pilot's Notes issued during the last three months, in case, by any chance, you've missed them. (The complete list of amendments is, of course, shown monthly in A.M.Os., N Series).

Defiant I II	A.L. 44 12/F	Undercarriage emergency operations—revised notes.
Fulmar I & II	21/D	Revised Section 2—more details of fuel consumption.
Hampden I	17	Bomb door operation when carrying torpedo.
Harvard I	10	Revised notes on spinning.
Havoc II	4/B	Oil temperature limitation changes. Revised feathering and unfeathering instructions.
Mosquito IV	1/A	Revised Section 2—more details generally.
Spitfire I II VI	25/J 23/J 1/A	More information on diving and undercarriage operation.
Typhoon I	12/E	Starting instructions—revised procedure.
Wellington VI Whitley V	6/A 25/F	Revised Section 2—more details, especially on economical cruising and fuel consumption.

Prune didn't know there were any amendments.

KNOW YOUR STUFF

DO you realise that over a thousand airmen have now been rescued from the sea in home waters alone? Well, it's true.

All that this precise figure tells you, of course, is that there are a large number of ditchings and also that there is a reasonable chance of rescue. It certainly does not represent the total number of airmen who *could* have been saved if every aspect of Aircraft Safety and Air/Sea Rescue had been studied and used correctly.

One can hear one's critics saying—in Service language naturally—"that's all very well, but how is one to know all about it?" Or else, "I don't believe there is any chance of being rescued except by pure luck."

The answer to the first question is that you will find all the dope in the various A.M.C.O.'s which deal with Air/Sea Rescue, and if you don't know which these are we strongly advise you to go to the Adjutant and find out. You may, of course, think that the contents of such orders only apply to the Flying Control and Operations staff. This is very definitely not so. It applies to both air crews *and* ground staff and if either side has refused to bother with them, then risk of loss at sea is high.

Now, as some of you may know, survivors are always thoroughly cross-examined so as to find out as much as possible from their experiences. From this cross-examination Sea Rescue Notes are made up. These notes are widely circulated, and once again it is terrifically important that every member of an aircrew should read them. There is, of course, nothing like personal experience, but a very good substitute is to study the first-hand experiences of others. And if you are one of those people who can only profit from mistakes—well, at least try to profit from the mistakes of others.

Besides the Sea Rescue Notes and A.M.C.O.'s there are many posters to help you. These show, for instance, the right and wrong way of getting into a "K" type dinghy, or they illustrate the various kinds of floats and rescue craft, buoys, emergency equipment, and so on.

Somebody once said that the reason for publishing two cheap daily newspapers one of them containing printed matter and the other almost entirely illustrations was that the former was for those who could not think, and the latter for those who could not read. This is perhaps why we issue posters as well as literature!

Finally there are films. At the moment there are two films you should most certainly see, if you are in the aircrew of a large aircraft. One is "Prepare for Ditching," and the other is "Lindholme Rescue Apparatus."

The former tells a story, and in doing so it illustrates how to compete with a forced landing at sea. It is based on fact. The moral is, *if you know your stuff* you will be saved.

The second film shows how to use the Lindholme gear and what it is. The moral here is, if you know how to drop it you will save others, or if you are down at sea and know how to use it you and your crew will be saved.

So make certain you know what the various A.M.O.'s are and have read them; read the Rescue Notes; study the posters; go and see the films if you haven't done so; and then ask yourself the following questions and see if you get the right answers.

(1) How does your dinghy work?
(2) Where is it stowed?
(3) How much drinking water should you have on board the aircraft?
(4) How should the water be carried, and where is it stowed?
(5) Why must you not put more equipment in the dinghy stowage than it is designed for?
(6) What precautions must you take before stowing the dinghy and during the operation of stowing it?
(7) Do you know how to prevent the dinghy from inflating upside down and how to right it?
(8) Do you know your dinghy drill so well that you will be able to do it correctly, quickly and without confusion in an emergency?

Believe it or not, inability to answer any one of the above may easily cost you your life and probably those of your comrades.

(*Answers on page* 120).




AFTER WORDSWORTH

I wandered lonely as a cloud,
That floats on high in straggling bits,
When all at once I saw a crowd—
A host of yellow Messerschmits.

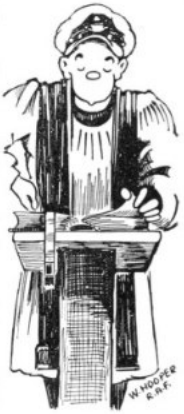
And now, interned for the duration,
I wish I had not lost formation.

PSALMS OF A FLYER

1. As the telephone operator who giveth wrong numbers, is he who extolleth his exploits in the air.

2. He shall enlarge upon the danger of his adventure, but in my sleeve shall be heard the tinkling of silvery laughter.

3. My son, obey the law and observe prudence. Spin thou not lower than 1,500 cubits nor stunt above thine own domicile. For the hand of the law is heavy, and reacheth far and wide throughout the land.



4. Incur not the wrath of the commander by breaking the rules, for they who ignore the course shall be cast into outer darkness.

5. More praiseworthy is he who can touch his tail and wheels to the earth at one time than he who loopeth and rolleth till some damsel stares in amazement at his daring.

6. He who breaketh an undercarriage in a forced landing may in time be forgiven, but he who taxieth into another plane shall be despised forever.

7. Beware the man who taketh off without looking behind, for there is no health in him. Verily I say unto you, his days are numbered.

8. Clever men take the reproofs of their instructors in the same wise, one like unto another, with witty jest, confirming their dumbness and regarding themselves with humor. Yet they try again, profiting by his wise counsel, and take not offence at aught that has been said.

9. As a postage stamp which lacketh glue, so are the words of caution to a fool; they stick not, going in one ear and out the other for there is nothing between to stop them.

10. My son, harken unto my teaching and forsake not the law.

Amen!

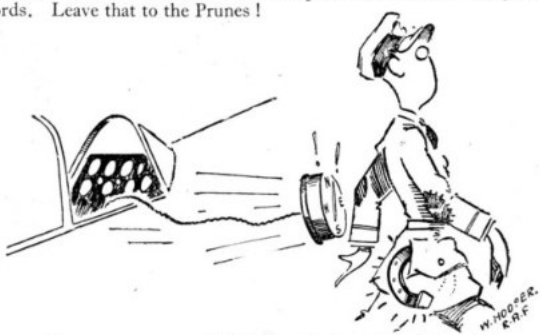
HAVE YOU A MAGNETIC PERSONALITY?

HAVE you heard about the fitter who left his tool-box neatly hidden away alongside the Master Unit of the D.R. Compass? It nearly sent an aircraft over to Norway instead of to France—because the compass felt it so deeply.

Would you do a thing like that? We don't suppose you would, but then probably you haven't got a tool-box. However, we bet you often take the air with loads of unsuspected magnetism in your pockets—magnetic penknives, magnetic dividers and other attractive little toys. (Already we can see a look of surprised wonder coming over Prune's face, as, muttering, "I *never* knew *that*," he surreptitiously turns an enormous clasp-knife with a corkscrew and even a thing-for-removing-stones-from-hooves out of his pocket; everything, in fact, except his lucky horseshoe.) Yet how can you expect your compass to behave itself if you surround it with unnecessary counter-attractions. It has very little will power and is easily led astray.

It is just as important to turn all the metal out of your pockets before going on a trip as it is to leave behind your copy of our latest Secret Cypher. So do remember to demagnetise yourself before flying and make sure that any loose magnetic equipment is kept well away from the compasses. This also applies, of course, when you swing your compass: see that everything you use in flight is in its normal position.

Don't let "But I'd have *sworn* the compass was accurate" be your Famous Last Words. Leave that to the Prunes!



Compass or no compass, P.O. Prune won't give up his lucky horseshoe.

WELFARE AND ALL THAT

WELL, welfare and all what? Why, all that the word "Welfare" means—and that may be quite a good bit.

To get a really successful football team, for instance, you need not only proficiency on the field, but a certain amount of "backstage work." You want a captain who doesn't lose the tickets or let his men stay up late the night before, and a secretary who doesn't forget to book rooms at the hotel, but does bring spare jerseys and playing cards and a few second-hand novels for the journey. Then, other things being equal, that team is more likely to win matches than a team which is left to scrape along all disjointed and anyhow between whiles.

So it is with the Royal Air Force. They are also a team, though slightly large for a football field. But the same idea holds good: it will not operate to best advantage on mere technical proficiency alone. Its members, to give their best, must at the same time be fit in body and untroubled in mind, they must have confidence in one another and enjoy each other's company when thrown together in their off-duty hours. All this is "Welfare."

Welfare pays not only in football, but in the Service as well. Your technically proficient pilot, or armourer, or even A.C.2 in the sanitary squad (for there is a technique even there) will not give 100 per cent. efficient service if he is worried about his wife making both ends meet, or the fact that he hasn't had a letter lately, or that his long-promised forty-eight has just been cancelled, or that he's been detailed for Special Duties three Sundays running, or that there's no decent room where he can write a letter, or that the tables in the dining-room really are unspeakably. . . But need we go on? And especially will he drop below that 100 per cent. if he thinks that his officer (commissioned or non-commissioned) is ignorant of all this, or that he knows it and does nothing about it.

What's all this to do with *me*? says P.O. Prune. Am I supposed to kiss him?

Prune's argument appears to be that he is not concerned, that there are blokes whose jobs it is to do all this.

Well, the Station Commander and the poor overworked Station Admin. Officer have such a hell of a lot to attend to that they can't be expected to do more than allocate the duties and supervise generally. The Padre (if there is one) will probably

deal with " Comforts," distributing the wireless and woollens, the draughts and darts boards. The Education Officer (again if you have one) probably supervises the recreational library. The Physical Fitness Officer (again, if——) will see to the sports gear and grounds. And, of course, the Catering Officer will concentrate on the inner man, that stomach on which an Air Force flies no less than an Army marches. All these are part of Welfare. But still only a part. Someone is still required to act as Entertainments Officer. And someone to give a lead in the gardening scheme. And the savings campaign. And several other matters, which may not seem much to you, but mean a lot to those for whom you are responsible. What are you doing, Prune? Or what can you do?

Admittedly you have probably not time for a biggish job like Entertainments. Pilots do have to fly and office workers do have to sit at their desks. But don't let that stop you lending a hand with the Station Concert Party, or even running a Sing-Song supper for your own Flight or Section, if you feel like it. Your efforts *will* be appreciated —though you may never be told so.

On some Stations, especially those built on the modern dispersed layout, you may find yourself put in charge of a sleeping site and told to organise amusements there, as well as being responsible for the general comfort and cleanliness of the huts—responsible, in fact, for the welfare of those airmen on the spot. You may even find yourself in charge of a small detachment of your unit, parked out on some strange station. Not long ago a Pilot Officer of only two months seniority, managing a Blenheim and two Lizzies of a Co-op. Flight, with two Sergeant Pilots and a Corporal and a dozen men, was dumped at a Fighter station. He was in sole charge and solely responsible for those few men. And when the P.O. wrote himself off along with the Blenheim, that command devolved on the senior Sergeant Pilot. This just shows you that you may, whether aircrew or non-flying, newly commissioned or not, find yourself commanding a small isolated station of fifty men, with no Padre or Caterer or P.F.O.—and then you'll have to paddle your own welfare canoe off your own bat, as Prune says, exploring every stone and leaving no avenue unturned.

So before you find yourself suddenly in charge of one of these outfits, you can (and should) take a piece of the burden—and an advance course, so to speak—by attending to the general welfare of the men about you. You can see to the fair running of duty and leave rosters. You can give advice yourself about domestic matters, if you know enough, or, failing that, you can advise a man where to seek for expert assistance. You can watch over the comfort and amenities of barrack and dispersal huts. You might even take your coat off now and again and lead the dig-for-victory campaign in your Flight or Section allotment, in competition with all the other allotments. It's really your job, you know, in the Air Force as much as it is to the Army, though admittedly, conditions in the Army make it a little easier to carry out. The sort of bloke (flying or non-flying, living in or living out), who the moment his particular bit of work is done makes a bee-line for the mess or home *via* the

local is neglecting his duty as an officer.

But there is one essential condition if you want to do that duty properly. You must know your men.

If you are a pilot you probably know a few of the right people—your fitter and rigger and armourer and sparks merchant, one or two of the more eminent N.C.O.'s in the Flight, and probably some of the batmen or mess waiters. Whom else? Is there anyone forgotten? And how well do you know *them?*

It *is* important. If you know your men as human beings with individual personal interests of their own, and they know you, then you'll have mutual confidence. And with such confidence you can all face any discomforts or worries that may come. The essential thing is for all to realise that the discomforts, such as they are, are inescapable and common to all, and that all are equally concerned to alleviate them as much and as soon as possible. The man who is unknown to any officer cannot share this feeling. He is a forgotten man. And his work will suffer equally with his peace of mind.

In short, know your men and be the leader of your little family and you'll be in a fair way to doing a 100 per cent. job yourself.

A.C.2 Clott says he's all for being looked after.

POSTSCRIPT. Is this a tall order? If you did find yourself in charge of an isolated show, would you shrivel up and say, "I don't know the answers, or where to find them," and push off, hoping that your Flight Sergeant would fix everything? No need to. Because there is a lot of guidance for you in a free booklet called "The Airman's Welfare." It gives you half the answers outright, *e.g.*, about applications to the R.A.F. Benevolent Fund, about enquiries and compensation in connection with bombed homes, and about organising games and amusements, and it gives you signposts to the other half of the answers in its reference list of A.M.O.'s about leave and travel and dependents' allowances and a host of other topics. Publishers: Air Ministry. Distribution: Free personal issue to every officer. Reference: A.M.O. N.1488/41. Have you still got it, and the new edition just printed A.M.O. N.1024/42?

1. COMPASS DEVIATION

ON operational stations aircraft are invariably dispersed for safety reasons, but on training aerodromes far away from any possible enemy attention you often come across a row of machines all neatly drawn up in line on the tarmac. If your duties include responsibility for compass swinging, here is a quick way to find out whether the compasses have had recent attention.

All the aircraft will be pointing very nearly into the same direction, so, after nipping smartly into the first machine to read the compass heading, see if the compasses in the other aircraft agree or very nearly agree. You will, of course, make allowance for any deviation already recorded in each particular aircraft.

You may say that this is only a rough check. So it is, but it's going to show up anything radically wrong and at times a quick check of this nature has revealed unrecorded deviations of—believe it or not—up to 40 degrees. For you'll admit that there are many occasions where an aircraft has been used for " circuits and bumps" and hasn't been on a navigational exercise for several months. In such cases a compass may easily be completely haywire, if a swing has not been carried out a short time previously.

So just take a quick look when you see the machines nicely paraded for the morning's work—it may save a lot of trouble later.

A TEE EMM PLEA

JUST a small point please ! Very many of the letters TEE EMM receives are from people whose usual signatures are, to put it mildly, individual. In other words, we can't make head or tail of them. Now, apart from keeping up our records, we do like, in our replies, to address you correctly, initials, rank and any decorations (all of which we look up in the Air Force List)—but we can only do this if your signature is legible. Otherwise we have to make a guess, and we don't always guess right. Wing Commander R. F. Widgeon, D.F.C., for instance, takes a poor view of being addressed as Pilot Officer B. F. Nilyeum, even if the letter fetches up. Again, while

we can make a good guess at the more common names, there are some which are not common and hardly guessable. So if your name *is* an unusual one, please repeat it in block capitals underneath. Otherwise we may not really believe it's true: you remember the story of the deaf old lady who, on being introduced to a man named Twinklebottom, said, "I'm sorry, I didn't catch the name?" He repeated it louder. She came back with: "I'm sorry, *would* you mind repeating it?" He yelled it. "I'm terribly sorry," she said, "but I'm so frightfully deaf I can't get it properly: it sounds to me *just like Twinklebottom*."

Well that goes for us too sometimes.

THIS MONTH'S PRUNERY

THE MOST HIGHLY DEROGATORY ORDER OF THE IRREMOVABLE FINGER (Patron: Pilot Officer Prune) has this month been awarded to Pilot Officer —— for Conspicuous Helpfulness to the Wrong People, and to Pilot Officer —— for Conspicuous Helpfulness in the Wrong Manner.

As navigator of a Wellington the former officer took upon himself the responsibility of switching OFF the TR9 from the wireless operator's position. Instead, however, he switched it to TRANSMIT. Unable to locate the primary target he gave the pilot the course to steer to reach the alternative target, over the inter-com. When over this target the pilot gave him the height, aircraft heading and Indicated Air Speed. The crew reported intense and accurate A.A. And no wonder.

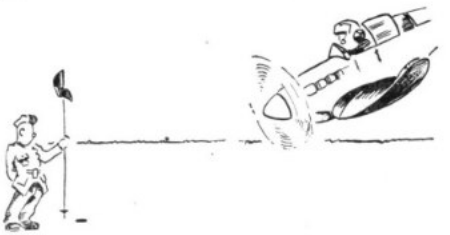
The second award goes to the navigator of an Anson. His pilot, while flying low owing to bad weather conditions, opened the hinged emergency window near his seat, but found that the screw catch would not hold the window open. Pilot Officer —— therefore leaned across to help make it stay open, and inadvertently knocked the starboard switches to Off. The pilot proceeded flying on one engine, not realising what had happened. In his further efforts to tie the window up with string, Pilot Officer —— knocked the port switches to Off, and as the aeroplane was then at 300 feet, the pilot had to make a crash landing in a hedge.

ANSWERS TO A.S.R.S. QUESTIONS

We *told* you: The answers will be found in the A.M.O's., the Rescue Notes, the posters and the films!

PRACTISE YOUR BEAM APPROACH SHOTS!

DID you play golf in peace-time? Do you perhaps occasionally play even now? If so, were you, or are you, content to let your handicap stick at 18? We think not. You've had that urge to reduce your handicap and let's hope you have reduced it. But have you a similar urge to reduce your flying handicap? What's that, you say—*flying* handicap? We'll tell you.



You're flying home from a long way away and all you want to do is to land on your own aerodrome. In other words, you're on the 18th tee with a bogey 4 ahead. What do you do? First, you try and get a darn good drive straight down the fairway; then you take a lot of care with your approach on to the green; and finally, thinking of the old tag "Never up—never in" you hope to sink in one putt for a "birdie." And anyway, you've always got another putt for a bogey, so there you are.

Now let's look at the clubs you are going to use on that flight back:

Your Driver. Isn't this your D.R. Navigation? Pay particular attention to your course, and don't slice into the rough if you want a good lie for your

Mashie. Bring this club—your S.B.A. equipment, of course—smartly out of the (S)bag, clean it up, keep your head down (on the instruments) choose your line and—crack!—you hit that ball right up the track guide, bang on to the green. Here you breathe again and, replacing your mashie in the bag, pull out the old

Putter. Take a look at the hole, select your line carefully, and remember, keep your head down until you hear the ball plop into the hole—the Inner Marker.

All very nice. Let's follow the simile a little further.

How do you normally set about bringing down your handicap at golf. You practise, you listen to professional Instructors, you swing at any old dandelion you see near the tee, but, above all, you practise with your putter on a green—remembering how often putting has ruined your game. Practice, in short, pure and simple.

Now surely, if you take so much trouble smiting a rubber ball along a fairway and putting it down a hole to reduce your golf handicap, you should pay much more attention to practising your S.B.A. and so reduce your flying handicap. And isn't the main difference between a golf handicap and a flying handicap just this? The penalty you pay for lack of practice at one is a smack at your pride; the other may quite well be a smack at your life—or even someone else's.

LETTER TO AN AIR GUNNER

FROM ONE WHO HAS BEEN THERE

II

DEAR SERGEANT BURSTE,

Since I last wrote you will have been posted to your new Squadron, and I hope you remembered all the things I told you in my last letter. Anyway, I'm not going to repeat them ; I'm assuming you've now found your way around and know the right people.

Well, you've probably been in your Squadron long enough to have been allotted an aircraft. Either it's a brand new one straight from the makers, or, more probably, an old one whose crew has just been posted. In either case, you've got a lot of work to do before you can consider it all right to take out on ops. Naturally, I'm only going to talk about guns, our own particular department, but remember the other members of the crew all have their jobs to do on the aircraft, too, so for heaven's sake *do* work as a team and not as independent individuals. It is as a team you will fly and fight, and don't you ever forget it!

I'll assume in this letter that you're taking over an aircraft which has already been in service. (In any case, the work and check to be made for a brand new one are much the same, except that in a new aircraft you ought to be even more on the look-out for possible defects.)

The first thing is to remove the ammunition from the tanks. Then take the guns out of the turret, and give it a really good spring-clean. *And* it may need it, too. Perhaps your turret's previous owner was not a careful guy and you may even find an inch or two of water and oil on the floor, a few old rounds of ammunition, chocolate wrappings, orange peel, etc. But please remember that it is really most important to be clean and tidy in everything to do with your guns and turret. I shall never forget once having to take over another aircraft while my own was being serviced. The afternoon before taking it on ops. I went into the turret, took the covers off the tanks to check the ammunition and found a mangled banana adorning the top layers. Personally, I can't give an opinion on the value of squashed banana as a lubricant for machine guns—in any case, I doubt if you'll see many bananas these days—but I know you'll agree that it was slightly careless and that bits of banana sticking to the belt might easily cause gun stoppages.

Having spring-cleaned your turret, and while the guns are still out, get your perspex thoroughly cleaned, inside and out. You can get proper perspex polish, and if you use it frequently, not only will it take off ordinary dirt and grease, but will remove the millions of small scratches which always seem to get on to perspex and badly increase the dazzle from searchlights.

By the way, before carrying out this spring-cleaning I should have said that you ought to make a thorough check of the turret system with the armourer's help and do any bleeding necessary to exclude air. It is most important to do

this *before* the spring-cleaning, as the bleeding will quite likely mean oil squirting about the turret.

So far so good. The turret system is in order, the turret clean, and the guns are in the armoury waiting for you. Strip, clean and examine them carefully, and if, after this, you think they are not quite right, and that some part is unusually worn, go to your gunnery leader and ask him what you should do. Take your barrels, for instance. If there are any signs of bad wear in one of them, your gunnery leader will go with you to your Squadron Armourer, and he will check for wear with gauges and, if necessary, issue you with a new barrel. In reassembling, pay particular attention to breeching-up. In the Browning gun—which almost certainly you'll be using—correct breeching means very nearly 100 per cent. efficiency in gun operation, always provided you put the rest of the bits back in the right places. You've probably been taught that the best way to do it is to screw the barrel into the barrel extension and then unscrew sufficiently for the locking piece to fall freely into place with the assembly upside down. This is a good method, though it means a little patience and care, but I shouldn't be content with just this if I were you. All Armourers have a gauge for checking the breeching of guns. It is very simple to use and I advise you always to use it to check your breeching, or rather ask an armourer to do it with you.

I'm not in this letter going to give you a lecture about how and how not to clean guns ; different squadrons have different ideas about this, particularly about, say, the type of oil to be used. The main thing is that the gun should be clean and with a minimum of oil on the working parts. If you look like going on a very cold op., I personally think it better to have your guns absolutely dry ; but in any case never use more than the merest suspicion of anti-freezing oil.

Before taking your guns back to your aircraft, draw fresh ammunition from the armoury and load it carefully into your tanks, taking care to see that each round is correctly aligned. This is so simple to do and so often neglected ; yet faulty aligning inevitably means gun stoppages, and almost equally inevitably these happen at some very inconvenient moment. Whether you load your tanks at your aircraft or in the armoury is a matter of convenience, but if you have to take ammunition out to your aircraft, carry it in a box or carefully coiled on trays. Do not follow the one-time popular practice of draping it round your neck *à la* snake charmer ; it may look very fetching but it'll lead to misaligned rounds and bent links—and both these are bad.

Well, we're getting on. New ammunition is in your tanks, the tanks back in the aircraft, and so are the guns. The next thing is to harmonise the guns and sight. For this the aircraft must be taxied out to a point where the 400 yards harmonisation boards can be used and you should fix with your Captain to do this as soon as possible. Allow plenty of time, too, for the first harmonisation is very important, and it may take a couple of hours to get all guns in the aircraft satisfactorily harmonised. You have learnt, both by diagrams on blackboards, and by word of mouth, a great deal about harmonisation and possibly it may seem to you both

complex and frightening. Actually it's really quite simple and merely means having the guns and sight pointing in the same direction and making allowance for the trajectory, or gravity drop. (A silly term really—" gravity drop " ; all drops are due to gravity anyway ! Trajectory is, in my opinion, the better word.)

Now you may have your own ideas on harmonisation, but I shouldn't at this stage try any other than that laid down by your Command, which—you being in Bomber Command—is for you, 7 feet 6 inches vertical harmonisation for two gun turrets and on the corners of a 7 feet 6 inches square for a 4-gun turret, allowing approximately 5 feet gravity drop.

However, time's short and this letter is running long, so for the time being I'll say cheerio and give you some more of my ideas next month.

Yours sincerely,

A. G. BARRELL-FFOULYNGE, F/Lt.

LOOK BEFORE YOU LAND

DO you always have a good look at the Signals Area before you land ? If you do, can you read the signs and portents ? Do you also look towards the Watch Office before you taxi out to take off, to see, for instance, if a black ball is hoisted at the mast ? (Yes, we've heard the story about the dark-skinned potentate, but that isn't what it means in our case !)

If you will turn up A.P. 1640—Flying Regulations for the Royal Air Force—Section L will show you the signals you may find displayed in the Signals Area. They have been designed for your especial safety, and if you observe the instructions they are intended to convey, you won't come to much harm. For instance, if you see a white " Dumb-bell " in the Signals Area, you will know that you must land on the runway in use and not taxi on the grass. You never know, we may soon be growing potatoes between the runways, and modern undercarts don't take kindly to rough surfaces.

If you see the black ball, you must find out the way the " T " is pointing before you take off. It would be just too bad if a chap coming into land had seen it and was obeying instructions, and you met him at " Charing Cross "—hardly as pleasant as meeting the girl friend under the clock, except that you wouldn't have to wait the usual ten minutes.

Always check up that a left-handed circuit is O.K. before you turn into it. In some c ses it is necessary to change the circuit on occasion. You wouldn't think of driving the wrong way round Trafalgar Square in the rush hour, would you ? In short, turn up A.P. 1640 to refresh your memory, and always look at the Signals Area before you land and take off.

That's all. May you live long and prang never !

He didn't bother with the "Amendments to Pilot's Notes."

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