

TEE EMM



Number 6

September 1941

CONTENTS

	PAGE
TEE EMM FOR SEPTEMBER	1
HOW MUCH DO YOU KNOW? No. 5: Wellington IC	3
WHAT DID YOU SAY?	5
FIGHTER GUNS	7
ADMIN.	9
SPEED AND RANGE OF AEROPLANES	11
THIS MONTH'S ANNIVERSARY	14
A.S.R.S. SPEAKING—FLOATS	16
THAT GROUND LOOP! WHY?	17
CALLING ALL NAVIGATORS	18
P.O. PRUNE CATCHES A CODE	19
DON'T LOOK AT YOUR BOOTS!	20
THE CREW THAT FINDS ITSELF	22
GOLDEN EGGS	24



*Pilot-Officer Prune says—
“Take Tee Emm regularly!
Prevents that Thinking
feeling!”*

IMPORTANT

TEE EMM is for Official Use Only.

This means it must only be read by those for whom it is intended. No part of it must be published and nothing it contains must be told or written to any one who might publish it. And, of course, it must not be taken into the air.

Issued by the Department of the Air Member for Training, Air Ministry, London.



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.

A handwritten signature in cursive script, which appears to be "C. Portal", written in black ink. The signature is positioned to the right of the main text block.

Air Chief Marshal, Chief of the Air Staff

TEE EMM FOR SEPTEMBER

NOT so long ago a short interview took place between the Chief Ground Instructor at an O.T.U. and a pupil. The object of the exercise was the tearing off of a strip for failure to attend a lecture. The pupil, however, took the following, to him, entirely reasonable, line: "I couldn't get my tea at the usual time because tea was later that day for some reason—in fact it was put off to a time when I had a lecture on. I couldn't go to both—so I had my tea and cut the lecture." When the C.G.I. had got his breath he began by asking what the culprit considered would be the German view of this sort of going-on; but this only gave the pupil the chance to reply easily: "Oh Germany isn't a *democracy*: we're fighting to *preserve* democracy." After which pronouncement conversation flagged.

This interview, however, leaves us deep in unaccustomed thought. We all say we are fighting for democracy, but we ought to have some clear idea of what democracy is and means. Freedom, of course, is the obvious answer. Freedom to live one's own life: freedom of speech and thought; freedom of action, except when this is limited by the equal right to freedom of the rest of the community. But to some people apparently democracy means freedom to take the easy way out, to consider one's comfort and even safety before anything else; freedom from the restric-

tions of duty and self-discipline, or anything else that clashes with what they want to do at the moment.

Let's consider P.O. Prune, that noble hound, for a moment. He discovers he's Orderly Dog, and it clashes with an important date. Does he set his jaw and conjure up a vision of the Roman sentry at Pompeii, standing firm at his post, slowly being engulfed by ashes and lava? Or does he say "Blow me down!" and rush off to find a pal who'll do a swop? We won't give you the answer. Whichever way it goes, it's a small point; but it's a small *test* point of his attitude. He has a duty to do which clashes with a personal arrangement. *Does he do it?*

"Duty must be done" we repeat parrot-like to ourselves, conscious of an ill-defined and hazy conception of duty as a routine job not usually difficult or hazardous or obviously important—easy to wangle out of if it arrives inconveniently, easy to arrange to do when nothing personally important is in the air. But we are complacent. We are not fully war-conscious. We do not yet understand that, in order that the nation may survive its death struggle with the Nazi, the individual cannot be allowed to count for quite so much as formerly. In short, if necessary, the individual must sacrifice his comforts, his meals, his regular living, his recreation, his goods, his chattels, his career, his life, his everything, in order that all those other things which mean "This England" may live. We must all, now, settle this matter of duty for ourselves—not only *duty the job*, but duty the *attitude* to the *job*—so that we may not be found wanting. It leads to cutting out consideration of self.

There can be no high conception of duty that is not based on discipline. P.O. Prune, of course, thinks only of saluting, marching, standing to attention, and Reveille at 0600—if awake! Well, these things count—for a lot. But the real strength which is at the core of the highest conception of duty arises from the discipline which is found within a man—self-discipline.

Does anything matter to you more than your life?

Don't be in a hurry to answer that question. The answer expected, of course, is "Yes." But think it out first. From Eton to Borstal every man must have found some cherished thing in his life which his forefathers fought for, which we are fighting for, things which, though we will hardly admit it in our hearts and certainly not in words, we believe are vital to the welfare of all mankind and which are in danger of destruction under Nazi rule. No sacrifice is too great, if necessary, to preserve these things.

Duty must come before personal safety—but lesser things than safety are often placed before duty by the undisciplined. Do you dodge your work? Do you ease off when not watched by higher authority? Do you waste the time of senior officers in dealing with your unworthy conduct? Do you carry your full share of responsibility? Do you fail to give full measure in your country's service? Do you wait to be told your duty?

Think of all this in your quiet moments and square the thing up for yourself. Don't wrap it round the trivialities and irksome things of normal routine. Adjust it to fit your highest ideals, those finest things which are in all men when they look for them.

Duty or Safety? Duty or Self-regard? You know which comes first! You know that it is there, regardless of all else, and you will know, too, that the driving force of high ideals and strong self-discipline will direct your conduct more worthily than the outward discipline imposed by King's Regulations and the parade ground. Once you have worked this thing out honestly and thoroughly with yourself there can be no doubt or difficulty about carrying on. High morale—the test of a good station.

Well? How do you stand?



HOW MUCH DO YOU KNOW?

COCKPIT DRILL TESTS. No. 5. WELLINGTON 1C



"P.O. Prune says What has he done wrong?"

Our Pilot Officer Prune carries out the drills and makes the assertions given below. What has he done wrong, or forgotten? There are definite mistakes in each paragraph, as stated in brackets at the end. Take a bit of paper and write down what you think he's done wrong. Then turn to page 24 and check your answers, marking yourself on the scale laid down. Marks are awarded according to the gravity of the error. You can then see what sort of a pilot you are—or if you would be better employed in a Demolition Squad!

1. *Preparing to Fly*

Collects all required paraphernalia, including cartridges, colours and letters, signs authorisation book and Form 700. Proceeds to aircraft and ensures that no obstructions, such as riggers' steps or bomb trollies, will strike aircraft, particularly the tail wheel, whilst taxiing

away. Carries out the usual exterior reconnaissance of aircraft. Enters aircraft and confirms that all escape hatches are secure and that any articles carried inside the aircraft are correctly stowed. Confirms all petrol and balance cocks, including those in the rear fuselage, are in the correct position. Ensures that the quantity of petrol carried agrees with the 700, by testing gauges. Sets altimeter to aerodrome height. Cages directional gyro. Sets airscrew controls fully forward. Correctly positions blower controls, throttle and mixture controls. Sets air intake to warm. Checks brake pressure and locks brakes in the "ON" position. Switches undercarriage lights on. Checks lights and flap indicator. Plugs in intercommunication. Tests communication with each member of the crew. Checks full and correct movement of all flying controls. Ensures that undercarriage lever is in the "DOWN" position. After switching on pitot head heater, receives signal from fitter that heater is working. Sets cowling gills fully open. (2 errors.)

2. *Starting Up*

Receives signal from crew "All clear, ready to start." Shouts "Contact Starboard" and presses Starboard starter button. Engine starts. Repeats process for Port engine. Warms up engines at correct speed, with all controls at correct settings, until oil temperature reaches 15° C., and cylinder head temperatures over 100° C. Adjusts tail trimming device to "Tail heavy." Runs up engines and tests switches, revs., boost and correct reading of all instruments. Exercises blower control, checks correct operation of airscrew control. Tests flaps for full movement. (2 errors.)

3. *Taxying Out*

Waves away chocks. Commences to taxi away, obeying signals of ground crew. (1 error.)

4. *Taking-Off*

Confirms all crew at correct stations for take-off. Sets airscrew control fully fine. Opens balance cock. Checks position of blower, hot air and mixture controls. Selects up to 15° of flap as required. Sets cowling gills for take-off. Turns into wind and takes careful note of all aircraft in the circuit. Receives

"All Clear" from rear gunner. Commences take-off. When well airborne and at not less than 50 feet, retracts undercarriage. At a safe height selects flaps up, reduces boost to 2½ lbs. and revs. to 2,250. Closes balance cock. Commences normal circuit. (1 error.)

5. *Climbing*

Sets boost at + 2½ lbs. and reduces revs. to 2,150. Continues climbing at the best climbing speed of 115 m.p.h. I.A.S. (With normal load.) Sets cowling gills to prevent the cylinder head temperature rising above 220° (3 errors.)

6. *Use of Emergency Hydraulic Device*

Selects undercarriage lever down. Notices that wheels fail to lock fully down. Engages hand pump lever, and operates hand pump. Still unable to lock wheels down. Decides to use Emergency Device. Moves emergency lever to the "E" position, and operates hand pump again. After approximately 30 to 40 minutes' pumping and about 500 strokes, observes undercarriage lights green, and tests horn to ensure that the undercarriage is locked down. Returns emergency lever to the normal position and prepares to land. (1 error.)



AN AIR GUNNER'S FORGET-ME-NOT

Do not, in your excitement at having an opportunity to try your guns in earnest at last, allow purely offensive firing to interfere for long with your search and purely defensive calling. The gunner in a bomber is for defence, and attack is incidental. If this point is remembered, fewer crews may be lost due to surprise, and successful results greatly increased.

WHAT DID YOU SAY?



THE invasion was at its height. For miles around the countryside heaved with troops, tanks, lorries, parachutists, Huns, guns and generals. At one place where the chances of the defence were looking pretty grim an excited Company Commander snatched up the 'phone to his H.Q. and yelled "Send reinforcements. I'm going to advance." An expression of horror crept over the face of the H.Q. telephonist as he wrote the message down and handed the paper to an anxious Adjutant. On it was written

"Send three and fourpence. I'm going to a dance."

At a nearby R.A.F. Station a tired controller picked up his microphone, switched on his transmitter and ordered a squadron to patrol Oxford. The formation leader acknowledged, and ten minutes later the squadron was carefully patrolling Watford.

Well, there you are! Most of us have had experience of this sort of thing when using the ordinary 'phone or the radio telephone. Your listener does not get

all that you say ; but while at times he may get enough to understand what you are driving at, at other times he may not. It depends upon the apparatus you are using ; it also depends upon YOU. But of one thing you can be quite certain : the sounds your listener *hears* are quite different from the sounds *you* make. The fact is that human speech-sounds are quite unusually complicated things and there are not many telephone or radio systems that deal kindly with them. (Those of radio crooners particularly, says P.O. Prune.)

So, remember that speaking into a telephone is a thing to be done with care, especially when you are doing so in the course of your duty. Speech is merely a form of signals : and good signallers in speech are just as important to the Service as good signallers in Morse. See that you become a good speech signaller !

The first rule, and the golden rule, is "*Never begin to send a message until you have made up your mind exactly what it is going to be.*" Nothing causes more confusion, more misunderstanding, more annoyance, or more waste of time and temper than messages hesitatingly delivered. Don't keep on saying, "Wait a moment !" Don't hum and ha ! Don't keep on clearing your throat—till the fellow at the other end thinks you must be speaking in code. Make up your mind what to say, and blooming-well *say* it. Then you won't find yourself at a loss for some vital fact in the middle of your message.

The second rule is "*Don't speak either too fast or too slowly.*" Sounds simple doesn't it ? But what happens when there's a flap and you've got a lot of messages to pass in a terribly short time ?

You'll probably start to gabble, and that's about as useful as talking Polish ! Less, in fact, for in these days the fellow at the other end might easily *be* a Pole ! And the opposite fault is just as bad. You all know that irritating chap who talks so slowly and so carefully that half the time you're not listening properly from mentally urging him on ; and when he does get to the end you've forgotten what he said at the start. Speech signalling *is* a quick method of passing information from place to place : No need to try to make it quicker ; no sense in slowing it down. And don't mix your drinks, as it were, by starting slowly and then going off into a gabble. Keep the speed of your speech as even as possible.

The third rule is "*Use a reasonably loud voice, and try to keep its volume constant.*" Whispering and shouting are both bad faults in a speech signaller. The first doesn't give the microphone enough work ; and the second gives it too much. The result in either case is disastrous. And just as with fast and slow speaking, don't vary by talking loudly at one moment and softly the next. We all do this in ordinary conversation—you have only to think of the way the voice drops at the ends of phrases and sentences—but in speech signalling it merely results in dozens of "What's ?"

It isn't easy to alter speech habits, but if your duty demands your speaking down into a mouthpiece it's equally your duty to see that your signalling is as efficient as it can be. So try to listen to yourself next time you pass a message ; remember the rules ; and don't forget that the success of operations and the lives of people may depend on the intelligibility of YOUR signal.

FIGHTER GUNS

By A FIGHTER PILOT



P.O. Prune knows all about guns.

The object of providing eight machine guns in a Hurricane (or Spitfire) is, of course, to reduce as far as possible the numbers of the Hated Hun. The way they do this is by producing what the Press delights to call "a withering fire, as a

hail of lead crashes into the enemy, reducing him to a blazing inferno and sending him in a headlong dive to destruction, the seventh victim to fall to the prowess of . . . etc." Well, we can read so much of that sort of stuff nearly every day that we are apt to forget certain other trifling factors that lead up to our hero's seventh victory.

The days have gone when the pilot lovingly stripped and cleaned his gun himself. The Service now provides skilled armourers to do it for him, and on paper he is not responsible for its maintenance. The armourers, by the way, appreciate any interest taken in their job by the pilot, and a little encouragement from him, helps a lot, besides being frequently of great value to the pilot himself. But this does not, by any means, relieve him of all responsibility except that of pressing the firing button.

Do you know, for instance, how to re-arm your guns? Do you know how to cock them, even? Or the sequence of ammunition in your belts? Do you know how to screw the panel back correctly? Well, you may, or you may not. If you

don't it is extremely important that you should.

Never let anyone else harmonise your sights. It is a simple job, and if your sighting is out, your next victory is out, too! Take infinite care to see that the little dots on the hangar doors coincide exactly with the gun-barrel apertures; and check them again when the guns and sights are tightened up. And don't say, "Why should I bother with this when in these days I don't need to?" Think of Crete and Norway: think of a possible invasion: think, in fact, of all the conditions in which you may not have the services of a full ground staff

Guns being worked by compressed air, you must watch the pressure gauge carefully, and if it is showing below 120 lbs. per square inch when you are about to engage, GO HOME at once and have it fixed.

When preparing in the air for battle, although it is a matter of taste, it is very advisable not to switch on your reflector sight, or turn the firing button safety-catch to "Fire" until you are on your patrol line or approaching the enemy. The bulbs in the sight are not very strong; they have been known to burn out by vibration after a long spell. Moreover, your guns may loose off owing to an over-enthusiastic right thumb.

In selecting your target it is a golden rule to choose ONE, and go for him. Don't spray all and sundry, and don't take a happy swing at anybody who comes past; it's pure waste of ammunition and you will be out of position within ten seconds and quite likely not able to get

back. Here's the best way to do things.

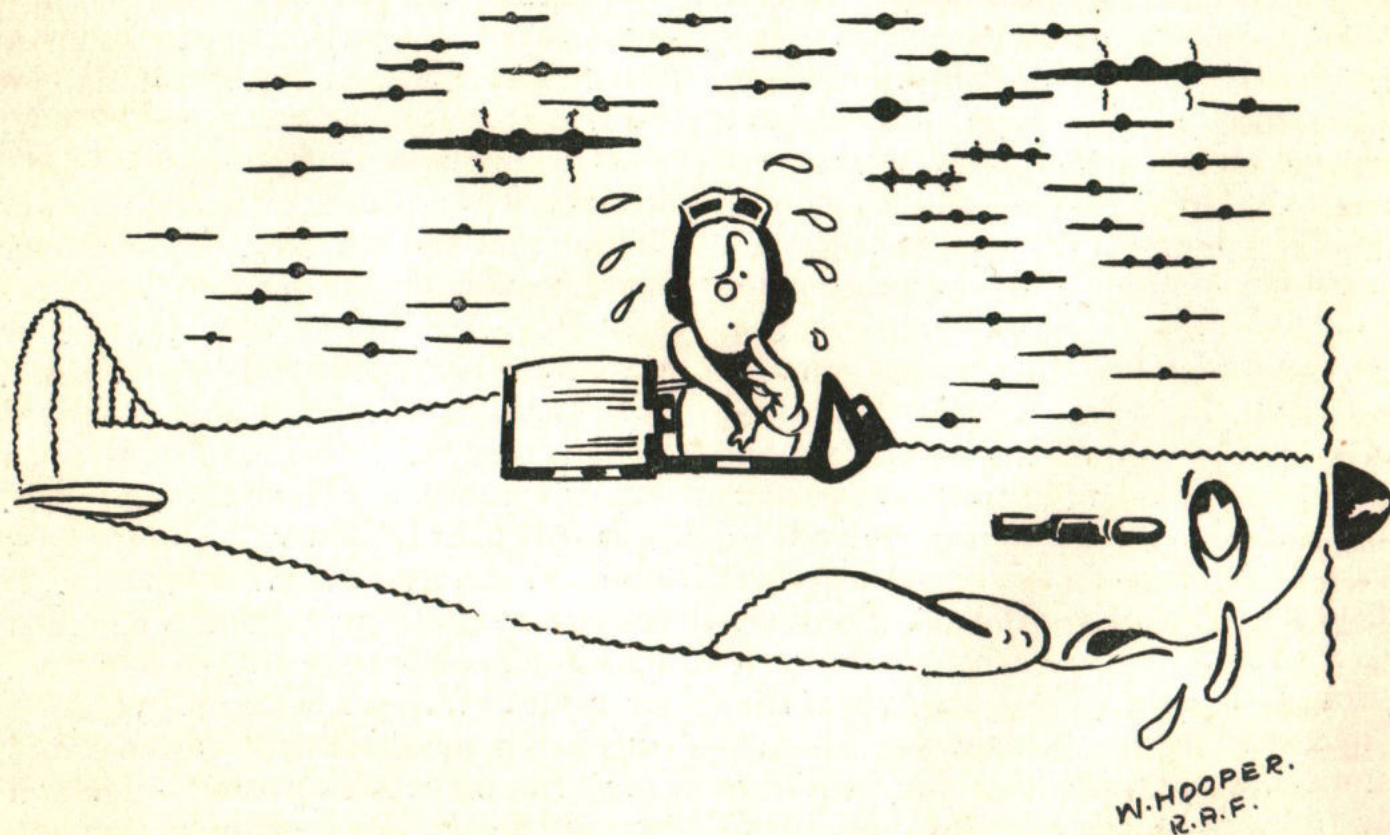
You are lining yourself nicely on a Heinkel, sight switch on, button "Fire" and plenty of pressure. First, have a damned good look round to see that nobody is taking a mean advantage of you from the rear, then close up until his wing tips overlap the horizontal graticule lines, aim for the centre of the fuselage and press the button for about three seconds. Don't look up to see the result. Keep perfectly still and do it again, and, believe it or not, things will begin happening.

At this point it is very important to remember that as you open fire the nose will drop slightly owing to the fact that the guns are mounted below the C. of G. You will then automatically ease the stick back, whereupon up will go your

nose; and, unless you are careful, a see-saw motion which is very hard to check will result through over-correction. So be ready for that drop.

One last point: in the excitement of the engagement you will not remember exactly how much ammunition you have expended. A cine-gun footage indicator is supposed to give you a rough idea, but is not infallible—for instance, there may not have been time to load it—so, if you think you have been firing rather a lot of bursts, GO HOME after your engagement. To be mixed up with a lot of 109's with no ammunition in your guns causes acute embarrassment.

On returning to base, supervise your re-arm, satisfy yourself that you are ready for your next battle, and good luck to you with it.



P.O. Prune agrees that being mixed up with a lot of 109's without ammunition causes acute embarrassment.

ADMIN.



*P.O. Prune has
no time for
Admin.*

Long ago a wise old man discussing the qualities required in a good General said this: "The General must know how to get his men their rations and every other kind of stores needed for war."

In 1939 another wise man, giving a lecture on the same subject, said: "It begins with the matter of administration, which is the real crux of generalship"

Time marches on. The first wise man was our old friend Socrates. The second was General Sir Archibald Wavell.

What does the word "Administration" mean to you—assuming, of course, you aren't an Administrative Officer, when it probably means a hell of a sight too much! Do you visualise a comfortable office, a large desk littered with papers, clerks and typists buzzing all over the place, and damnall being actually done? So much fuss for practically nothing? So many doing so little for so few? Or do you think of the colossal amount of energy that must go into bringing the fighting man the weapons he wants, into feeding and housing everyone, and into safeguarding the rights of every officer or man to reward or advancement in the Service? For all that takes a bit of doing in these days.

There was, of course, a glorious time when the fighter needed no administrator: he chipped out his own flint spearhead, cut his own club, found his own rations or lived on the country, and

used his prisoners to carry home his loot. To-day, however, spearheads are no longer of flint, nor are rations what you yourself can pick up. And the fighting man is far too busy fighting or training to be able to "administer" himself. So there must be a special branch, continually expanding, whose duty it is to handle the intricate details of modern administration which may range from hot water for baths to providing members for a Court of Enquiry. Maybe you have not realised the many duties and the wide scope of "Admin." Well, remember that the smoother any machinery runs the less noise it makes. Administration runs well if it is well run; but it can only be well run when you help by not making difficulties, by putting oil into the machinery, not grit. You may even sympathise with the Admin. officer and think his job is monotonous and boring—well, sympathy is welcome, but your help is doubly so.

For the aim of the Administrative Branches is just the same as yours: to end this war by victory as soon as possible. Their contribution to the kitty is to help you; so it is only fair to try to help them.

Can you help? (We are now speaking primarily to G.D. officers.) Yes, you can. First, by not increasing the height of the fence between those who fly and those who don't. There is always a fence, of course; but keep a sense of proportion. Share your successes with "those others"—try to share their worries. They are not a "lesser breed without the law." Many of the younger ones were probably

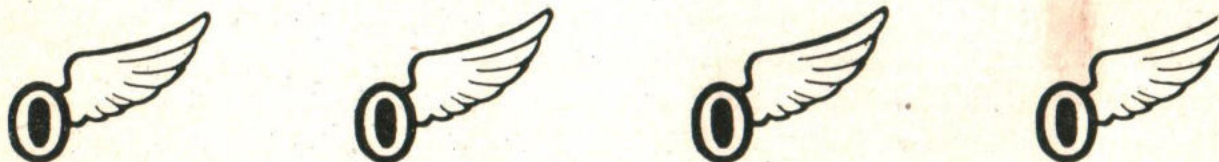
just as keen to fly as you, but they hadn't your advantage of Air physical fitness. But they've got something—probably quite a lot—even if they haven't got wings. And by attention to detail, promptness in dealing with the usual masses of bu . . .—sorry, we should say the “inevitable influx of official correspondence”—by passing on all your enquiries to the right channel at the right time, they can be pretty useful to you, and your perhaps more vital activities. And they *want* to be. It's their job—as much as flying is yours.

Listen to this! Recently an Air Ministry branch was considering replenishment of its stock of that nasty little bit of paper known as the “Reminder Form,” the one which (something like “Dear Sir, Unless . . .”) starts off, “No reply having been received to my letter ref., etc., etc.,” and goes on to suggest that you give a pretty good reason why. Well, the records showed that the annual consumption of this form was 250,000. This works out at 700 per day. Somewhere, somehow, 700 letters remained unanswered, stowed away in perhaps 700 trays labelled “IN”

or “ABEYANCE.” Granted that a proportion of them need never have been sent—that's the penalty of being a democracy; but it cannot be true of all. *Some* of them must have required an answer that could have been given—and ought to have been given. Do *you* clear your “IN” tray and look through your “ABEYANCE” tray every day? Do you answer at once all chits you receive? Do you read, initial, and pass on quickly things sent you for that purpose?

From Socrates to Wavell battles have been won by generals who saw that the real crux of generalship was efficient Administration. All our East African victories, for instance, would have been worthless without it. In the first place it was essential to the winning of those battles. In the second, the places could never have been held without that perfect administration which provides water, rations, ammunition—all the necessaries of military life.

You have the ungrudging help of the Administrative branches in winning your battles; so be tolerant, do not grouse—at least not *too* much! Help where and when you can!



AIR NAVIGATION

This latest and most up-to-date book on Air Navigation for the R.A.F. has now been published. Copies are being distributed in rotation to Instructors and pupils at training establishments and to operational squadrons, but in view of the numbers involved, this will necessarily take some time. You'll get it sooner or later.

SPEED AND RANGE OF AEROPLANES

THIS rather rough, but, we hope, helpful, article explains the relation between fuel consumption and range in air miles per gallon (a.m.p.g.).

Since this war started there has been a clamour from High Up for longer ranges for aeroplanes, particularly bombers. Various methods of increasing a bomber's range have been suggested and the Simple Pilot who conscientiously tries to do what he is told sometimes finds that he is not doing so well as the experts would have him think. This is not really so extraordinary because Expert Advice is nearly always rather complicated and sometimes unintelligible, and so the Simple Pilot is often thrown back on his own resources, in which he is handicapped by not having a water-cooled slide rule with him in flight. Having ourselves suffered in the past, we are, now that we are mingling with the Experts, careful in what we write and we do believe that this stuff is the Real Thing.

Before we go further let us agree on the meaning of that ambiguous term "Fuel consumption." There are, in all, three different meanings: (1) consumption in gallons per hour (g.p.h.); (2) consumption in air miles per gallon (a.m.p.g.); and (3) total fuel consumed on any particular flight. The pilot with the lowest consumption per hour is not necessarily the pilot who gets the maximum number of a.m.p.g. To avoid confusion we shall use the terms "g.p.h." and "a.m.p.g." and the latter you can see is the true airspeed.
g.p.h.

Obviously if we can increase our g.p.h. proportionately less than a corresponding

increase in true airspeed it is worth doing: *e.g.*, an increase of 5 per cent. in g.p.h. may give a 10 per cent. increase in true airspeed and therefore an increase in our a.m.p.g. Conversely, a decrease of 10 per cent. in g.p.h. is acceptable if it gives, say, a decrease on airspeed of only 5 per cent.

Your Engines. Your engines are your best friends; treat them properly and they will treat you properly, too.



P.O. Prune always treats his engine.

If you always cruise in weak mixture and never go into rich mixture or use "S" gear, unless you have to, you will not go wrong. Know your engine limitations; a good working rule is to fly at about $\frac{1}{4}$ lb. below the maximum boost permissible in weak mixture and adjust your revs. to obtain your required *indicated* airspeed as per the last paragraph of this article. A high boost with low revs. gives a better consumption for any given horse power output than low

boost and high revs. Decreasing your revs. is much the same as changing into a higher gear in a car. For any given throttle and rev. setting at any particular all-up weight (A.U.W.) of the aeroplane the *indicated* cruising airspeed will be the same at *any height* up to the height where your boost begins to fall off: your *true* airspeed, of course, steadily increases as you go up. Above that height your indicated airspeed will fall off with the boost because you are getting less power out of your engine. If because of your height it is necessary to use maximum cruising r.p.m. to maintain height at the desired indicated cruising speed, you will do better to use "S" blower at a lower r.p.m.

Before we go further, we'd like to dispose of a couple of beautiful Red Herrings, often produced and swallowed whole. Here's the first! We all know the chap who complains: "My engines have a high petrol consumption" (he means g.p.h.). We often believe him. But ask him the following questions:

(i) Were you in weak mixture all the time?

(ii) At what height or average height were you flying?

(iii) What were your average or actual boost or revs.?

(iv) Have your boost gauges been calibrated?

(v) Are your rev. counters accurate?

(vi) How did you accurately check the quantity of petrol used in any given time in order to arrive at your figure? (This last means, did you KNOW your tanks were absolutely full before you started? For the only ACCURATE way of checking consumption is to empty a tank of known capacity in the air and thus learn the

worst, or best, before it is too late. There is no dead accurate method of measuring the amount of fuel put into an aeroplane because Bowsers, dipsticks and gauges are not sufficiently accurate. In any case there is no need to do "petrol consumption tests" with our engines, except to find out if there is something wrong with them. Normally they will use just as much petrol as their makers say they will. The Fuel Consumption Data cards to be installed in Bomber Command aeroplanes give accurate consumptions under various conditions.)

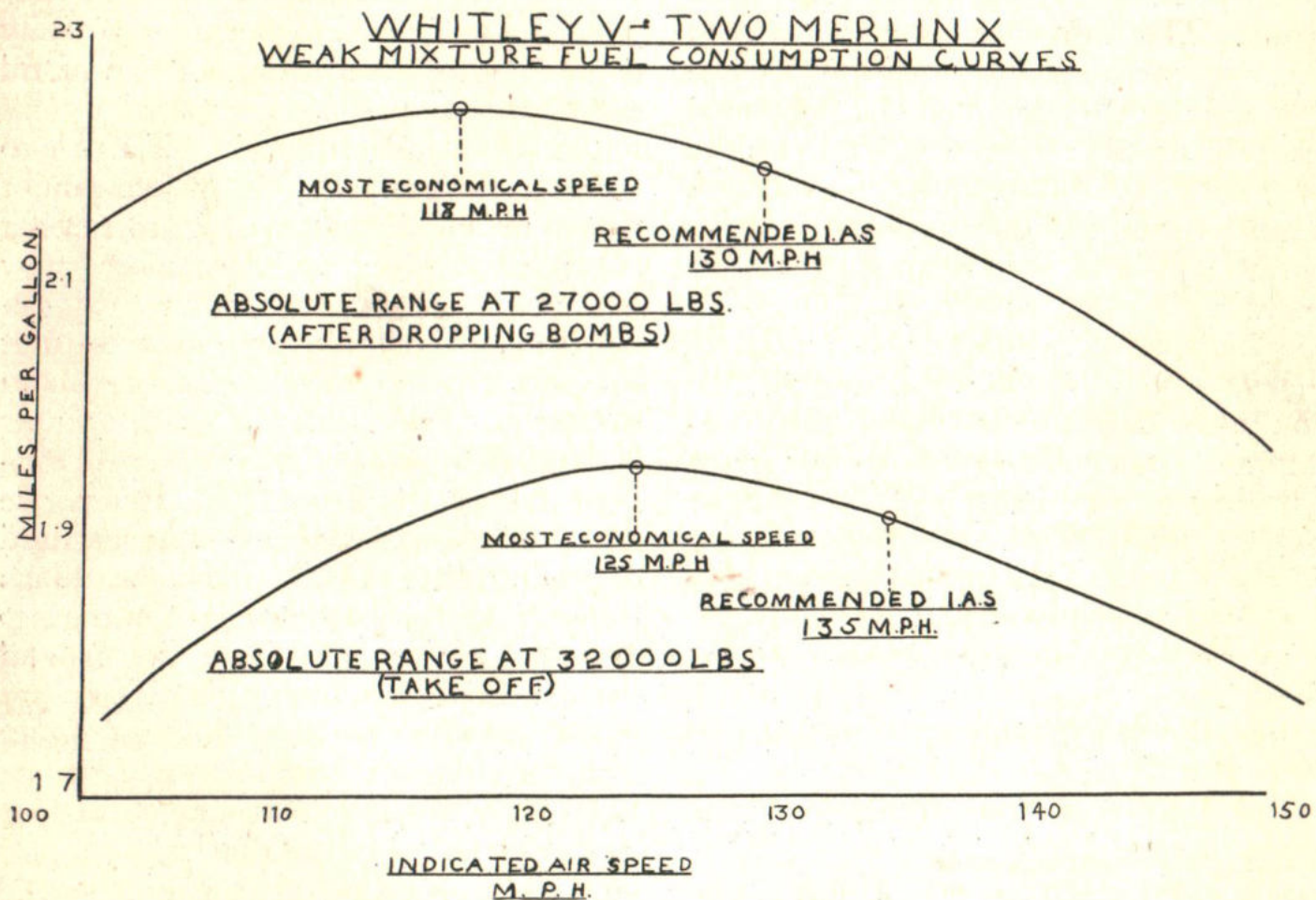
Now all engines give consumptions within about 3 per cent. of what they are supposed to give; so *only* if our friend can give a satisfactory answer to all the above questions can we safely assume that his engine really has a high consumption.

Most Economical Speed for A.M.P.G. Now comes the other Red Herring, a real stinker, on which we must perform the last rites. That is, the chap who thinks that the best range, a.m.p.g., is obtained by the pilot with the Lowest Petrol Consumption. This ignorant fellow actually criticises his colleagues who have higher consumption than he has. He will tell you how much further he can go on his petrol than you can and how much more petrol you use than he does. Well, provided you remain in weak mixture and do all the things we are telling you, your g.p.h. may be higher, but your a.m.p.g. will be about the same as or greater than his. Even if your g.p.h. is greater, you will be home first and fast asleep before he returns, although you will have used no more, and possibly less, petrol than he has. For example, it could happen that your

consumption was 84 g.p.h. and that you used a total of 420 gallons for a flight of five hours, which our Low Consumption Fiend did at 70 g.p.h. As he took six hours, he also has used 420 gallons—and possibly got his engines overheated through flying too slowly. For if you are flying too slowly your angle of inci-

have displayed in their crew rooms curves similar to the one shown below, which will give you the following information:—

- (i) Recommended indicated cruising speed and economical indicated cruising speed at the maximum weight; and
- (ii) The same for the mean weight,



dence is high, too high, and you are flying inefficiently. As you increase speed your angle of incidence decreases and you approach the most efficient, or economical, speed at which you attain your longest range. You can fly usually about 10 m.p.h. faster than this and there will be no appreciable drop in your range. All Bomber Command stations will soon

which is the weight immediately after you have dropped your bombs.

The speeds for (i) are higher than for (ii) because when the aeroplane is heavy it obviously requires, *at any given* indicated airspeed, more incidence than when it is light because it has got to get more lift. You will fly more efficiently if you give a heavily loaded aeroplane its

extra lift, not by increasing the incidence and maintaining the same indicated airspeed as when it was light, but by going faster.

The curves on the graph show clearly what are the recommended cruising speeds for the outward and homeward journeys for a Whitley V. And if you climb at the most economical airspeed you will not go far wrong on any aeroplane. The difference in range between the two curves is due to the difference in weight. The recommended indicated cruising speed at any given weight is the same at all heights. Clearly you use more petrol per hour if you are heavy because you need more power (higher boost and r.p.m.) in order to maintain the higher indicated airspeeds; hence the variations in range or a.m.p.g. If you obtain any consumption while cruising you can check up your a.m.p.g. by our simple formula.

$$\frac{\text{True airspeed}}{\text{g.p.h.}} \text{ e.g. } \frac{160}{70} = 2.3 \text{ a.m.p.g.}$$

The resulting figure, provided you fly at the recommended indicated airspeed,

will vary with the weight of the aeroplane.

A last point. Fuel gauges are becoming more reliable, but they are liable to go haywire sometimes. Calibrate them, particularly at the lower readings, by filling up the empty tanks with carefully measured quantities of fuel, but don't rely implicitly on them. Many crews have jumped under the illusion that they were short of petrol, when they actually had enough to last them till dawn or till the fog had cleared.

We have done our best in this article to cover a difficult subject, which cannot easily be condensed. But remember this: although you know more now than you did before, nothing we say can be absolutely correct in *all* cases, but everything we've told you will serve you well at all times. If you want to know how and why to obtain the best performance under all possible conditions we *could* tell you, but you would get tired of reading it. Finally, of all the things we've said the most important is to *keep in weak mixture whenever possible* and navigate well.

THIS MONTH'S ANNIVERSARY—SEPTEMBER

JUST a quarter of a century ago this month the German armies were being harried by the British in the Battle of the Somme, the British Air Force had established complete superiority in the skies overhead, and the British Navy had driven their opponents into hiding in their ports. In an attempt to liquidate this ominous situation the Germans launched, on September 2nd, a sudden gigantic onslaught by airship upon the

heart of Great Britain. It was the culminating point of two years of patient experiment. If the Zeppelin could not now accomplish its purpose all hope of its ever doing so would have to be abandoned.

That the attempt was foiled was largely due to the skill, courage and determination of a pilot of No. 39 Squadron, Lieutenant W. Leefe Robinson. For, of the fourteen large airships which crossed

the British coast (two more never reached it), no fewer than nine turned back after hurriedly disposing of their bombs at random, and of these five at least are known to have beaten a quick retreat before reaching their target, because they saw the warning glare of S.L.II, brought down in flames at Cuffley. S.L.II was the only airship to reach London—and she never returned.

Lieutenant Leefe Robinson was only one of the many airmen who ascended to the attack that night. He went up from Sutton's Farm, one of the four aerodromes specially called into being to cope with airship attack on London. The best aircraft then available—B.E.2c's—were distributed among these aerodromes to maintain a constant patrol when Zeppelins were approaching.

Leefe Robinson went up shortly after eleven o'clock in his B.E.2c and climbed to 10,000 feet. Although the night was clear he saw nothing for two hours, but at ten minutes past one he observed an airship caught by two searchlights to the south-east of Woolwich. Being now at some 13,000 feet he made in the direction of the illuminated Zeppelin. He slowly gained on her, and judging her to be only some 800 feet below him, he decided to sacrifice speed in order to maintain height. Unfortunately she passed into some clouds; Leefe Robinson lost sight of her and could not find her, though he searched for fifteen minutes. At ten minutes to two he noticed a red glow in the north-east of London. Believing this to be an outbreak of fire he made towards it, and at five minutes past two he again saw an airship held in the beams of searchlights. This time he was determined not to lose his quarry,

so he sacrificed height and made full speed, nose-down, towards the airship. In spite of the heavy anti-aircraft fire he drew close up. In his report he says:

“ I flew about 800 feet below it from bow to stern and distributed one drum along it (alternate New Brock and Pomeroy). It seemed to have no effect; I therefore moved to one side and gave it another drum distributed along its side—without apparent effect. I then got behind it (by this time I was very close—500 feet or less below) and concentrated one drum on one part (underneath rear). I was then at a height of 11,500 feet when attacking the Zeppelin. I hardly finished the drum before I saw the part fired at glow. In a few seconds the whole rear part was blazing. When the third drum was fired there were no searchlights on the Zeppelin and no anti-aircraft was firing. I quickly got out of the way of the falling, blazing Zeppelin, and, being very excited, fired off a few red Verey lights and dropped a parachute flare. Having very little oil and petrol left, I returned to Sutton's Farm, landing at 2.45 a.m. On landing I found I had shot away the machine-gun wire guard, the rear part of the centre section, and had pierced the rear main spar several times.”

The S.L.II was a wooden ship and burned for two hours. The flames were a funeral pyre for all the hopes of successful large-scale Zeppelin attacks, for she was the first airship to be shot down in the air by machine-gun fire from an aeroplane. No event in the history of airship attacks on Great Britain had such an overwhelming effect on the German airship service.

They had made their greatest effort,

with the largest number of ships and the maximum load of bombs—260 bombs were dropped with a total weight of nearly 16 tons—and the casualties were only four people killed and twelve wounded! The biggest air raid of all time had fizzled out in the embers of S.L.II, and it marked the beginning of the end of the airship menace. Leefe Robinson's victory indeed had far-reaching results.

In those days, it must be remembered, instruments were few and their reliability not up to present-day standard. Aircraft were still in their infancy and there would have been every excuse, after

losing sight of the Zeppelin in the clouds, to go home and call it a day. But Leefe Robinson's persistence endured. He hung on like a terrier until he found her again. He had searched for three hours before he was able to begin his David and Goliath battle which was to make history for British military flying. Germany's giant airships had made their greatest effort and failed. One young man had, by his courage and tenacity, sent her crashing down in flames. It was the doom of the airship menace.

Lieutenant W. Leefe Robinson was awarded the Victoria Cross.

A.S.R.S. SPEAKING—FLOATS

YOU wouldn't expect, would you, to find alcoholic refreshment in the North Sea or English Channel, free of charge and out of hours, just waiting for someone to drink it? But it's there—and many other even more useful things as well. For dotted round the eastern and southern shores of this island there lie, gloriously at anchor, certain strange craft. They are the Floats of the Air Sea Rescue Service.

Should you have to force-land in the sea, the A.S.R.S. will bring you to dry land from there, but *you* must do your bit. You must remain on the surface of the water (we cannot find you if you are underneath), and you must remain fresh and well. Your dinghy will do all this for you if you work it correctly. What *we* have to do is to find you. That may be fairly easy in fine weather, but devilish difficult when there's fog and mist, and visibility has gone to blazes. This is when you help yourselves by remembering where the rescue floats are moored (and don't forget the fitted buoys), and trying to reach one with the help of paddles, wind and tide. The floats are designed to house you for days on end if necessary, made with a sloping grid reaching down beneath the water-line so that a child could get aboard. Even a wounded man should have little difficulty, and when he goes below to reach the comforts of the cabin, rails are placed over his head to hold on to and to guide him down. Once below, with the hatch closed and the weather shut out, you can change your clothes and light the stove, brew hot drinks and heat some food, take a sip of rum as a liqueur, select a book from the library and lie down in peace. First, though, of course, you will have set the automatic transmitter buzzing or tapped out a message to tell us that you have arrived.

So please, before you go on your next flight across the sea, take a look at the chart in your briefing rooms or dispersal huts, and note carefully where these floats are moored.

THAT GROUND LOOP! WHY?

FEW pilots have not had that curious experience when, after an apparently beautiful touch down, they suddenly find themselves squeezed into the side of the cockpit as though making room in a 'bus for a rather too fragrant fellow-passenger. Recovering from this surprise, they find themselves quite helpless to stop the aircraft spinning round to the sound of tortured tyres and scraping wing tips.

What has happened, and why? We'll tell you. It's quite simple.

Undercarriage wheels are made to go smoothly in the direction in which they are pointing and don't like moving sideways. If therefore for some reason the aeroplane is moving sideways at the moment of touch down, while the wheels, to which it is rigidly fixed, are pointing forward, then the wheels will energetically resist that movement. If at the same time other parts of the aircraft are still free to move, either because they aren't in contact with the ground or because the tail wheel to which they are fixed can swivel in any direction, then these parts will try to continue in the original direction. Thus they will swing the aeroplane round the main undercarriage wheels.

What's the answer, then? Obviously to ensure that, before allowing the wheels to touch the ground, the aeroplane is pointing in the direction in which it is moving.

Now an aeroplane—like a woman window-shopping—may point in one direction and move in another. In the case of a woman the reason is generally an attractive shop-window. In the case of your aeroplane it may be one of several things. You may not have noticed the direction of the wind before deciding to land; there may be no wind, but you made a poor recovery from a turn near the ground, thus leaving on slip or skid; or you may be forced to land on a runway with the wind blowing across it. In all these cases the remedy is simple. Notice the direction in which you are *actually* moving over the ground, that is, the point on the ground which is *coming directly towards you on a constant bearing*. Then, just before touch down, apply rudder to swing the aircraft to point in that direction. If you want a "rule of thumb" for this last manoeuvre, it is simply remember to turn down wind, not upwind, contrary as it may seem.

To sum up: When about to land on a runway, approach along the line in prolongation of that runway. To do this with a wind blowing across it the aircraft will obviously be pointing to windward of the runway while its path in space is maintained along the line of the runway. Keep this position constant during the approach until the aircraft is flattened out just preparatory to touching down, then rudder it so as to point straight down the runway. Hold the rudder on, if necessary, to keep straight.

Got it?

CALLING ALL NAVIGATORS

IN the In trays of Navigation Officers and such there have been appearing lately certain papers dealing with a subject pithily called "Investigation into Change of Deviation during Flight." The backwash of this paper-flow has by now become apparent, in that everyone concerned with navigation has been asked to help in this investigation; and the natural query is "What the hell is all this anyway?" A very reasonable query, too. You want an explanation? TEE EMM will give it to you.

We'll start by assuring you that this isn't just another racket devised by the bureaucracy to keep themselves busy and help defeat the paper economy campaign. Far from it. The ultimate aim is the very laudable one of helping you in your job.

The Investigation is simply to find the cause and cure of everything affecting the accuracy of that old and well-tried friend of all aerial navigators, the Magnetic Compass. P.O. Prune, who has always managed to get home with anything up to two pints of petrol left, says "Why the flap? What's a few degrees between friends?" Well, apart from the obvious fact that those few degrees may be enough to take you straight through the pearly gates via the Blackpool tower or the upper slopes of Ben Nevis, there are many other reasons why an inaccurate compass is A Bad Thing. Here are three important ones:

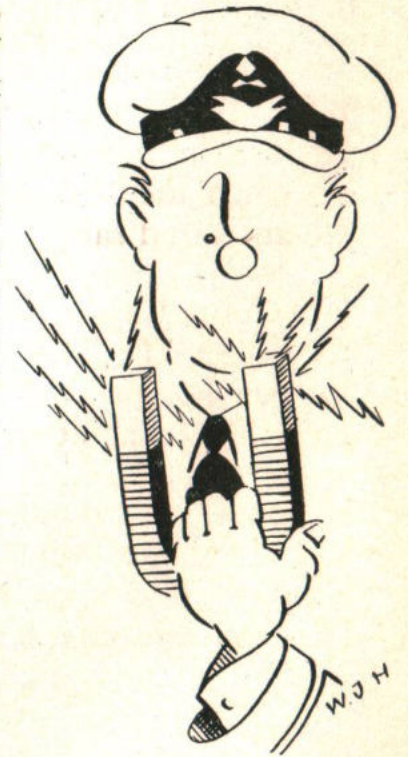
First, the more you trust a compass that isn't doing its stuff properly, the more time, mileage and petrol you will waste in getting to your objective. For example, if you can't get fixes or pin-points, a compass with an unknown error of only 2 degrees will put you six miles

astray for every hour you fly at 170 m.p.h. At the very least that six miles will mean two extra minutes flying, probably over enemy territory, and three gallons of petrol wasted. Secondly, you must use your compass in determining your loop bearings. If it's inaccurate, so will be all your fixes. And third, should you get shot up and lose your radio, a combination of dirty weather and an inaccurate compass may result in your "failing to reach your base."

In fact, your compass is your best friend: so naturally you should do everything you can to prevent him going wrong.

A good flight commander sees to it that his compasses are swung at least every six weeks and thereby ensures that they are accurate at that time and place.

(This also means, of course, that any small errors left behind are known.) What he does *not* know, and what no one else knows at present, is whether things are going to stay put that way or whether Deviation Dan the Sub-permanent Man will creep in during flight, lead you from the straight and narrow, and remove himself undetected shortly after landing. That is one of the things the investigation is trying to find out.



P.O. Prune can't make out why his compass lets him down, especially as he always carries a horse-shoe in the cockpit for luck!

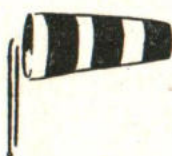
Other things that with luck and co-operation we hope will come to light are what happens to the compass when you drop your bombs, and exactly what is it that electrical storms do to aircraft to make the compasses go hay-wire. In fact, we want to find out all we can about the whole darn business, so that remedies can be sought where necessary, and as a result the magnetic compass made to serve you with guaranteed accuracy.

Now the investigation is attacking the problem from several highly scientific angles (which we won't go into here), but there is a part of it where the help of operational navigators is essential—

and that is, the collection of data. Those running this investigation must have a complete picture of what compasses actually do during flight. No amount of work by the "back-room boys" alone can provide this. If, however, you all do that little that is being asked of you via these papers we spoke about—more if you like—the boys can fit together from your figures and observations the giant jig-saw puzzle which will give them the answers, and will at the same time give you a compass on which you can rely at all times.

So help us to help you!

Thanks in advance.



P.O. PRUNE CATCHES A CODE

P.O. Prune went into Town ;
Of beer he had his fill ;
So when they asked him " QBA ? "
He answered sadly " NIL."

His comrades sat him at the bar ;
" Now QAH ? " they said.
But ere he got a QFE,
He climbed a bit instead.

He stood and shouted " QGV
and QTH precarious."
Then QFO'd upon the floor,
His language mixed and various.

" Oh QFR," Prune said, " I guess
I QGH'd too fast.
Control!—I'm in a ruddy mess!
A QGX please! Blast!"

He then turned to the Barmaid
Saying, " QDR, my Dear ? "
She answered rather snappily
That " QFT's right here ! "

The QTR is " time " at last,
so QAA at mess ?
" You seem to me, Prune, almost tight ;
" So QAK unless

" You wish to QAL in jug
And be a most peculiar mug.
So get your QDM for home ;
Allow for drift and do not roam."

(Can you work all this out?)

DON'T LOOK AT YOUR BOOTS!

DON'T look at your boots all the time; they're always there! The man who goes about with his eyes on the ground rarely knows enough to come in when it rains. Indeed, he rarely knows that it is raining till he's wet through.



P.O. Prune always knows when it's going to rain because his corn hurts!

Ever seen a farmer come out of his house first thing in the morning? He at once looks up into the sky, sniffs, screws up his eyes, feels the wind and knows at once whether it is from the east or west—dry or damp. He does this because success to him depends on the weather. He may not know the mechanics of a cold front, but he will not be far wrong if he predicts showers when after a night's rain he finds the wind in the morning is from the north-west with a rising glass.

Now you rightly say you're not a farmer and haven't spent your life looking at the weather. But upon the weather your livelihood is now based; upon it even your life depends. The air is the element in which you live and fight. You *must* get to know the weather. It's no good saying, "Oh, nobody can foretell weather properly, it's largely unpredictable." A married man doesn't, unless he's a fool, go about saying women are unpredictable and leaving it at that. The wise husband tries to understand them—and even if he learns that they invariably do the opposite from what he expects, he's at least learned something. He now knows enough to urge his wife to stay at home quietly with a nice book because she's looking tired, when he really wants her to come out with him. And, of course, she does come out. She wonders *why* he was so keen for her to stay at home; and so she darn well won't.

Similarly, you, too, can get to understand a good deal about the weather. Better even than the farmer. For you, fortunately, have available sources of information which the farmer can't get. The study of weather is not irksome; it can, and should, be a hobby.

The stamp collector, the greyhound-racing fan, the football-follower gets to know a hell of a lot about his subject because he's interested, because it's his hobby. Make the weather your hobby for a year or so: for in that year or so it's going to be a far more valuable and useful hobby than any peace-time one.

Do you look up at the sky when you

first go out? Or are you still keeping an eye on those boots? Do you know the names and types of clouds? That's only a first step. Do you then know how and why they have formed like that? Do you know what's going on inside them? Do you know what weather changes they portend? You should.

Study the signs and practise yourself in forming an opinion about them! It'll probably be wrong nine times out of ten at first, merely tentative and local, but you'll improve. In time you'll come to carry pictures of the weather in your head, frequently fairly accurate ones, too.

Then discuss the weather with the Met. Officer. After all, he doesn't make a forecast thus: "It's going to rain; my corns have been giving me hell all day!" His information is gathered from hundreds of observers and must be better based on fact than yours. Therefore you

will learn from him. Study the reports. There's much information there, in much detail—a lot of it difficult of comprehension by the average person who does not depend upon the weather. But *you* should be able to understand it. Learn the various met. phrases, so that they come to mean something to you and aren't just a poem in Choctaw.

Don't get caught out by weather! It plays tricks; but so did Columbus when he bet King Philip and his Court they couldn't make an egg stand on its end. He collected the cash all right—when, after they'd all failed, he did it by slightly cracking the end first. In the same way once you get to know the weather tricks, they don't fool you any more. And most of the answers are in the Met. Office.

And once again we say: talk to the Met. Officer and learn from him! It's his hobby, subject, job and pride.



A TRIBUTE TO THE GROUND STAFFS

The Minister of Labour and National Service recently paid this tribute in Parliament to the ground staffs of the R.A.F.

BUT there is another difficulty to overcome in connection with the Services. The number of Service tradesmen who have to be provided is about ten times as great as in any previous war. There has been a good deal of criticism about the number of skilled men who have gone into the Services. I invite any industrialist to go through the servicing depots of the Air Force establishments and tell me whether they have ever found it possible to run industry on as low a percentage of journeymen as that with which the Air Force has managed to build up that great organisation since the war broke out. It is an amazing achievement. The overwhelming proportion of the people repairing our aircraft are semi-skilled and trained since the war broke out in terms of months, and, not only that, but they are being continuously transferred to the seats of war, with new men coming along for training. I take my hat off to the Air Force. They have done an amazing work."

THE CREW THAT FINDS ITSELF

IF you've read your Kipling you may remember a story called "The Ship that Found Herself." A new ship set out on her maiden voyage and all the time the different parts of her talked and grumbled among themselves, each complaining that it was doing all the work, each considering it was more important than the rest. Then, as she reached port at the end of the journey a big new voice was heard. It was the Voice of the Ship. All the parts had at last reached a harmonious co-operation, each still indispensable, but each now only a small portion of an infinitely greater whole, the Ship Herself.

That is what has got to happen to every Bomber Crew. There is no other way. Imagine on their first trip together the pilot saying to himself "I am skilled at flying by day and by night. I can steer an accurate course in rain, cloud, bumps—any weather. I'm the only chap that can handle this ship under all conditions. Without me it cannot even leave the ground, much less reach its target. I'm the cat's whiskers in this outfit."

Meanwhile the navigator and bomb aimer is thinking, "I am the fellow who knows and handles the maps and charts. Laying off courses, allowing for varying winds, plotting fixes, logging positions by knowledge, skill or instinct, even when the ground has been out of sight for an hour—why, without me the aircraft cannot even reach its target, much less return safely to its base afterwards. And that's not the only thing I do, either. Who is it that, with care and skill, makes

all preliminary bombing calculations? And then releases the bomb to hit the target at the correct split-second of the whole flight? Me, of course. Frankly, I'm the cat's whiskers in this crew."

And during this the wireless operator air-gunner is saying to himself, "Without a wireless operator where are these chaps, any way? They must have fixes and I get 'em. Without these half the time they were in the air they wouldn't know where they were within thirty miles or more. They'd lose themselves and wouldn't get back to the aerodrome at all. Yes, where *would* they be without Regional Control in thick weather? Just cruising around wondering where to go instead of *knowing*. I'm the cat's whiskers."

And at the same time the air-gunner part of him is thinking, "But that's only half my job. Without my guns, and what's darn sight more important, without *me* behind them, they'd be flying along feeling completely naked and undefended. Most of the time they wouldn't even know if there were fighters on their tail, let alone be able to deal with them. I've read the war manual, and I notice with great pleasure that a fighting force must first secure its base before it can operate freely. Well, when one comes to think about it, the bomber is a base for the pilot and navigator, but it is my skill, resource and tenacity that gives that base security. Look at it how you will, I'm definitely the cat's whiskers in this kite."

Thus the individual members of a crew might reason to themselves as they take the air together. And what have

you got? Four sets of cat's whiskers, but no cat. Yet soon they must discover, as did the component parts of Kipling's *S.S. Dimbula*, that without each individual the whole simply does not exist. The co-operation of each member is essential to unity.

By those who train and make our bomb crews, and who are responsible for getting the bombers over their target, each member of the crew is considered equally important.

Constant efforts are being made to improve the already high standard in the training of pilots. They are the men who have to fly the aircraft, and the flying qualities of those aircraft are being brought to greater efficiency every minute that passes.

The navigator and bomb-aimer's maps, instruments, charts, navigational aids, training and other requirements are also untiringly studied; old methods and devices are being continually improved, new methods and devices continually brought out. A few years ago the bomb-aimer had a manual bomb release and a bomb sight that was used during the last war. Now he has the electro-magnetic bomb release and the automatic bomb sight.

Nor is the wireless-operator air-gunner left out of it. His radio sets are the best that can be produced, and when better sets come along he will get them. The single Lewis gun, mounted on the open-air gun ring is a thing of the past: instead he has the powerful, hydraulically operated batteries of Browning guns, which the gunner can control by a touch

of a lever and swing himself and guns in one movement to command any sector of the sky. Side by side with this the air cannon is being developed to provide him with an alternative and powerful long-range weapon.

All, you can see, are being equally well looked after; all are considered equally important. Yet none is so important in himself, as the blended harmonious whole of which he is a part.

Remember that:—

The Air Crew without the Wireless-Operator Air-Gunner cannot succeed,
The Air Crew without the Navigator-Bomb Aimer cannot succeed,
The Air Crew without the Pilot cannot succeed,
And these together make



THE SUCCESSFUL TEAM
without which nothing can succeed.

GOLDEN EGGS

IT is the actor, on the stage for all to see, who gets the plaudits of the people— and if he has entertained his audience, let him have his due. Likewise the fighter pilot, fresh landed from a victory, is acclaimed by all, and who shall grudge him his well-earned glory? But somewhere standing in the wings unseen is the producer who at rehearsal after rehearsal has guided the actor to his triumph. And somewhere likewise on the humble tarmac of some F.T.S. there toils the flying instructor, diligent and unspectacular, giving not himself alone, but a score of pilots to the national effort.

Just as back stage, too, there stand the scene-shifters, dressers, and property men, so, too, in the R.A.F. are those who keep the aeroplanes airworthy. Our operational strength at any given moment depends upon their work. But behind them again stand the men who taught them their craft. Each team of tradesmen at an Operational Unit may keep one aeroplane in flying trim, but each instructor at a School of Technical Training indirectly keeps a squadron or more aloft.

Lastly we come to the scenery—the aeroplanes themselves. The aeroplane at an Operational Unit lives its brief and glorious life, and then is finished—perhaps with violence. Its fellow, allotted to a School of Technical Training, plods its long and modest road and dies in bed—of old age. But its years have been fruitful. It has taught many hands to tend its kind. “Those also serve which do not operate” is as true as anything Shakespeare wrote. The proof is in the number of “Unserviceable” boards laid up in the Flight desk and not hanging like leper bells on aircraft after aircraft lurking shamefully in dismal corners of the hangar.

By all means let the table birds be cherished, but the goose that lays the golden eggs is worthy of his keep.

ANSWERS TO “COCKPIT DRILL” (see page 3)

(The marks are shown in brackets after each answer.)

1. Air intake must be in cold air for starting, otherwise back-firing may damage carburettor baffles. (4 marks.) Omitted to switch off the pitot head heater after test. (4 marks.) 2. Incorrectly started starboard engine first, possibly causing heavy strain on the generator, and probably blowing main fuses. (2 marks.) Trimming tabs must be neutral, otherwise elevator trimming gear will be damaged when the flaps are lowered for test. (6 marks.) 3. Tried to commence taxiing without releasing brake lock. (3 marks.) 4. Failed to ensure that the flap selector lever was securely locked in the neutral position after selecting 15° flap. (3 marks.) 5. When climbing at plus 2½ boost, revs. should be at least 2250. (4 marks.) Best climbing speed for normal load, 130 m.p.h. I.A.S. (3 marks.) Cylinder head temperature for continual climbing should not exceed 190°. (3 marks.) 6. Must on no account return emergency lever to normal as the emergency supply of oil will be lost and the undercarriage will unlock. (8 marks.)

POSSIBLE MARKS: 40.

100%–90%	= 40–36 marks. Exceptional.
89%–80%	= 35–32 marks. Above average.
79%–65%	= 31–26 marks. Average.
64%–45%	= 25–18 marks. Below average.
Below 45%	= Below 18 marks. Definitely Demolition Squad!

DO YOU KEEP TEE EMM?

The Air Member for Training is particularly anxious that all officers, instructors and members of air crews who want to do so should keep copies of all TEE EMMS. He also wishes Messes to keep a set of TEE EMMS for reference if required, and hopes that arrangements may be made to ensure this. Back numbers can always be obtained from A.P.F.S., 81 Fulham Road, S.W.



Sergeant Straddle always keeps his Tee Emm.

SOME R.A.F. SAYINGS

Remarks that get one expelled from the Air Gunners' Union.

You never see anything on these trips, so I always take a book into the turret. . . .

Training? No, you see, I'm at an operational squadron now. . . .

How was I to know there was anything wrong with the turret: the D.I's. always done by the armourer. . . .

I never make a testing burst—we have to clean our own guns. . . .

I couldn't tell the range, as it was a Condor and we'd only practised with 109's and 110's.

Well, you see, nobody knew what it was, as we were all having our sandwiches at the time. . . .

We'd already sighted the coast, so I wasn't in the turret at the time. . . .

I didn't bother much about it, as it had R.A.F. markings on it. . . .



"P.O. Prune doesn't see why."

NOTE.

Three slight corrections are necessary to our last month's article "March him in, Flight Sergeant!" Para. 2 (a): In war-time only one conduct sheet (F.121) would be available, F.120 being held by Officer i/c Records. Para. 2 (b): The Guard Report (F.160) would only come into the picture if the man were remanded for the C.O.; the subordinate commander should get the Minor Offence Report (F.281) for the Orderly Room. Para. 3: He should refer to K.R. 1129, as well as to K.R. 1141 (2) to find out what offences he can deal with and what powers are delegated to him.



Fransman

NOT to be taken into the air