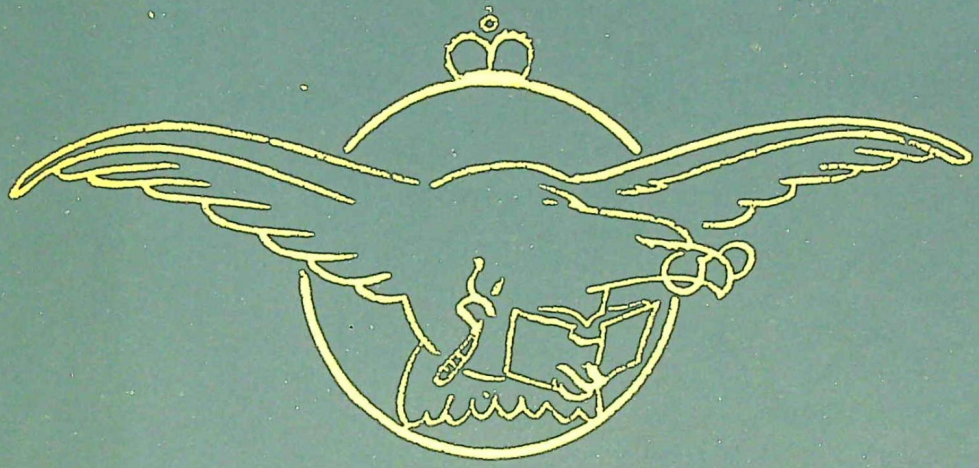
TEE EMM



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Vol. 2 No. 2 **TEE EMM** May, 1942

CONTENTS

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

BINDINGS FOR TEE EMM.

Very many readers have written in at different times asking whether it was possible for us to supply covers for binding up the first Volume of Tee Emm (and the second, if we get as far), and we have had to reply that we can't do so. Nobody would quote us a price without knowing how many were required and we had no way of finding this out. Now we have had a letter in, which may be of value as a guide. It is from a Squadron Leader at a Group H.Q. who has just had his Volume I bound up by a well-known firm of printers. It cost him 4*s*., and he said they made a very good job of it. The binding case itself cost about a shilling and the actual binding was 3*s*.—though any printer can do this if you have a case.

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

GIVE 'EM JAM ON THE BREAD

THOSE of you who are on operational stations are doing your job, and, we hope, doing it to the best of your ability. You are keen, fully trained, and in a position in which you can serve your country. But can you do more ?

What more *is* there to do, you might reply. Here is one little way :

Help those others who, though equally keen to serve their country, are not yet old enough or trained enough to do so, not yet in the same lucky operational position as you, *but* who are out to learn all they can against the great day when they can join the R.A.F. fully fledged.

We are referring, of course, to the cadets of the Air Training Corps.

You have perhaps seen these young men knocking about your station. " Oh, those chaps," says P.O. Prune. " They're having a grand time seeing round and all that. Just a nice piece of cake, that A.T.C." Prune, as usual, doesn't know what he's talking about. His general idea is that these lads do nothing but kite about aerodromes having a cracking fine time, and he's not certain whether it oughtn't to be stopped. No use for young chaps at places where their elders are getting seriously on with the war. So thinks Prune : and so Prune *would* think.

Let us, however, tell you—and Prune if he's listening—a few facts about the young men of the A.T.C. First of all, those aerodrome visits are very important. It only works out at an average of about once every two months. It is the jam on their dry bread—a hell of a lot of bread, and very dry, too. For mostly they have had to go out and earn a living since they were fourteen or so, and they are now in factories or other hard and often boring jobs. Yet they have voluntarily joined the A.T.C., so as to use their very little spare time in fitting themselves for the R.A.F. And a great deal of that spare time is given up to work which is just as hard and almost as humdrum as the jobs they are doing all day—lectures on navigation, rigging, calculations, engineering, signals, and aircraft recognition, armament, anti-gas training, and so on ; heavy stuff which has to be absorbed in evening classes when they are tired from their day's work and to which nevertheless they turn out regularly, and over long distances. Why ? Solely because they are *keen*. They want to help ; and keen people who want to help should always be encouraged.

Now, perhaps their greatest sources of encouragement are those rare week-end visits (with sometimes a camp in summer) at real live working aerodromes when parties of cadets are allowed to visit the Station to which their squadrons are affiliated. And this is where *you* can help. (Do you realise, first of all, by the way, that they *do* visit your Station ?) When you see them about, don't ignore them in a superior Prune-headed manner ! Don't think " Oh, they're quite happy," or " I can't be bothered ! " or even, though less Prune-like, " They don't want to be bothered by *me !* "

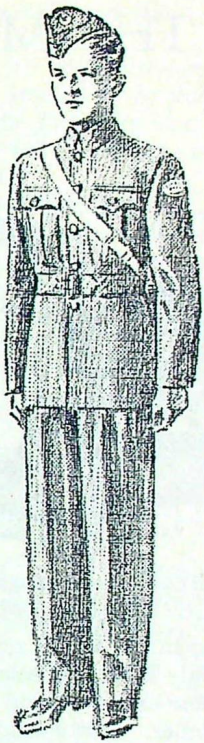
They're not really as happy as they *might* be. You *ought* to be bothered. And they *do* definitely want to be bothered by you. You probably don't realise, if you are reasonably modest, just how they look upon you ; all of you, not merely those of you who are qualified members of aircrews, but everyone who is connected with an operational station. They think a lot of you, because you are what they want to become, intend to become, and are giving up their spare time to become. And so naturally they want to hear from your lips what it's like and what you think of it and what you do, have done, or are going to do. There needn't be too much of it—merely the odd word ; they just want to be taken an interest in, to be shown something, even if only for a few minutes. " Ha ! Chance for a bit of line-shooting," says Prune. " I'll tell the next lot I see about the time I shot down two Me.'s in ten minutes." Probably it was only *one* Me. and it nearly shot Prune down in five minutes and was ultimately shot down by a pal—but even that doesn't matter. It's all doing *good* : if only you realise how much good, you'd do a bit more of it.

It's grand encouragement, too ; for these young men go back and shoot their own line at home and become the more keen and the more proud of themselves for it, which is again to the good. " Met a fellow to-day, Mum, Pilot Officer Prune. Terrific chap. He told me how he got the D.F.C.—well, at least earned it, only the Group Captain was jealous of him and wouldn't put him in for it." Moreover, the cadets have their uses about an aerodrome, as N.C.O.'s i/c Flight Sheds should know. They can, and are delighted to, help around the hangars. With a little supervision

they can do work, as plumber's or rigger's mates or whatever their favourite subject is—for they really know quite a lot—which may mean a few extra hours week-end leave for your mechanics. And it also makes *them* feel responsible, makes them realise they are actually getting on with the war, not just swotting up theory in an A.T.C. classroom.

And you can help still further—when they are not on one of those rare and lucky visits to your Station. They welcome, frankly are longing for, talks from the R.A.F. proper. Why don't you, pilots, sergeant pilots, any aircrew members, any one, in fact, volunteer once in a way to go out to one of the training centres of your affiliated A.T.C. Squadrons and give them a talk. You don't have to *teach* them anything ; they just want a talk ; about experiences, fighting, bombing trips, air gunnery, control room work, life on a Station, anything that smells like the inside dope on the Air Force. You can claim for the expenses of your transport—an Air Ministry letter to Commands authorises this : so all that it'll cost you is a little of your time and a little of your knowledge, or more probably of your imagination. Think of them and don't be selfish. You can help to spread the jam thicker on that dry bread.

Many thousands of A.T.C. cadets joined the R.A.F. in the first year from its formation. This figure will become tens of thousands this year. The cadets of to-day are the airmen of to-morrow. They are now busy reading the Book of the R.A.F.—but it wants more Illustrations. You can provide these.



"A.T.C."

"DON'T FORGET THE GLIDER, SIR!"

We have had the following letter from a pilot who is engaged in flying gliders. He says, " My friends and I, being glider pilots *pro tem*, resent very much being ' shot up ' by Ansons, Whitleys and so on, who seem to take an unholy delight in getting us in their slipstream and forcibly drawing our attention to the fact that they have engines." So have a heart, all you tough-engined fellows and if you want to go up close and look at a glider, try and restrain your curiosity till you are both on the ground.




THE MAN WHO DIDN'T COME TO DINNER

P.O. Prune explaining that he's absolutely on his way now.

Suppose some friendly folk near your Station book you to dine with them one night? At the last moment you are delayed; perhaps by a damsel in distress or by something going wrong with your transport—which is not so exciting but no less unforeseen. Would you say to yourself, "Let 'em wait: they can expect me when they see me. It'd be a dull dinner, anyway." Or, would you ring up your hostess to make your excuses, explain the delay (Prune says he can explain simply anything on the phone) and give them an idea of your E.T.A.? Almost certainly the latter. Not to do so would be very bad manners indeed.

Now, talking of E.T.A.'s, turn this incident into R.A.F. terms. Every time you fail to report your arrival at an airfield to the Duty Pilot, you commit a similar breach of good manners. Unfortunately it has far more expensive and dangerous results than a worried and angry hostess and a spoilt dinner. Just consider why.

The Duty Pilot at your destination, like your hospitable friends, is expecting you. If you don't warn in he doesn't know where you are. If you have had to land at an intermediate airfield and haven't reported to the Duty Pilot there, he still doesn't know where you are. And so when you don't show up an hour after your E.T.A., he has to initiate a lengthy and laborious procedure—which, briefly, includes telephone calls to the Air Ministry, to your station of departure, warnings to the police, Observer Corps and others. In fact, while you—un-wired-in or unheralded—are quietly quaffing your noggin in the mess, your name is being bandied about the country, and a network of telephone wires, both tie-lines and G.P.O., are occupied for some time in a vain and unnecessary quest for you.

What's the result? You are eventually found or else turn up all innocent-like—but only after an appalling waste of public money, private time, wear and tear of ear drums, vocal cords and tempers. Worse still you may have caused delay on important operational calls, perhaps even involving loss of life.

If pilots were more conscientious about this small but vital duty all this worry and trouble would be saved, and, in addition, much more work could be done

organising searches for those chaps who have really got into trouble and failed to turn up.

The consequences are not necessarily so serious if you fail to " wire-out," because you will be considered safely on the ground when really you are flying along happily home. Even though unknown, you are then under the Observer Corps' kindly eye. But at least remembering to report your departures will help you to get the reporting habit and thus to remember to report your arrivals.

So don't forget to telephone or report personally to the Duty Pilot, arriving or departing. It is surprising how grand that pint of beer in the mess will taste when you know that the regulations have been complied with, and that all the hoo-hah entailed when an aircraft is reported overdue is not going on about you, believed to be crashed on a mountain side but actually safe in a large armchair.

Incidentally, your Station Commander will be happier too. After all, he probably gets the initial and official " raspberry " from the Powers-that-Be for your bad manners, even though he passes on a full bowl of them to you, good measure, pressed down and running over.

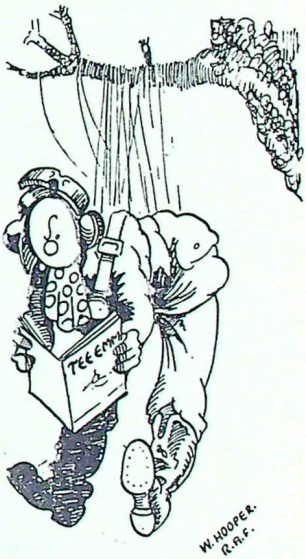
So always contact the Duty Pilot, and particularly on arrival.

LEARN TO FLY BY TEE EMM APPROACH

WE have always known how valuable TEE EMM is. We keep telling this to everyone we meet who has time to listen—and to a great many who haven't time to listen. But quite recently we have had proof of it.

We were out at a Bomber Station and heard the tale of a Hampden pilot who, while snooping round the hangars, found a dear little Hurricane. Probably it was P.O. Prune's, who'd dropped in to ask the way and stopped on to lunch, but, anyway, this pilot thought he'd like to fly it. But he wasn't quite certain how. What did he do ? Why he went and got the July issue of TEE EMM, turned to our " Cockpit Drill Test. No. 3 : The Hurricane," and mugged it up. He rather cleverly remembered that certain errors were purposely included in the test and turned also to page 29 where the answers were—otherwise we'd probably by now be involved in a law case with his executors. Then he went up and FLEW it.

Actually he circled three times struggling to get his undercart up, and finally landed hastily, shouting, " Where's TEE EMM ? ", read up the relevant paragraph, and went up again to have his efforts crowned with success. But that's neither here nor there. TEE EMM is proud of its first pupil.



" What did I do wrong ?" asks P.O. Prune.

LEARN FROM THE OTHER FELLOW'S MISTAKES

"It happened like this," says P.O. Prune.

"At 3,000 feet the ground was invisible until I estimated we were twenty miles from A—— when the Front Gunner reported a beacon flashing 'M.' This must have been incorrect. I informed the Captain that the highest ground on our course was 900 feet, and he decided to descend. At 0215 hours the aircraft struck the brow of a hill and after bouncing several times came to a standstill."

In other words, a damaged aircraft, and a crew very lucky not to be damaged. Why? Because the Navigator didn't believe the Front Gunner. Yet if he had looked up the gen on characteristics for that night (M being one), assuming he had been properly briefed and had been attending, he would have known his position to nearest minute of Lat. and Long. Instead he knew better than the Beacon, and crashed.

Recently two of our cannon aircraft on patrol caught an E/A near the Scillies. Both pilots decided to open fire at long range. Their reason for this decision was that they believed they were running short of petrol, though this was not, in fact, the case; they had merely both read their petrol gauges wrongly! As a result, however, of this error, one opened fire at 700 yards, whereupon the E/A took evasive action. The British pilot managed to close to 300 yards—and found he had only two rounds left in his cannon! The other pilot then carried out a beam attack—followed by astern attacks from 600 to 500 yards range, till he, too, ran out of ammunition. All the cannon ammunition in short, except two rounds, was thus wasted outside effective range, and the E/A escaped into cloud.

The following case is rather similar. During a recent engagement between two Spitfires and a single Ju.88, it appears that the latter escaped undamaged, despite the fact that no use of cloud cover was attempted and visibility was good. The Combat Report shows that Red 1 made a quarter attack developing into line astern, fired two bursts from 350 yards to 100 yards (cannon and machine-gun) without result and then broke away, having finished his ammunition. Red 2 made an astern attack from 350 yards to 50 yards firing all his ammunition in three bursts. Red Section then followed the E/A for about ten minutes.

In other words, the whole of the ·303 and 20 mm. ammunition was fired with no visible effect, due evidently to the inability of the pilots concerned to aim correctly, and their apparent desire to exhaust their ammunition in the smallest possible number of bursts, irrespective of whether or not their fire appeared to be hitting the E/A. As the Spitfires were able to follow the enemy for ten minutes after the conclusion of the engagement, it seems there was no necessity to hurry.

under all conditions of flight, and then translates that power into thrust with minimum loss.

It cannot, therefore, change low engine power into high thrust or low thrust into high speed, nor can it, of itself, select the best operating conditions for the particular type of aircraft or the particular type of work in which it is engaged. These conditions *must* be selected by the pilot—after which they will be maintained automatically by the propeller until such time as the pilot makes a change.

If, in certain circumstances, the propeller helps the engine to keep up appearances, it is just because it is pretty good as a windmill and very willing to do a spot of driving for a change, but the engine doesn't much like being kept on the job when it's not feeling well and so most C.S. propellers nowadays are made to feather in order to give the engine a rest and save it from getting really het-up. And this is where the experts who make the things have something to say.

Feathering the propeller results in turning the chords of the blades into the line of flight, when the propeller develops no torque and offers least resistance. It is brought about by an independent pump driven by a motor which—and this is very important—draws its current from the aircraft battery, and is controlled by a variety of automatic switches, all of which are set going by the operation of a single push switch in the cockpit.

When, why and how you should feather is all laid down in black and white in official instructions, publications, and Pilot's Notes. So if you don't get things right, who's to blame—the instructions, the propeller, or you? Do you remember how gingerly you tried all the buttons and knobs of your first car, how, in spite of reading and re-reading the booklet, issued therewith, you mucked your gears and got into first instead of reverse, how you trod on the accelerator instead of the brake, how you got 2 and 3 ignition leads crossed, and how, just when you most needed it, you found your battery flat? Do you agree, looking back on these early experiences, that the driver was at fault more than either the car or the instruction book, and that the unexpected effects were due to insufficient care, concentration, knowledge or decision?

Very well, get thoroughly acquainted with this propeller business, check up the system frequently that it is in order, try out feathering when circumstances permit, always be sure that your battery is full to bursting and that your fuses are not blown—then one day, when you need to feather, address yourself to the propeller—by name to make sure you've got it right—"Hey, starboard inner—here I come," and press the button as though you meant it. All will be well.

SYNTHETIC TRAINING HAS ITS USES

A young pilot on a Nav. exercise got caught out in really bad weather for the first time in his life. On his return to base he was asked how he had got on. "Fine, sir, thank you," was the reply. "I just pretended I was in the Link, climbed up to 10,000 feet, got Q.D.M.'s and here I am."

SHOT GUN TURRET SHOOTING

IN our last issue we gave you the works on clay pigeon shooting from the shoulder as an aid to training for air firing. This month we want to tell you how to use shot gun attachments in turrets. For it is a fact that no official information on the correct way to cover this training has as yet been issued and thus many different methods—with equally different standards of success—have been evolved.

Now, broadly speaking, there are three methods of presenting the target to the gunners. These are—advancing, retreating, and crossing.

The first is usually done by flinging the clay over the stop butt wall of the 25 yard range, with the gunner in his turret on the firing point. In this exercise three different shots are possible. One is when the clay is fired straight up and over the wall towards the firer—which is about the easiest, for he can almost certainly bag it at the end of its upward flight—and the other two are when the clay is fired either left or right at an angle of up to 45° on either side of straight ahead. Unless the gunner knows which side the clay is coming this type of firing is a good " quickening " exercise ; but owing to the surprise element due to the sudden appearance of the clay and the short time it can be treated as a target, it hardly gives the gunner a fair chance of hitting before it reaches the end of its flight.

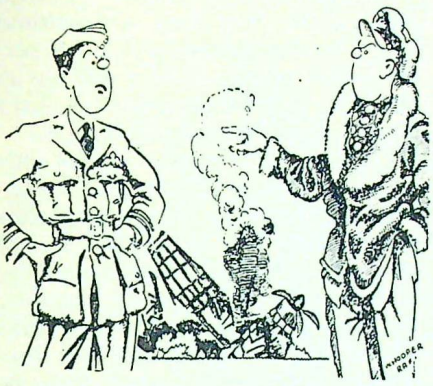
The second method of presenting the target, *i.e.* retreating or going away, is achieved by either lining up the trap and the turret both facing the same way ; or else by firing the target from behind the gunner and away up over his head. In effect, on the command " Go," the target and the shot from the gun have a race—which is usually won by the former.

The third method is the crossing one. This gives the gunner his best chance of showing his skill as a manipulator of turrets and a liner up of sights. The trap is placed behind cover and the gunner lays his line of sight on to this cover. When the trap is fired he swings his turret, follows the target, overtakes it, and fires when he judges that he has the correct deflection. It is most important that he should continue to swing his turret while firing.

A layout such as the Skeet range described in last month's article could well be used for turret shot gun shooting. (We might point out, though no doubt the error was obvious to everyone, that the diagram supplied to us to accompany the article had the dimensions shown in *feet*. This should, of course, have been *yards* as stated in the text.)

We would like to mention finally that before a gunner can expect to be reasonably successful with this kind of training, he *must* first of all have done some turret manipulation in the spotlight trainer, and some shooting from the shoulder with shot guns. Only then will he be able to get full value out of Shot Gun Turret Shooting.

A PUPIL SOMETIMES WONDERS



P.O. Prune sometimes wonders if he's been taught right by his instructor, he has so many accidents.

WE published some while ago (No. 7 of our Vol. I) an article called "A Pupil Bows to his Instructors." It was from a pupil pilot who openly congratulated his instructors on having taught him to fly. He took a pretty good view of them in general.

It is, however, not a perfect world; and it must be admitted that even instructors have their faults—small ones, no doubt, for they are carefully selected for the job. But perhaps time may breed a little complacency; and small faults easily creep in undetected—except perhaps by the pupils. For to the pupil the instructor is always a new man who is going to teach him something new; to the instructor the pupil is merely another pupil who has to be taught the same thing.

For this reason we publish a few comments made by a pilot who has passed right through the schools and is now at an O.T.U. Of course they only deal with the particular instructors who had charge of this pupil, and they contain inevitable extravagances, such as solo in three hours, and a method of landing evolved in the Pupils' Room! But they do emphasize that an instructor is always watched, and the "other man's" opinion can often be of help.

At the I.T.W., and, indeed, throughout training, this pupil notes that the disciplinary officers and N.C.O's almost without exception made excuses to each course for "having to be disciplinarians." They gave the impression they didn't really hold with it and, indeed, were browned off with the whole idea.

Doubtless this attitude was due to the desire to establish friendly contact on a basis of popularity and so achieve more influence over those they had to teach. Unfortunately from the pupils' point of view, it did not foster good discipline, which should have been the N.C.Os.' and officers' object; nor indeed did it lead to respect, which was even more important.

At the E.F.T.S. the first instructor the pupil encountered said he would be off solo in about three hours. After three hours he had a fresh instructor; and, in fact, just made solo after thirteen hours. He says he felt that, though the first instructor was unduly, even wrongfully optimistic, he was getting on well till he got the second instructor. This latter (one who had been to the E.F.T.S., then the C.F.S., and then back as instructor with about 150 hours' flying) appeared to be unduly, even wrongfully, pessimistic, not to say distrustful of his pupil. The latter said that of the forty-five

minutes in the air, he rarely had more than ten minutes with complete control, and often was told he had it, when he could feel the instructor's hands on the stick. This is a fault that instructors should watch carefully. Lack of confidence in a pupil is communicated to him and thus engenders lack of confidence in his instructor. The pupil says further:

"I made the landings eventually through discussing it with another pupil, who said he never looked at the ground when landing, except when flattening out, but watched the nose on the horizon, and by pulling the stick back tried to prevent it falling below. I did this for the first time when the Flight Commander gave me the final test and was surprised how easy landing was. Is any check made on the failures due to a pupil getting many different instructors? I noticed that those who, through no fault of their own, had many changes, had great difficulty in getting solo."

At the S.F.T.S. the pupil found his instructors, on the other hand, far too uncritical, too easy-going. He feels that he would have become a better pilot if they had insisted that, say, a climbing speed of 100 m.p.h. *meant* 100 m.p.h., and not 100 with a tolerance of 10 m.p.h. or so either way.

And he adds finally that at both schools instructors would do better by their pupils if they were more conscientious over what they themselves did. A perfect circuit, say, should be a rule for an instructor, not an exception—if that's what he wants the pupil to make.

This last is very important. Not only does a pupil, however unskilled, resent being told always to do what his instructor seldom does, but instructors should remember that a pupil is not taught by word of mouth alone, but by example. He looks up to his instructor, he thinks a lot of him, he wants to be a real flyer like him. If he sees him doing things in a particular way he is apt to copy them. And if at the same time the instructor is telling him that the proper way is so-and-so, which is quite different, he takes what he is being told with a grain of salt and subsequently ignores it. He feels it is only what the instructor has been *told* to tell him; and that the really proper way to do it is the way a proper guy—like the instructor—actually does it.

All the above may not affect the majority of instructors, but it may induce one or two to look into their hearts—through the pupil's eyes—and see if there's anything that needs changing.

McCUDDEN, V.C., ON TRAINING

". . . I shot down a D.F.W. that was doing artillery work over Vitry at 12,000 feet. This D.F.W. crew deserved it, because they had no notion whatever of how to defend themselves, which showed that during their training they must have been slack and lazy, and probably liked going to Berlin instead of sticking to their training and learning as much as they could while they had the opportunity. I had no sympathy for those fellows, and that is the mental estimate which I formed of them while flying back to the aerodrome to report the destruction of my forty-third aerial victim." From "*Five Years in the R.F.C.*"

CAN YOU RELY ON YOUR COMPASS?

P.O. Prune says he swings his compass regularly.

LAST November an A.M.O., A.1001/41, introduced a new trade—that of Compass Adjuster—into the Service. We can imagine that the first reaction may be to take a poor view of an "outsider" coming along to mess about with compasses: the observers and pilots no doubt prefer to swing their own, knowing that if anything goes wrong they have only themselves to blame.

Well, so long as the value of caring for your compasses is properly understood, and crews can do swings or make accurate adjustments when wanted, then there is no great need for a compass adjuster. Unfortunately, however, the regular swinging of compasses (you might refer back to the article on p. 11 of our Volume I, No. 2) is not always done, and it is because of this, and also to give aircrews full confidence in this vital bit of the works that the new trade has been introduced. And when we thus lightly intimate that there may be a lack of confidence in the compass among aircrews, don't think we're talking through the TEE EMM hat! Only the other day a Coastal Command pilot, whose wireless had been written off during an attack on shipping, said on his return: "As the wireless was out of action I had to fly home by compass." Obviously he felt it was rather an unorthodox and risky thing to do; might have landed up *anywhere!*

Now this new trade of Compass Adjuster is designed to be of particular service to training units where the large amount of flying means constant checking of the compass. For when a Compass Adjuster has been posted to such a Unit it will mean that instead of aircraft being allowed to fly for months without their compasses being swung, there will be one person who can state with authority and the evidence of his Form 343 (and have you seen the new version of this?) that a recent swing has taken place.

Moreover, modern compasses are becoming more and more complex and it has now become hardly a paying proposition to train all pilots and observers to be able thoroughly to understand and deal with these increasingly complicated instruments. Therefore when a sufficient number of Compass Adjusters have been trained, it won't any longer be necessary to deal so exhaustively with compasses during basic aircrew training.

A.M.O. A.1001/41 originally laid down that candidates for this new trade should be permanently or temporarily unfit ex-operational observers or pilots. Not enough of these, however, could be provided, so now cadet observers and pilots who become unfit for flying duties during their basic training are to be included. These candidates are very carefully selected and only those who show aptitude and keenness are remustered for training as Compass Adjusters.

A word about the actual training. It is an eight-weeks' course from which a high pass standard is demanded. The instructors have been specially chosen and the subject is covered from every angle, all types of compass from the P.2 to the D.R. being dealt with in detail. Air swinging with the astro compass is taught, also minor adjustments and repairs and a full knowledge of all the forces in an aircraft that act upon the compass. Accurate ground swinging is specifically dealt with and the importance of co-operating over this job with the aircrews in Bomber and Coastal Units. All Commands, in short, can rest assured that the pilots will be able to rely absolutely on their compasses from the time the squadron establishment is increased by a Compass Adjuster, Group I., who in view of the responsibility attaching to this trade is given the rank of Sergeant on successful completion of the course.

THE MONTH'S PRUNERY

THE MOST HIGHLY DEROGATORY ORDER OF THE IRREMOVABLE FINGER (Patron: Pilot Officer Prune) has this month been awarded to Flying Officer —— for Conspicuous Oversight.

While flying a large twin-engined aircraft he decided to feather his airscrews for experience. Having memorised the instructions he brought one engine to rest fairly easily. He then unfeathered the airscrew, but discovered that although revs., oil pressure and boost were all there, the airspeed was low and the aircraft was steadily losing height. He ultimately force-landed, crashed, and the aircraft had to be written off. It turned out that his whole trouble was forgetting to switch on the ignition again while unfeathering.

Action on this basis was promptly taken, and the searching aircraft directed to the much smaller area now worked out. Result : within half an hour the dinghy was sighted and a speed-launch fetched in a crew who now think pretty well of pigeons in general. And there you are ! An aircrew saved from a long and uncomfortable time in a dinghy, and perhaps their lives saved as well.

As we said last month, if you want to go further with the subject of pigeons the fellow to approach is the Signals Officer at your Station under whom the N.C.O. pigeon-keeper functions, and this latter is a pigeon expert. In some cases the pigeons are kept on the Station in established R.A.F. pigeon lofts ; in others, as in the case above, they are supplied by the civilian volunteers of the National Pigeon Service, who are doing very good and useful work indeed. In any case the pigeons are the best obtainable.

To give an instance, on one occasion a couple of pigeons were wanted for a very difficult and important job which meant a risky, and rough, passage for both pigeons and potential employer. A specially chosen National Pigeon Service Volunteer was asked to send the best birds he had and they did the job successfully, flying a distance of 350 miles, to the delight of all concerned. It turned out afterwards that the market value of these two birds was about £150, but the owner's officially authorised remuneration was 8*d.* ! Plus, of course, a much valued letter of thanks from the Air Ministry.

This shows the sort of work these fellows are doing for the Service ; for pigeons of that quality aren't common, and they certainly can't be mass-produced like aircraft engines. Frequently they are the culmination of the breeder's devotion to his hobby over a life-time. Yet the pigeon services, both civil and R.A.F., strive all the time to send out really good pigeons on the job, and honestly feel well repaid if ninety-nine out of a hundred are lost but the hundredth saves the lives of a trained aircrew—*as long as they are given a chance to try it.* So the moral is : Do, if you possibly can, give your birds that chance for which they are bred and trained and don't just casually leave them behind in the aircraft.

MORE DON'TS FOR FIGHTERS

Don't approach a friendly aircraft from astern ; come in from the side so that he can see your markings.

Don't get out of your Leader's sight. He hates playing hide and seek.

Don't imagine that an enemy aircraft is " finished " if you see black smoke pouring from his engines.

Don't forget to turn the firing button on to " FIRE."

Don't forget your radiator ; remember that your guns need keeping warm.

Don't forget your oxygen at night ; you need more, and you need it from the time you leave the ground.

Don't go off without your goggles, gloves and flying boots. They are a great help in case of fire in the cock-pit.

CRITICAL TABLES FOR AIRSPEED

WE had an article on the above subject in the July 1941 TEE EMM ; it showed you how to prepare a critical table of airspeed corrections. The following revised method is an improvement on the instructions given therein.

Taking the original example given, the position error of the particular type of aircraft (a Stirling) was as under :

Airspeed m.p.h.	Indicator reads	
	High	Low
120	10	—
140	5	—
160	2	—
180	—	2
200	—	5
220	—	7½

The particular airspeed indicator under consideration was then calibrated and the instrument error ascertained. Thus :

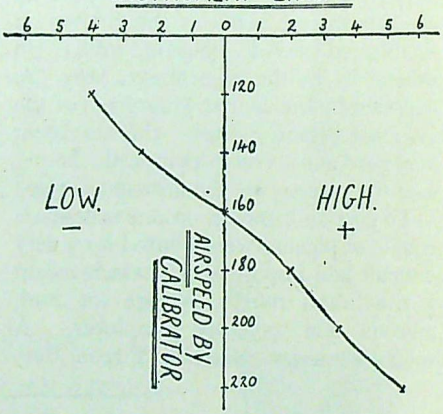
Airspeed m.p.h. by Calibrator	Indicator reads	
	High	Low
120	—	4
140	—	2½
160	—	—
180	2	—
200	3½	—
220	5½	—

And to get the figures necessary to compile the critical table you had next to combine these two tables so as to find what the indicator actually reads at different airspeeds.

Now the normal method of doing this is to say, " If at 120 m.p.h. the indicator reads 10 m.p.h. high because of position error, and 4 m.p.h. low because of instrument error, then it will read 6 m.p.h. high (*i.e.*, 126 m.p.h.).

This, however, is not strictly correct. When the aircraft is going through the air at 120 m.p.h., a perfect airspeed indicator would read 130 m.p.h. because of position error. But the airspeed indicator we are considering is not perfect, and, therefore, instead of 130 m.p.h., it reads some other figure, though if the calibrator and the A.S.I. could both be joined up to the pressure head, the calibrator would read 130 m.p.h. Now we have already prepared a table comparing the calibrator with the A.S.I., but instead of looking up to see what the A.S.I. reads when the calibrator is showing 120 m.p.h., the comparable figure is really 130 m.p.h. In this instance there is only ¾ m.p.h. difference from the instrument error at 120 m.p.h., but this might quite easily be more if there were a larger range of instrument error.

The best way of combining your two tables then is first to prepare a graph of instrument error against airspeeds by calibrator, thus :—



Then the correct reasoning is to say, " When my speed through the air is, say, 220 m.p.h. my A.S.I. should read 212½ m.p.h. because of position error. However, at 212½ m.p.h. my particular instrument has an Instrument Error of + 4½ (see graph), so it will read 217 m.p.h.

Thus you finally end up with an airspeed indicator reading of 217 m.p.h. when the aircraft's speed through the air is 220 m.p.h. From this point the critical table is constructed as shown in the original TEE EMM article.

IT SHOULDN'T HAPPEN TO YOU

IT'S wrong—you know it's wrong—but you persist in doing it. We mean the *little* things you do—the little things which can make a *big* difference.

For example, you know the minimum brake pressure allowed for the type of aircraft you are using. You are preparing to take off and you find that the pressure is below the minimum. Do you report it and have the brake pressure increased? Oh, no! You want to press ahead with training, so you forget it, hoping the pressure will build up once you are in the air. Out you taxi to your take-off position. Then you see an aircraft ahead; you apply your brakes; they won't work, as you are on a slight down grade; you try to turn using the engine; but you are too late. Result —two aircraft badly damaged.

P.O. Prune says nothing ever happens to him.

Announcement :—

A FEW MINUTES SPENT BUILDING UP THE BRAKE PRESSURE MIGHT HAVE MEANT DAYS SAVED REPAIRING THE TWO AIRCRAFT.

Another little thing. You are coming in to land and lower the undercarriage. The undercarriage indicator lights come on green but the warning horn blares out its raucous note. Don't assume that the horn is out of order. If you do you may get an unpleasant shock on landing. It is equally unsafe to assume that when the lights are " red " but the horn does not sound the lights must be out of order. After all the commonsense precaution, if in doubt, is to resort to the emergency method of lowering the undercarriage.

We know how nice it will be to tell your grandchildren about the wizard belly-landing you made in the Second Great War. But think how much nicer it would be to tell about the belly-landings you prevented!

Announcement :—

EVERY AEROPLANE YOU SAVE MEANS ONE MORE TO BE USED AGAINST THE HUN.

Another bad habit is the " creeper " approach. This is an approach to the aerodrome from a considerable distance at low altitude. Unfortunately there may be a water tower or some other obstruction in the way, and in an argument with a water tower the aeroplane always comes off second best, even if it is British.

Another Announcement :—

ALWAYS REMEMBER TO KEEP TO THE STANDARD METHOD OF APPROACH WHICH YOU WERE TAUGHT. IT HAS BEEN BASED ON EXPERIENCE.

Last but by no means least. You are an instructor coming in to land with a

pupil and showing him the " do's and dont's." You realise you will overshoot, but don't want to go round again in case the pupil or your brother instructors make fun of you. Don't worry ! You will get the laugh on them—when they are in a similar position, but try to land, and finish up in a ploughed field.

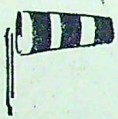
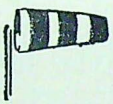
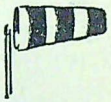
One More Announcement :—

HE WHO OPENS UP AND GOES ROUND AGAIN, LIVES TO LAND ANOTHER DAY.

You may, of course, be able to pull up in time by the use of brakes and engines to turn. But the pupil who has been watching, goes off on his first solo and tries to do the same thing. Not having so much experience as you have, he naturally makes a muck-up of it.

Final Announcement :—

REMEMBER TO TEACH THE PUPIL THE CORRECT PROCEDURE AND DON'T WORRY ABOUT ANYTHING ELSE.

P.P.C.I.

WITH the object of finding out the real underlying causes of aeroplane accidents, certain officers have been appointed to make a whole-time study of this subject.

As their job is probably going to be difficult enough anyway, TEE EMM has been asked to give this brief explanation of their why and wherefore, just what they are to do, and just how they will do it.

Up to the present the system has been that when an Inquiry into an accident is held on a Station, the Court is composed of officers of that or a nearby Station. These, however, are already fully occupied with their normal duties. Their natural reaction, therefore, is to arrive at a likely and reasonable explanation of how the crash happened, to apportion blame, if any, and to get back to their own jobs. In other words, they want to get it over and done with, as efficiently as possible but definitely as soon as possible. Now the question of why the accident happened, what were all the circumstances which, coming together as they did, finally brought about an accident, is rather difficult to answer. It requires careful thought and patient investigation, and not a single factor can be omitted, because without just that very factor the accident might not have occurred. Yet under these conditions there is a possibility that should one of the contributory causes be something that reflects indirectly on the Station or Group, a Court composed of officers from that Station or Group may be *quite unconsciously* influenced not to give too much weight to that particular failure, though mentally and conscientiously resolving to obviate the possibility in the

future. But the result would be that full consideration might not be given to a point which may prove of great value in helping to avert future accidents.

In short, it must be admitted that a Court working under these conditions is perhaps not best fitted to get at the *real basic* causes of every accident. Yet if these could be brought to light in every case, they might help to save valuable aircraft and lives in the future.

For many years now the present Chief Inspector of Accidents has been building up a staff of expert inspectors, known as the Accident Investigation Branch. These men concern themselves chiefly with the technical causes of accidents. A large amount of valuable information on all kinds of airframe and engine failures has been got together which enables the organisation to link up accidents, which to an individual Station or Group may be just isolated examples.

Under the present new scheme, the Permanent Presidents of Courts of Inquiry (for that, so help us, is what they are called !) will do a course under the Chief Inspector of Accidents before taking up their duties, and will thus acquire certain specialised knowledge to bring to an investigation, as well as the latest gen on the engines and airframes with which they are dealing.

But the scheme will be of very little use unless everybody connected with the accident is ready and willing to co-operate. And this can come about only if all realise that the primary object of the investigation is Accident Prevention and *NOT* allocation of blame.

In other words, these Permanent (here we go again !) Presidents of Courts of Inquiry are not really a sort of Gestapo prying about in order to tear off strips right and left. They are definitely there to find out What Happened in order that it may not, as far as possible, happen again. The unknown stooge, therefore, whom P.O. Prune spots one day standing wistfully in the corner of the anteroom, is not a member of the C.I.D. come to ask searching questions about Prune's undercart habits ; he is merely a Permanent What-we-said-before and he is there because he's thoroughly used to accidents. His knowledge, brought to bear at an investigation of a local accident, is, in sum, the knowledge of all local accidents. And one must admit that the greater the knowledge brought to any problem, the greater the chance of solving it—even if the problem is such a thorny one as the prevention of flying accidents.

" He's thoroughly used to accidents."

NICE TEAM WORK

THE following story of how a rear gunner got his first Me. shows the value of good crew co-operation :

" I had the good fortune to be rear gunner on an ideal Wellington bomber crew. Every man of the crew pulled his weight on the ground and, what was more important, in the air. Before each Night Op. we got together and devised a plan of campaign, after digesting all the ' gen ' the Intelligence Officer gave us at briefing. For every eventuality each man knew exactly what was expected of him. Our normal procedure was for the 2nd pilot or the captain, when not at the controls, to be stationed at the astro-hatch to give additional aid to the gunners in their plan of search for night fighters. This method had enabled us, on several previous occasions, to spot enemy fighters when some distance away ; and by taking avoiding action immediately we were always successful in losing them.

" On the night in question there was a three-quarter moon and excellent visibility. We were returning from a sortie and quite candidly we did not expect any fighter opposition. We did not, however, relax our vigilance.

" About a quarter of an hour after leaving the target, following a successful attack, I spotted two dull red lights (or so they appeared) close together following us on the starboard quarter. These two lights were in the dark part of the sky, the moon on the port quarter. There were no clouds near by and nothing to silhouette an aircraft against. Indeed, I was not at all sure at first that the lights were on an aircraft ; nevertheless, I warned the captain, and immediately avoiding action was taken, but the two red lights still followed us.

" We then turned to starboard in a tight turn and went down in a dive. During this manœuvre I saw the silhouette of an Me. 110 against the bright part of the sky and what I had thought to be two red lights proved to be the exhaust glow from its twin engines. We found we could not shake the fighter off so we turned back on course and our evasive action took the form of undulating. This fighter didn't appear to be a keen type and followed us, still on the starboard quarter, about our own height (11,000 feet) and at about 1,000 yards range. After five minutes had elapsed the fighter closed in to about 800 yards opening fire with two cannons. The range, of course, was too extreme for ·303 Brownings so I held my fire hoping that the enemy aircraft would close and give me a chance to have a crack at him. But he was a very shy bird, and when we throttled back hoping he would overtake us, he fell back too and kept the range at about 800 yards. Every now and then he would turn in and fire a short burst from his two cannons and then continue as before.

" This went on for about a quarter of an hour, and having showers of explosive cannon bursting around the rear turret was far from comfortable. I was fully convinced that the only way to get rid of the fighter was to fox him into coming in close to point blank range and shoot him down. I pause to remark that never for a moment did I doubt that I would

get him first—why, I'm afraid I can't explain. Anyway that attitude, which came on me quite subconsciously, certainly improved my morale 100 per cent.

" I asked the captain, who was at the controls, when the fighter opened fire again, to dive down as though we were out of control, and when I gave the word to throttle back, lower the undercarriage, pull the nose up, and, in fact, do everything to slow us down suddenly. The resulting dive was rather hair-raising and of the whole encounter that was the only thing that really gave me the ' wind up.' The A.S.I. registered 360 m.p.h. in that effort, which isn't bad for an old ' Wimpey.' Jerry was completely foxed into thinking he had got us and he came down after us, closing in to give what he thought would be the *coup de grâce*.

" What was most surprising to me, he came in from dead astern, and when we throttled back, lowering the undercarriage, etc., we dropped from 360 m.p.h. to 100 m.p.h. in less time than it takes to tell. Jerry was taken completely by surprise and, of course, overshot. Instead of breaking away he attempted to get his sights on us and when he found he couldn't get his sight to bear, he pulled up into a climb dead astern. The range during this was from 100-50 yards and I was firing longish bursts, all the while.

" At this short range I couldn't miss, and I continued firing as he climbed away from us. When he got to about 500 feet above us, he stalled, turned over on his back and went down in a dive which rapidly became a spin. I last saw him 1,000 feet below, still going down. There was no indication that he was on fire or that the pilot had baled out. About 20 seconds later there was an explosion on the ' deck ' below us followed by a large fire, which indicated the Jerry had dug in.

" We then returned to base without further incident, and all felt very pleased with our night's work. I found on landing that in all I had fired about 300 rounds. Let me say now that most of the credit for this successful encounter goes to the captain, as he relied implicitly on my instructions without ever seeing the fighter, and he did the right thing at the right time. The conclusions I feel to be drawn from the above are (i) the importance of having a plan in the event of fighter opposition, (ii) the importance of good team work in a bomber crew, and (iii) the importance of conserving ammunition and only firing when sure of hitting the enemy aircraft."

NEVER forget that the HUN is listening to nearly everything you say either on the R/T or in the " Local." Be careful what you say on the former, and always resist the temptation of describing even your most successful patrol at the latter. It would be very hard to do so without telling HITLER something that he would like to know.

MODELS

"FIRE a couple of bursts at him ; he might be a Hun ! . . ."

Well, we haven't actually heard P.O. Prune say *exactly* that yet, but one never knows. The point is, does Prune really kite about the sky squirting at anything from Havocs to Gremlins—or has he really a good working idea of what Hun aircraft look like ? And, of course, what our own aircraft look like. If he hasn't, not only is he a menace to everything in the sky—as long as he lives, but it's also certain he won't live long. That moment of holding off while you try to recognise in the dusk a homing bomber of ours from a too inquisitive bomber of theirs has often proved fatal. He gets *his* squirt in first. Maybe, once you have fired a tentative burst at him he promptly switches on his navigation lights. This shouldn't fool you, but frequently it does. You say : " God ! have I boobed ? Is it a Blenheim after all and not a Ju. 88 ? " You hold off a second or so : and in that second or so he gets off a burst at you and takes avoiding action. You may, or may not, be in a position to continue the argument. The real point is that that moment of hesitation as to whether you have or have not committed a social error is *dangerous*. Two seconds' doubt may mean a four seconds' burst—going the wrong way. The remedy is simple : Be *sure* of your identification !

Is it a Blenheim or Ju. 88 ?

Now there are identification handbooks ; there are films ; and there are models of every type of E/A you are likely to meet. Do you *use* these models to increase your knowledge ? Or do you look on them as toys—with no real purpose in life except to decorate a room.

Come to that, do you get a chance to see them ? We know cases where they are stacked in a heap in an out-of-the-way corner ; cases where they are distributed uselessly round all offices and rooms on the " one-for-you and one-for-*you* ! " basis, like a dozen kids sharing out a tin of toffee ; cases where they are even kept in a box to prevent them getting dusty or broken ; cases where they are hung up in some room where no aircrew ever goes. The Station Commander's office, for instance, is hardly a happy meeting ground for P.O.'s, Ground Defence Gunners and aircrews, who are the fellows for whom the models are really provided. At every station, for instance—and certainly at every O.T.U.—there should, if possible, be a special aircraft recognition room with all the recognition diagrams stuck on the walls and with all the models hung from the roof. It should be accessible, too, not in some far-distant corner ; and pilots and pupils should be encouraged, if not made, to visit it.

After all, these models cost money. This money should not be wasted, either by those responsible (from Station Commanders down to Intelligence Officers), for ensuring that crews have every chance and opportunity of seeing and studying them ; nor by those who ought to see them and don't take the trouble to do so. *Ask* to study them if you aren't in a position to do so. Go and do it, if you are !

Failure to recognise may mean failure to fight !

"He liked to bum around on his own."

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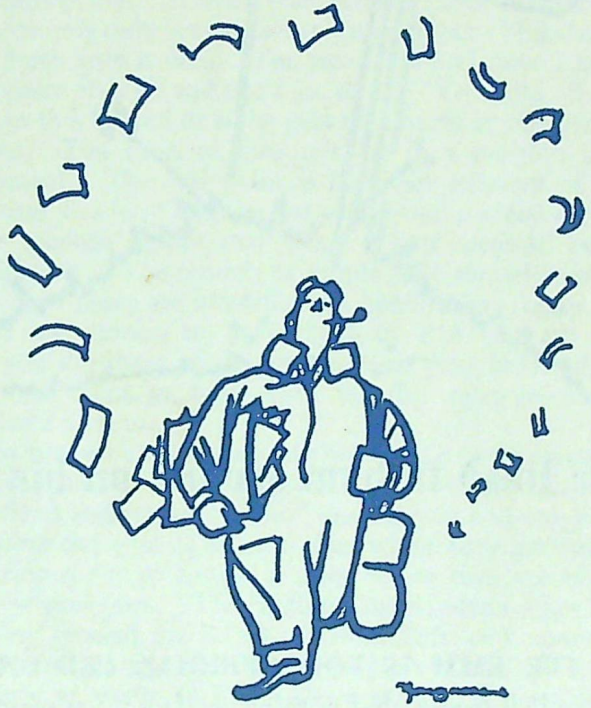

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