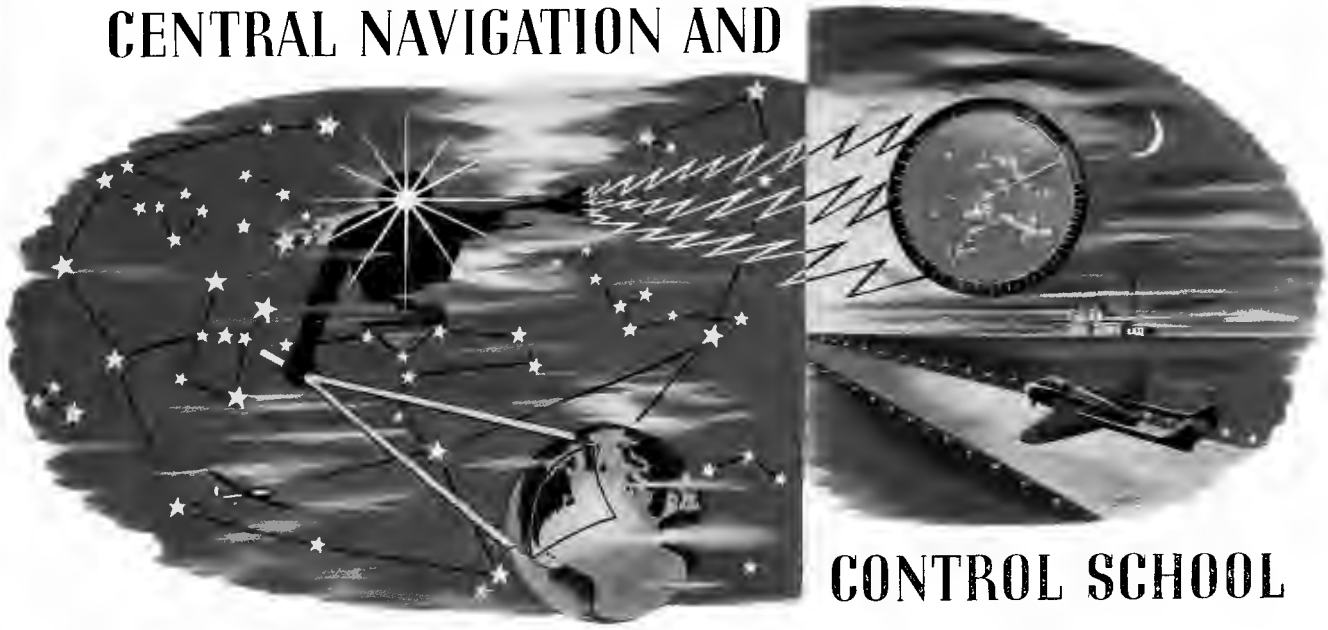
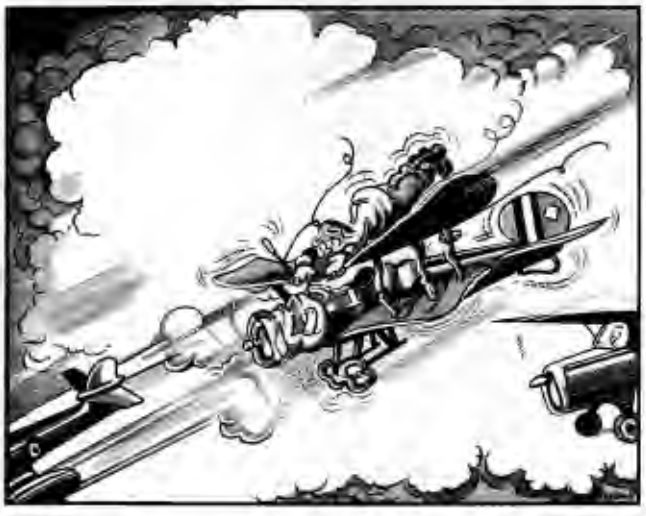
# CENTRAL NAVIGATION AND CONTROL SCHOOL



## THE GIVE AND TAKE OF AIR TRAFFIC CONTROL

by Squadron Leader J. A. JARVIS, D.F.C., A.F.C.

FOR some years now, particularly since the end of the last war and the transition from the carefree atmosphere of operational squadrons to the more sedate and disciplined routine of peacetime flying, air traffic control has been tolerated by a large number of flying personnel as a necessary evil. This is because they do not understand the reason for the inception of an internationally organized air traffic service and how it works. They see only that it adds—unnecessarily, they consider—to their burdens, though incidentally it causes the air traffic control staff additional work, too. So the object here is to explain the responsibilities of the various air traffic control sections, and to show flying personnel how they can make their own job and that of the control officer easier.



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### Of international interest

With the development of commercial air traffic, evident before the Second World War, and accentuated by the sudden postwar increase of air travel, some form of international agreement was obviously necessary to standardize procedures, regulations, and suchlike. Hence the birth of P.I.C.A.O. (Provisional International Civil Aviation Organization) at the end of 1944, subscribed to by all countries of any size this side of the Iron Curtain. That organization is still very active, less the "P", and has formulated certain basic rules—some mandatory, others optional—to which Great Britain has agreed. In so far as operational requirements permit, the Royal Air Force, too, has consented to abide by these rules, which in fact form the framework of the R.A.F.'s air traffic control service.

### Marshalling—the major problem

Nowadays there must be air traffic control; it is even more necessary with modern aircraft types, especially the jet species. Again, while aircrew training has been framed round the Air Staff requirement for an all-weather air force, it is no good having crews that can fly in any weather unless they can be got into the air and—more important and more difficult—be got back on the ground on completion of the flight. Thus the major problem confronting control staffs is the marshalling of aircraft in the vicinity of the aerodrome, and ensuring an orderly and safe stream approaching to land.

### Need for local control

While flying around the countryside, away from an aerodrome, there is little risk of collision since, in relation to the three-dimensional air space available, even the largest aircraft is comparatively small. No positive control is therefore practised in flight information regions outside controlled air spaces—of which more later. Round an aerodrome, however, it is a different story. Here aircraft are concentrating in a small air space, and under I.F.R. conditions, some form of control is essential to obviate the risk of collision. And even under V.F.R. conditions, control is desirable since most aircraft join the circuit at about the same height and, with the varying circuit speed of different types, may get closer to one another than is good for comfort or safety.

Even more concentrated is the final phase of the approach to the runway when aircraft are all making for a narrow strip—mostly only 50 yards wide—and, with undercarriage and flaps down, are flying at a low speed and hence have less manœuvrability to avoid collision. Control here is surely indispensable.

Some of the don't-want-to-be-bothered brigade will probably ask why they should have to practise local control in V.F.R. conditions when the chances of collision are so slight—isn't it a waste of both time and manpower? What they fail to see is that air crews and control staff get into the habit, so that when weather conditions deteriorate, the whole business is second nature to them all. Crews should regard it as an integral part of their flying routine rather than a means of justifying the existence of a control staff.

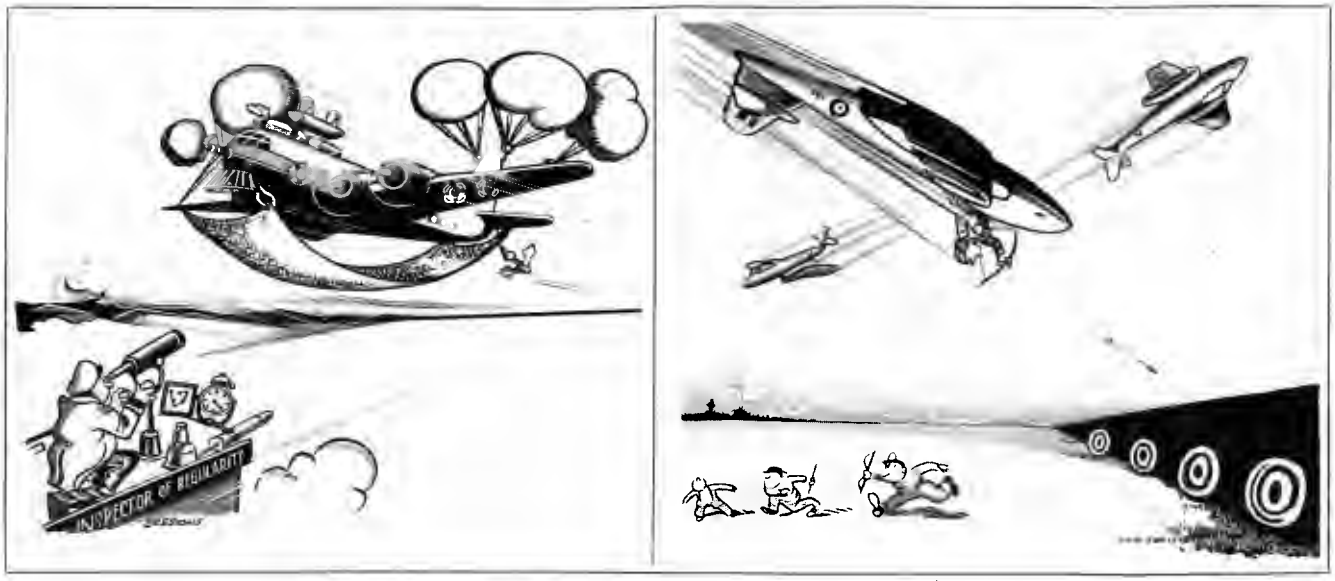
### Controlled air spaces

When flying away from their bases, within flight information regions aircraft are not, in the true sense, controlled. The exception is within the controlled air spaces set up by the Ministry of Civil Aviation under international agreement. These include control zones established round major civil airports; airways linking major airports; and control areas. Their location is given in R.A.F.A.C. documents, that is, the Radio Facility Charts and Pilots' Handbook; in the latter, moreover, are details of each individual air space and regulations for military traffic.

Broadly speaking, if a pilot, flying under I.F.R. conditions, wishes to enter a controlled air space he must obtain prior clearance based on a flight plan (Form 2919). Where the point of departure is less than 20 minutes' flying time away, or is within the controlled air space, this clearance must be secured before take-off; it can otherwise be obtained while airborne, through either an air traffic control centre or any aerodrome *en route* with which the pilot can make and maintain radio contact.

### Altimeter setting

Separation of aircraft flying under I.F.R. at 3,000 feet and above within flight information regions is assured by the adoption of the Quadrantal Height Separation Scheme whereby pilots fly at certain heights according to the magnetic track they are making good. To ensure the efficacy of the scheme, altimeters must obviously be set at the same datum on the sub-scale, which is why an altimeter setting known as the "Regional Altimeter Setting" has been introduced. This setting is the lowest forecast barometric pressure, reduced to mean sea level, for the particular altimeter setting region. There are nine such regions in the United Kingdom; a diagram of their boundaries is included in R.A.F.A.C. documents. The pressure value is forecast by the Central Forecasting Office, Dunstable, two hours ahead, and is given in the main hourly meteorological broadcasts covering all regions. It can be obtained from the Meteorological Office before take-off, or in flight from an air traffic control centre or an aerodrome. Overseas, outside Europe, the standard I.C.A.N. setting of 1013.2 mbs. (29.92 in.) is generally used as the altimeter setting.

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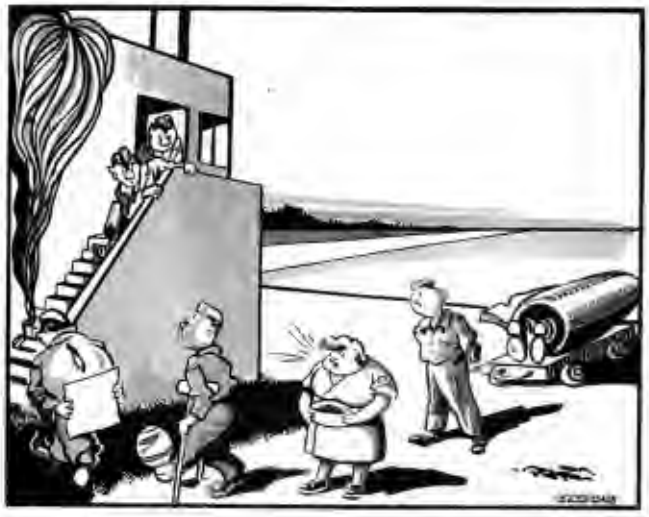

The centre is the focal point of all distress incidents . . .

Within controlled air spaces the Quadrantal Height Separation Scheme does not always apply, heights to be flown being dictated by the controlling authority according to the traffic in the area.

**Where civil and military needs conflict**

Much has been said about the controlled air spaces set up by the civil authorities, and R.A.F. pilots, who often have to divert from their track to avoid these areas, may be forgiven for wondering at their necessity.

Briefly, the difference between civil and military air traffic is that the civil people are interested in one main objective only—safety coupled with regularity of service. The civil company that made a habit of scattering citizens over the countryside would soon go bankrupt; so it wants positive control at all times, with adequate separation, vertical and longitudinal, between aircraft, on the lines of a railway system.

On the other hand, the Services, while they recognize the need for safe operation of aircraft, are military organizations whose rôle is to train for war—that may sound belligerent, put baldly, but basically it is true. Their flying is designed to one end—operational efficiency. And that precludes positive control involving regular position reporting. For instance, how foolish it would be for, say, Bomber Command aircraft, engaged on affiliation duties with Fighter Command, to compromise the usefulness of the exercise by passing regular position reports.

Manifestly it would be pointless for the civilian air traffic organization to practise positive control over its aircraft—say, in the United Kingdom, where air traffic, civil and military, is heavy—while numerous military aircraft are flying around of whose position, height, and suchlike it has no exact knowledge. So, as far as possible, civil aircraft have been segregated from military traffic by the introduction of airways and controlled air spaces —airways in which they can fly from A to B, and control zones and areas round major airports to afford protection against collision between aircraft approaching to land or taking-off. Within flight information regions all aircraft, civil and military alike, can obtain what is known as "Information Control"—information on hazards to their safety, such as other known aircraft in the same area, and navigation and other warnings—by establishing W/T or R/T communication with air traffic control centres. Otherwise, within those flight information regions outside controlled air spaces, the air traffic control centre acts as a safety service, advising aircraft in flight, aerodromes within its region, and other centres, of hazards to navigation, facilities available, and so on.

**A matter of distress**

The extent to which air traffic control centres are concerned with the safety of aircraft within their regions may come as a surprise to many of you. The centre is the focal point of all distress incidents and overdue action, and in search and rescue it works in collaboration with rescue co-ordination centres of Coastal Command.

Crews can help the air traffic service enormously by following the correct procedures to bring—or, better still, to avoid bringing—these services into operation. It is a regrettable fact that very few pilots flying in the United Kingdom know how the V.H.F. D/F Emergency Organization works, and how to get the best results from it. And by best results we mean not the best "fixes", but a "fix" with the least waste of time, for in distress incidents seconds count.

**Pilots—help us to help you!**

Again, how many pilots, delayed *en route* or changing their route—perhaps owing to the weather—so putting back their E.T.A. at destination by more than 20-30 minutes, notify these changes to the destination through a centre or another aerodrome, so that the destination aerodrome doesn't get "hot under the collar" and start overdue action? How many pilots who land at an aerodrome other than their destination fail to ensure that the departure and destination aerodromes are notified? There was a great deal of truth in the old Air Ministry poster which depicted a well-dressed pilot with brimming

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tankard, surrounded in the Mess by his long-lost friends, while all kinds of unfortunate characters scoured the countryside looking for him. And all because he failed to let the air traffic control section know that he was a "non-scheduled" arrival, *i.e.*, a pilot who had landed at an aerodrome other than his destination.

These are, after all, such little things you can do to help yourself and those on the ground who are trying to make sure you draw your gratuity or pension.

All this is an attempt, not to justify the existence of an air traffic control service, but to give aircrew types an insight into why such a service is necessary; what they can get out of it; how they can help in its work and so ensure efficiency. The more crews understand the system, the less will be their exasperation at times, and the easier the job of the chap in the tower. And from this understanding will come improved relations between flying personnel and their closest link with the ground, the air traffic control officer.