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THE AEROPLANE

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On the Employment of Massed Aeroplanes.

It may be assumed that no one possessing any common sense believes that if we had 10,000 or 20,000 aeroplanes, with pilots to match, in our possession at the moment we could stop the war in a week, or a month, or in six months for that matter. Even Mr. H. G. Wells himself, who is the arch-prophet of certain recent agitation for a rapid increase in the size of our air fleets, can scarcely believe as much. Nevertheless it is a fact that if we possessed 10,000 aeroplanes with the necessary accessories in the way of transport, and the necessary personnel to use them to the best advantage and to maintain them in proper flying order, they would aid very materially in shortening the war, for several reasons. For one thing such a force could be divided definitely into sections, each devoted to separate purposes, that is to say a certain number would be used as scouts and nothing else, a certain number would be used for repelling enemy scouts, others would be used for artillery spotting, and another section—which would in practice turn out to be the largest of all—would be used simply as an actively offensive force.

The use of aeroplanes in active offensive was regarded, even by sound military critics with a knowledge of aviation, as the mere dream of sensational journalists or of a few wrong-headed Service aviators until actual experience in war showed that bomb-dropping could be of definite military value. Now their usefulness in this direction is fully established, though under existing conditions one aviator may be called upon to fill any one of these four functions in turn.

Assuming the truth of this statement one may regard offensive aeroplanes in two ways, either as guns possessing moderate accuracy and abnormal range, or as cavalry operating in a third dimension. In the former guise they are already used regularly by the Army, individual aeroplanes being sent out to bomb individual points. The second method of use is yet to come, and it can only come when aeroplanes are available in vast quantities. So far as I know their use in this way has been very little discussed outside this paper as a serious proposition, though it was one of the pet ideas of the late Stanley Franklin Cody.

THIRD DIMENSION CAVALRY.

Those who take any interest in military history must have been fascinated by the raids of General Stewart's Confederate Cavalry behind the Federal Lines in the American Civil War, and almost equally so by the operations of his great rival Phil Sheridan. These flying columns, consisting of some thousands of horsemen, accompanied by light transport carts and pack animals, and a small force of galloping guns were able to cut lines of communications, burn stores depôts, capture and destroy hostile towns, and even to capture general officers of some importance. They lost men and horses, but they did useful work.

There seems no reason why, given enough aeroplanes

and pilots, raiding parties of aviators should not act in a similar manner. Ordinary bomb-dropping raids in force will naturally come first, and may do much real damage, but the sooner we get away from the idea that the aeroplane is something apart from the rest of the world and realise that it is only a vehicle for the transport of troops or munitions, or a mount for an individual scout or artillery-spotter, the sooner we shall be able to estimate its true place in military plans.

And, please note, when we have awakened to this fact we shall be clear once for all of that idiotic idea of an "Air Ministry," for if our air raiders are to be of any use they must be firstly, lastly and altogether soldiers, otherwise their operations cannot be carried out with proper effect. Incidentally, the average cavalryman who is anything like a decent horseman would learn to fly in very quick time. So here may be found an opening for the cavalry which is generally held to have lost its vocation in modern war. The idea that N.C.Os. and men do not make pilots is undoubtedly due to the wrong men being chosen for the experiment in most cases.

THE GERMAN GAME.

Just at this point I would ask my military readers to pause and think whether the comparative absence from our lines for some months past of German aeroplanes in any considerable force does not betoken that the German Staff is "saving up" its aeroplanes and pilots for an enormous onslaught on the R.F.C. when the big thrust is made by troops brought back from the East Front. Situated as the Germans are in field positions of defence, very little air scouting is sufficient to tell them whether and where we have any big move on. Therefore their best game is obviously to pile up reserves of pilots and machines till they are needed for an attack in force. And remember the German output of machines and engines must be many times as great as our own owing to their early start.

The Germans taught us the use of massed machine-guns when we regarded them merely as minor adjuncts to infantry battalions. Must we wait for the Germans to teach us the use of massed aeroplanes as vehicles for an attacking force while we persist in regarding them as mere scouts or as mounts for individuals making sporadic raids which may or may not have a part in the particular scheme of military operations?

POSSIBLE NEW USES.

It is quite easy to see the possibility of landing a raiding force of a couple of thousand men in enemy territory to destroy factories or stores guarded only by partly trained men. It would be possible to land even a bigger force behind an enemy's lines, which under present conditions have to be attacked from the front, and for that force to dig itself in and hold its position with machine-guns while a portion of it attacked the rear of the enemy lines.

Recollect that a flight to such a position would be of short duration and that a machine of moderate size capable of lifting two men and fuel for five or six hours, as the German machines can, could probably lift an extra man or two and a machine-gun if only required to carry fuel for an hour. Also recollect that such a force could be supplied with ammunition and food by other aeroplanes, so long as it was able to hold its position.

The use of aeroplanes in this way may be likened to the action of the metal worker who when he wants to remove a large chunk of steel from a thick sheet and finds a frontal attack with a hack-saw or file too slow or too expensive, proceeds to operate in the third dimension from above by drilling a series of holes at a suitable distance apart along the line which he wishes to occupy, and then connects up the holes with saw or file, so that the desired chunk of metal falls out when the last holes are connected up.

Imagine the holes to be small positions behind the enemy's line seized by troops conveyed on aeroplanes, and connected up by operations on the ground, and you may see the idea. You may say that the original edge of the steel sheet cannot hit back and destroy the holes. No! But have you ever seen a drill break owing to a sheet sagging through its not being properly supported at the edge? Similarly the enemy's original line must be kept at full tension by a frontal attack while the drills, or aeroplane forces, are making the holes behind it. And that frontal attack would be made with mechanically propelled vehicles, not by infantry.

So far the general scheme is perfectly simple and is not likely to be of any particular use to any alien enemy who comes across a copy of this paper, for German thoroughness must have thought it out already, and is probably preparing just such an attack for our men.

Naturally I do not care to go into details in print, but if any responsible military person cares to discuss the question I am prepared to describe such a system of

operations, from the design of the required land vehicles to the speeding up of aircraft production and school work so as to procure the necessary number of machines and pilots.

This is a simple engineer's proposition; it is not that of any kind of visionary or prophet. I merely ask my soldier readers to think it over. It is no use objecting that the chief trouble is finding starting and landing grounds for a thousand or two aeroplanes at a time. That is also quite a simple matter when one takes the question seriously.

THE IMMEDIATE NEED.

Primarily, however, whether for such a "drilling" operation as I have suggested, or for actual "cavalry" raids behind the enemy's lines or for mere every-day bomb-dropping raids in force, which are already recognised as desirable and possible even by those who have never stopped to consider aeroplanes as vehicles for fighting troops and guns, a great quantity of aeroplanes is immediately necessary, and it is just that great quantity which we have not got and are not likely to get until the whole production of aeroplanes is organised, speeded up, and properly "slave-driven" by a strong man with a free and heavy hand, who has complete confidence in the need for the work he is doing and who is regarded with complete confidence by those who have set him to do that work.

I know personally one or two men capable of taking on such a job—incidentally I have no ambition to take part in the work myself, for I know my limitations—and I know half a dozen men at least who would make able lieutenants to him. Probably, however, they will all be dead before the next war, which is the one in which the system will be properly developed, but meantime we want thousands of aeroplanes even for the present elementary and frequently futile ways of using them.

On the Production of Aeroplanes in Quantities.

Curiously enough, two recent articles in very important papers decry the "more aeroplanes" agitation, which somehow gives the impression that a hint has been given to someone that such agitation is unwelcome. Why it should be less welcome than agitation for ammunition is hard to understand. Possibly I am wrong, but I have been told that a retired officer of high rank who has had some slight connection with aviation has been asked by another officer on the active list to use his influence to stop the agitation, and this information may have caused me to misinterpret the writers of the articles mentioned. In which case I apologise to them in advance.

Mr. Massac Buist, of the "Morning Post," who at one time was quite closely in touch with aeronautical matters, writes:—

"Apparently specialists on aviation who have agitated on these terms have no first-hand acquaintance with what is being done in this country."

As one of the "specialists" in question, perhaps I may plead that I have a fairly first-hand acquaintance with what is *not* being done, as well as with what is being done. Hence my part in the agitation.

A curious phrase of Mr. Buist's also suggests semi-official inspiration, for he says:—

"Casual conversations with junior members of these individual services who may have any passing cause for discontent with this, that, or any other detail may be a pleasant enough occupation in the way of gossiping, but is not to be recommended as the means of gaining any real grasp of the subject."

Without for a moment admitting that any part of my views are influenced by "junior members" of the Services I would remind Mr. Buist that in the words of Mr. Kipling:—

"The toad beneath the harrow knows
Exactly where each tooth-point goes.
The butterfly upon the road
Preaches contentment to that toad."

In other words, the man in the unrelieved or badly supported trench, or the man in the unseaworthy ship, or the man on the slow-climbing or badly-built aeroplane, knows exactly where the trouble lies, while the gilded and red-tabbed Staff, more beauteous than any butterfly, preaches contentment to him from cosy billets well out of shell range, or comfortably ashore, and "downs" him if he dares to express his opinions. Happily, the staffs of the flying services include many highly efficient individuals, so the actual harm done in this way is much less than one might expect, and probably the British Services are better off all round in this respect than those of any other country.

Judging from pre-war performances Germany's high state of efficiency and preparedness is due rather to the high authorities taking the advice of practical scientists, of working not merely consulting engineers, and of men of knowledge generally, than to heeding "gossiping" in the lower ranks, or to listening to the babblings of pure theorists. The possibility that some of the mere practical men may have formed their opinions by "gossiping" with mere flying officers and civilian aviators, and collating, classifying, sifting out, and editing their

theories and experiences, seems to me rather in favour of such a method of arriving at the true estimate of various machines.

Among my personal friends in both Services I will guarantee to find some experienced flier or other who will damn heartily any one machine used in that Service, and I will find another to praise the same machine as the best he has ever flown. It is only by judging the men as well as their opinions that one can arrive at the just value of the machines.

THE FINANCIAL QUESTION.

In the "Observer," the mysterious "C. W." becomes more definite in his views, for he says :—

"The aeroplane is booming and the voice of the unpractical enthusiast is heard in the land. Of projects for ending the war quickly those aeronautical are usually either for a fleet of 10,000 machines, which, it is assumed, can be made and manned in a few months, or for the building of super-aeroplanes or super-airships.

"As to the former, it would suit the book of certain makers of old types of aeroplanes who would like to 'make hay while the sun shines,' this plan diverting attention from newer types that have won more favour in the field and were not struck off the list at the outbreak of war."

The latter paragraph should be read in conjunction with two paragraphs of Mr. Buist's, in one of which he says :—

"Before attaching any importance to these miscellaneous and constantly recurring agitations, most of the work in connection with which is being done by those having disinterested motives, and, in any case, little enough knowledge of what is going on behind the scenes, one would put in a plea that these knights of the pen and the platform should desist until such time as they can acquire an accurate understanding of the technique and scope of the proposition of a national air service, and of what part manufacturing must play as but one item of many in such a scheme."

Which seems to imply that some of those concerned are working from interested motives. Personally, I must confess that I am deeply interested, though hardly in the manner he seems to suggest.

In the other he says :—

"It is therefore sincerely to be hoped that the Treasury will also display a better understanding of the situation when it is required to give or to withhold sanction for applications for the public to subscribe to new propositions for the manufacture of aircraft at this juncture."

The passages may possibly be intended to be read in conjunction with a recent company prospectus, which, be it noted, did not appear in these pages.

As a matter of fact, there seems little enough reason for company flotation at a period when Government departments are prepared to finance by payment in advance firms who find their capital insufficient to meet the call of wages, and when big engineering firms are quite ready to support people with experience, but insufficient capital.

The inference which one draws as an open-minded reader of the two articles quoted is that company promoters are thought to be behind the agitation for more aeroplanes, whereas as an unprejudiced observer of events it seems more likely that company promoters are merely trying to jump in on an unexploited boom. "So that's that"—as one of our greatest philosophers has said.

A CERTAIN LIVELINESS.

On the more practical side of the question, "C. W." writes :—

"Does it not occur to those who advocate a fleet of 10,000 aeroplanes that the naval and military authorities of France and England are fully alive to the value of aerial raids, and do they imagine that aerial preparations have ceased or are languishing? Secrecy must be preserved as to these matters; to reply to the criticism would involve revealing plans and preparations, and it must, therefore, be permitted to continue to impress the less thoughtful sections of the public."

Now that is just precisely what does not occur to this present advocate of more aeroplanes—the figure 10,000 is neither here nor there, it is no more definite than the Navy League's ancient demand for "£1,000,000 for Aeronautics," which seemed equally preposterous at the time.

The Naval and Military Authorities were not fully alive to the fact that we should need an unlimited supply of big guns and high explosive ammunition, or an enlisted army of munition workers, or a lot of other things which were being made in small quantities while we needed them in enormous numbers. The high authorities being used to guns and sundry other things in their youth, before increasing years dimmed their perception and stereotyped their ideas, are still able to envisage artillery on a vast scale, but aircraft are a new thing and the use of aeroplanes as simple transport vehicles for a striking force may well be as much outside their mental scope to-day, as the serious use of air scouts was beyond them three years ago.

HEADQUARTER EFFICIENCY.

As far as the Air Department and the Department of Military Aeronautics are concerned, no one need have any doubts, for those in control are very fully alive to what is needed. Anyone who knows of the magnificent work which has been done by the Deputy Director of Military Aeronautics and the able staff which he has gathered round him at the War Office realises that, considering all the difficulties which existed at the beginning of the war, the increase of output which that department has produced by a skilful combination of leading, driving, moral suasion, hard words, fatherly advice, oil, vinegar, and strong acid, according to the needs of each individual case, is simply astounding.

Some day perhaps due recognition will be given to the very important if unadvertised part these officers and the staff of the Aeronautical Inspection Department have played in saving the British Army from staggering losses, if not from annihilation, ever since the original stock of aeroplanes which crossed the Channel with the Expeditionary Force was smashed up or worn out.

Naturally, mistakes here and there could be pointed out by the hypercritical, but perfection has never yet been achieved in anything in this world, and where any individual has had a real or imagined grievance his complaint has always been met in a most reasonable spirit.

When the time comes to build up a Flying Corps of a size equal to or even greater than that of the Royal Regiment of Artillery one hopes that the officers who have done so much for it in its early days will meet with their just reward.

HOW TO GET AEROPLANES MADE.

To return to "C. W.,"—one may agree with the first phrase of the following paragraph while disagreeing with the rest :—

"The increase in the number of machines turned out

has exceeded all expectations; but with every ounce of material and every available skilled worker in use, the making of 10,000 machines, over and above those required for reconnaissance and other duties, would take years. To mention one practical difficulty, if the Government gave an order to Messrs. A. to deliver fifty aeroplanes a week, and Messrs. A. had power to acquire (by force if necessary) the required motors, it would simply mean that Messrs. C. and Messrs. D. could not go ahead with the aeroplanes they were building, because the motors they had ordered could not be delivered—that Messrs. A. had collared the lot."

With the assistance of a dozen first-class American factory organisers, preferably, of course, those of British birth, and perhaps a hundred of their picked foremen, it should be easy to raise the output of aeroplanes in this country to a thousand a week, and the engines to match could be produced equally easily. If one strong man were given a perfectly free hand to-day he could reach that output in six months from now and deliver 1,000 machines in the first week in 1916. Before "C. W." starts writing about factory output he should learn something about factory organisation, a subject concerning which very little indeed is known in this country.

If we cannot get the material in this country we can get it in America. If our workmen will not work on the American system or at American speed we can get men in America too, for there are some millions of British workmen there who have learnt American methods and who would be pleased to come over and use them for the defence of their motherland. Also, remember that actually there is not much more work in an aeroplane than there is in a Ford car, if only someone will take the trouble to work out a few simple standardised designs on a "minimum of operations" basis.

THE TRAINING OF PILOTS.

As to the supply of pilots, "C. W." says:—

"Pilots are being trained at as great a rate as possible with existing facilities. Early in the war the Government took measures to increase the facilities for training flyers. If the truth could be given it would have to be admitted that the increase could not have been appreciably greater than it has been. The weather factor counts, and a steady proportion of pupils are not complete successes."

The list of aviators' certificates, still officially published for the benefit of the world at large, shows how slow the increase is compared with what it might be. The rate of increase is not helped by the class of youth now mostly available for training as an officer-aviator, or by the fact that little is done to train N.C.O.s and men.

As I pointed out long before the war, the mistake was made early in the life of the R.F.C. of selecting the "good boys" from among the N.C.O.s of the Corps for training as pilots, instead of going through the defaulters' sheets, picking out the real "bad hats," and putting them up on aeroplanes to fly or break their necks as they chose.

There is sound philosophy in "Punch's" famous picture of the ship's "jaunty" who, reporting the crimes of a prisoner, says to the Commander: "'E goes ashore when 'e likes, 'e overstay's 'is leaf, 'e comes aboard intoxicated, 'e uses 'orrible langwidge. In fact, sir, 'e carries on just like a bloomin' officer!"—or words to that effect.

Allowing that these "carryings on" in peace time are the result of sheer high spirits and not of inherent vice, one sees why the type of man who resembles a certain cheerfully reckless type of officer may make a very useful flier.

The good boys of all ranks are afraid of smashing machines and afraid of incurring official displeasure, even if they are not afraid of breaking their necks. Moreover, some of the best instructors are being wasted on other work, and much might be done to improve the machines used for instruction at many Service schools, and by using different types.

THE BIG AEROPLANE AGAIN.

Referring to the multiple-engine aeroplane, about which the Press has been making such a fuss lately, "C. W." says:—

"A big multiple-engine is in process of development for Great Britain, and it has been on the way for some months. It will be a few months more before, even with the best of progress, it can take the sky by squadrons."

One does not know to which particular machine he may be referring, but some of which I wot are never likely to "take the sky" (priceless phrase that) at all. On the other hand, there are possible types which could, with proper organisation, be turned out like sausages.

On the same subject he says:—

"It would be well if those who encourage the ideas referred to would reflect for a moment on the months of vicissitudes through which the Curtiss trans-Atlantic seaplane and the Sikorsky biplane have been, the former without any real success."

As to that, it entirely depends what he understands by success. It is true that the "America" never flew the Atlantic, but, knowing a good deal of the work she has done, I should reckon her as being very far from a failure even with her small engines, and with bigger engines I fancy her progeny will surprise some people.

The Sikorsky was, of course, very much an experiment herself, and her designer used her for all sorts of experimental purposes, progressing slowly, step by step. The biggest Sikorsky is still an experiment, but the smaller ones, which owe little to the "Ilia Mourametz," have, one hears, done quite good work.

THE REAL KEY TO THE POSITION.

To sum up, the provision and successful operation of a really big force of aeroplanes is purely a matter of organisation, and organisation depends on having the right men in the right place.

So far as certain departments are concerned, we are happy in having the right men there, as I have already said; but there may be difficulty in finding more of a similar kind for responsible positions in a bigger organisation. The men exist, but they will take some finding.

One of the most evil and harm-producing doctrines in the world is that expressed in a saying attributed to Field-Marshal Sir Evelyn Wood—namely: "Does my country require me to sweep a crossing? Give me the broom!" It is the same as that villainous phrase of a naval friend of mine, to the effect that "In war time many a sahib has to do sweeper's work." It is evil, villainous, and productive of harm, because there are not enough sahibs to go round as it is, and the result is that the sweeper is perforce put on to do the sahib's job, which means disaster and damnation.

The whole secret of organisation is to find the sahibs and to kick out the sweepers. The sahib's duty to his country is to refuse to be a sweeper if he has any special knowledge which is useful in other departments. And the duty of the big man at the top is to see that the mediocrities—the white babus—in those departments are not allowed to hamper the sahib's work by jealousy of him and by petty dissensions among themselves—which saying may perhaps be understood of certain people in several departments.—C. G. G.