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## VALUE OF AVIATION TO THE MARINE CORPS

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**I**N common with every new weapon introduced to the military service, Marine Corps aviation has travelled a rocky and uphill road. Its small size has tended to make the jolts more frequent and severe. Nothing short of the firm conviction that it would ultimately become of great service to the Corps sustained the enthusiasm of the small number of officers who have worked to make it a success. The past year has seen the completion of the first of the stages through which our aviation must pass. Prior to this we had practically no official status or recognition. While we sent 182 officers and 1030 men to the front in France, and they made a splendid record under severe conditions, we had no aerodromes at home, no shops or other facilities; in fact, nothing permanent, and could very readily have been disbanded entirely. When it was realized that the Marine Corps' permanent strength of 17,000 was entirely inadequate and that a larger permanent strength must be requested, the figure decided upon was approximately one-fifth the authorized strength of the Navy, or about 26,380. It was desired to utilize this number for ground duties; therefore, Congress was asked to authorize an additional 1020 men for aviation duty, making the total 27,400. This gave us permanently our aviation personnel. The next task was to secure well-equipped home stations for our personnel, and it required the surmounting of many discouraging obstacles before the Navy Department, which handles the expenditure of all aviation funds, approved the construction of flying fields at Quantico, Parris Island, and San Diego. With this much accomplished and our men and pilots well trained, we feel that the time has about arrived when we can demonstrate our usefulness to the Corps, which I am confident will be great.

One of the greatest handicaps which Marine Corps Aviation must now overcome is a combination of doubt as to usefulness, lack of sympathy, and a feeling on the part of some line officers that aviators and aviation enlisted men are not real Marines. We look upon the first two criticisms complacently, knowing that we can abundantly prove our usefulness even to the most skeptical, and that when we have done so, we will receive the sympathy and hearty support of all Marine officers. The last criticism we resent vehemently as an injustice, so far as it applies to loyalty, supreme pride in the Corps, and a desire to do what is assigned to us as quickly and as well as it can be done. Conditions arising from the necessity of organizing and training in a short time an aviation section, with practically nothing to start with and the nature of the duty, which does not allow the older officers to keep their juniors continually under their observation and guidance as is allowed in ground work, may have prevented the instillation in the younger pilots of all the qualities necessary in a Marine officer to the same degree as is done in infantry work. We have realized this difficulty and have made an earnest effort to overcome it and believe, with some few exceptions, that we have been successful. Now since the rush of organizing for war service is over this difficulty will be easily and simply overcome and the task of aviation officers made much more simple by taking into aviation only those young officers who have had enough service with infantry troops to be thoroughly indoctrinated with Marine Corps discipline and spirit.

It is fully realized that the only excuse for aviation in any service is its usefulness in assisting the troops on the ground to successfully carry out their operations. Having in mind their experience with aviation activities in France, a great many Marine officers have expressed themselves as being unfriendly to aviation and as doubting its full value. I am confident that this must have been caused by some local condition, as the French, British, and Belgian troops in the sector over which the First Marine Aviation Force and the British squadrons operated were enthusiastically "full out" for aviation. In our own aviation section we intend, before asking a vote of confidence from the remainder of the Corps, to demonstrate to their complete satisfaction that we can contribute in a surprising degree to the success of all their operations, save many hours of weary, fruitless "hiking" and

materially shorten each campaign. Previous to now we have had no opportunity to do this. During the war we were unfortunately not allowed to serve with the Fourth Brigade, but were placed in a sector containing only British, French, and Belgian troops. Since the war all our effort has been required to secure flying fields and the construction of buildings and hangars on them. We would have been hopelessly handicapped without these facilities. Now since they are nearing completion we are looking forward with enthusiasm to our real work of coöperating helpfully with the remainder of the Corps. All we ask is a spirit of co-operation and encouragement, and that judgment be reserved until the proper time.

Judging from the unfamiliarity of the average Marine officer with what has been accomplished by Marine aviation, we have failed woefully to advertise. A short résumé of what has been accomplished will perhaps be of interest.

In May, 1912, when the writer was detailed for aviation, the Marine Corps took very little interest in the subject. In those days it was looked upon more as a crazy sport than as anything useful, and when I look back on the old original Wright 35-horsepower planes I flew, where one sat on a board projecting out into atmosphere, I am inclined to agree with that view. About eight months later another Marine officer was assigned to aviation, and during the next year we accumulated six Marine enlisted men. There was very little increase in personnel until the World War began. On April 6, 1917, Marine aviation amounted to four officers and thirty men, all part of the complement of the Naval Air Station, Pensacola, Fla. From this time we began to work energetically for expansion. Our ambition was to organize a first-class aviation force to operate with the Marine forces we hoped would be sent to the front. During the next few months we secured a flying field at Philadelphia, organized a full squadron of land planes, and began intensive training, so that we would be ready to go to France with the other Marine Corps forces. In order to have the latest aviation information the commanding officer of this squadron was sent to France to serve with the French aviation forces for three months. This officer made every possible effort, both with the War Department in Washington and the American Expeditionary Force authorities in France, to secure authority for our Marine aviation squadron to serve with

the Marine Brigade in France. No success whatever attended these efforts. Army aviation authorities stated candidly that if the squadron ever got to France it would be used to furnish personnel to run one of their training fields, but that this was as near the front as it would ever get. Confronted with this discouraging outlook the squadron commander set about to find some other way of getting his squadron into the fight. The only aviation operations abroad planned by the Navy at that time were anti-submarine patrols in flying boats. After visiting the Navy flying station at Dunkirk, France, and talking with officers of the British destroyer patrol, it was realized that Marine aviation's opportunity to get into the fight lay right here. The situation was as follows: Submarines were causing enormous losses to shipping; their main operating bases and repair shops were at Ostend, Zeebrugge, and Bruges, all within easy reach by plane from Dunkirk; the water for ten to fifteen miles off these bases is so shallow that a submarine can not safely negotiate it submerged. If these waters could be patrolled continuously during daylight with planes carrying heavy bombs, submarines attempting to enter these bases could be destroyed. Destroyers were prevented from patrolling these shallows efficiently in daylight by the heavy shore batteries, but could under the cover of darkness and with mines close the channels at night. This was evidently such an effective plan that inquiries were made as to why it was not put into effect. These inquiries developed that the Germans realized the danger of such a plan and energetically suppressed any attempts of the British Navy to patrol these waters with seaplanes, sending out their best land pursuit planes to shoot them down. An inquiry as to why the British did not patrol this area with bombing planes protected by fighting land planes developed the fact that they were so hard pressed on the front in Flanders and northern France that they could not spare the planes for this work.

Why could not the Marine Corps man the necessary number of planes to allow this operation to be carried out? Jubilant at having discovered a prospective field of usefulness for Marine Corps aviation our squadron commander hurried home and placed the whole scheme before the Major General Commandant, had a hearing before the General Board and the Secretary, and as a result orders were issued soon afterwards to organize four Marine land squadrons as quickly as possible and secure from the Army

the necessary planes to carry out the operation. It may well be imagined that with the prospect of getting into some real thick fighting all hands turned to with a rush, and by May, 1918, we had our planes and four of the best-trained fighting squadrons that ever went to war. A short time before going overseas a British ace and all-round aviation expert was ordered to spend a week with these squadrons to give them their finishing touches. After three days he stated that they were the most thoroughly trained squadrons he had seen away from the front, and that he could offer no suggestions for improvement—that they were then ready to go over the front lines.

Before the Marine squadron arrived in France the Navy decided to make the main objective the destruction of the bases at Ostend, Zeebrugge, and Bruges, and to increase the number of land squadrons, manning the additional squadrons with Navy personnel and assigning a naval officer to command the whole operation. It was somewhat of a disappointment that the status of this operation, which was originated and organized by the Marine Corps as a Marine operation, should have been changed. But with the prospect of getting into the fight, nothing could discourage the squadrons.

The Northern Bombing Group, which was the title given the combined Navy and Marine Corps land plane bombing operation in Belgium and northern France, although supposedly operating under the British, was in reality almost an independent body. It was composed of four Marine squadrons of eighteen DH4 planes each, known as the Day Wing, and was to have had four Navy squadrons of six Caproni night bombing planes each, known as the Night Wing. Only one Navy squadron was organized and it got into difficulties and sent, prior to the Armistice, only one plane over the front on one raid. Although handicapped on account of the inability of the Naval Bases at Pauillac, France, and Eastleigh, England, to furnish us our planes, spare parts, and tools, the four Marine squadrons accomplished a great deal. The results of one of our raids, verified after the enemy had evacuated Belgium, showed that we totally destroyed a troop train, killing about 60 officers and 300 men. The Marine aviators also introduced an innovation at the front. A French regiment was isolated during an offensive near Stadenburg, and it was decided to feed them by plane. Sacks of food were bundled into planes and

they flew low over the isolated regiment and made good deliveries of much-needed subsistence. This necessarily had to be done at a low altitude and under a heavy fire from every weapon the enemy could bring to bear. It is believed to have been the first instance of its kind. This organization participated in the Ypres-Lys offensive and the first and second Belgian offensives.

The following is a table of what was accomplished over the front lines. The objectives of some of these raids were seventy-five miles from our aerodromes, nearly all of the distance over German territory:

Number of raids with French and British.....	43
Number of independent raids.....	14
Pounds of bombs dropped.....	52,000
Number of food-dropping raids.....	5
Pounds of food dropped.....	2,600
Number of enemy planes shot down.....	12
Pilots and observers cited for decorations (two for the Medal of Honor).....	25

In the meantime other activities were being worked out by Marine aviation. An organization of twelve officers and one hundred and thirty-three men was organized and sent to the Naval Base at Punta Delgada, Azores, where they carried on an anti-submarine patrol with seaplanes and flying boats until the Armistice. A temporary flying field was secured at Miami, Fla., where approximately 282 pilots and 2180 aviation mechanics were completely trained, including advanced and acrobatic flying, gunnery, bombing, photography, and radio. A Marine aviation unit of six officers and forty-six men was organized and attached to the Naval Air Station, Miami, Fla., and performed practically all the long overseas patrols for that station.

In March, 1919, a squadron of six land planes and six flying boats was organized and attached for duty to the First Brigade in Haiti and in February, 1919, a flight of six land planes was organized and attached to the Second Brigade in Santo Domingo. These organizations have been seriously but unavoidably handicapped by a lack of suitable planes and not enough personnel to properly carry on the work. These handicaps will be removed in the near future. However, both brigade commanders have requested that the number of planes be increased, and very complimentary

reports as to the value of the aviators' work have been received. They patrol regularly the whole island and have saved many long, hot, and fruitless "hikes." They have located bands of "cacos," dispersed them with machine gun fire and performed many useful services which will be explained later.

Naturally our first and most important peace-time duty was to secure permanent well-equipped flying fields as close as possible to large Marine Corps posts, so that we could by actual demonstration prove our usefulness. The difficulty of accomplishing this was greater than all our previous endeavors. We received abundant proof that, whether the Government wastes money or not—as is claimed by the public—it certainly does not waste it on the Marine Corps. It was finally accomplished, however, and we now have nearing completion well-equipped stations at Quantico and Parris Island, and the establishment of a similar station at San Diego is approved and work on it will begin when the ground at the Marine Base is in condition.

The question regarding aviation which is of most interest to the Marine Corps is: Of what practical use is it to us? We see the planes flying around and they seem to be enjoying themselves, but how will they help us perform our mission? It is confidently believed that this question can be answered to your satisfaction. This article will mention some of the ways aviation will be helpful to the Marine Corps. These suggestions will not attempt to cover every use aviation can be put to or to mention anything which is not practical with the present development of planes and the art of flying them. No one can more than prophesy what the future development of aviation will allow it to do.

It is my opinion that a great part of the evident lack of belief in aviation shown by officers serving with ground troops is caused by the entirely unnecessary amount of flying which is done with no specific object in view, except the practice the pilot gets in handling his plane. This naturally creates an impression that the only use the planes have is to give their pilots practice in handling them. This impression should and will be removed. There are many important military problems which must be worked out by aviation and so many interesting opportunities to work in cooperation with troops on the ground that flights should rarely be made in future except with some useful military purpose in view.

The following paragraphs give some of the duties we believe we can perform satisfactorily, provided always that suitable equipment is furnished. They require no equipment impossible to secure with the present state of development.

Every officer who served at the front in the World War was given a rather impressive demonstration of the damage and demoralizing effect of bombs dropped from the air, and was perhaps extremely annoyed by being shot up by a machine gun in an airplane which it seemed impossible to hit from the ground. It will be remembered that troops in this war were, for the most part, well protected in trenches and dugouts from aerial attack as well as from attacks on the ground, and that both bombing and gunnery from airplanes will be much more effective against guerrillas and troops with less permanent protection. During the late war proper advantage was not taken of the possibilities of radio and radio-telephonic communication between planes and between ground troops and planes.

Let us assume that the Commanding General of a Marine expeditionary or advanced-base force with his troops on board transports is approaching a port at which he is supposed to land in the face of enemy opposition. Would it be of value to him if one or more of his Marine aviators left his ship a hundred or more miles off shore, flew over the port, photographed the harbor and returned in time to have the finished photographs in the hands of all subordinate commanders before land was sighted? This would allow the commander to plan his operation, not with inaccurate maps, but with actual photographs showing every detail of any effective plan of resistance. Pilots would hardly be available at an enemy port. The photographs of the harbor in practically all tropical waters show clearly the channels, buoys, reefs, sandbars, and minefields, if any exist, allowing the ship to be navigated into the harbor without a local pilot.

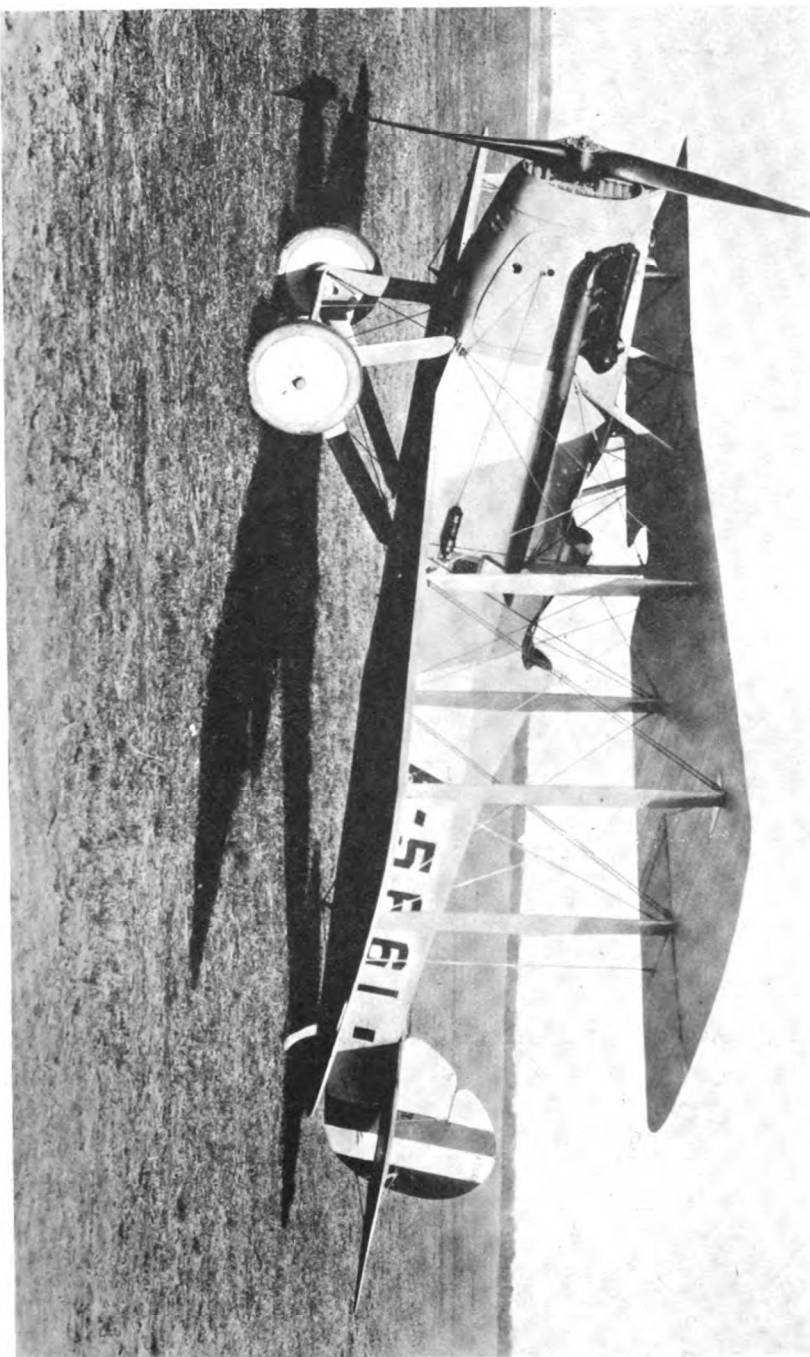
If the Commanding General desired to prevent the removal from any locality of enemy stores, railway equipment and locomotives, would it not be of service to him if the aviator left the ship before the enemy was aware of its presence and destroyed the railway tracks or bridges and made the highways impassable by bombing? During the actual landing the planes could with machine gun fire and small fragmentation bombs so demoralize resistance as to make the task of landing much easier and safer.



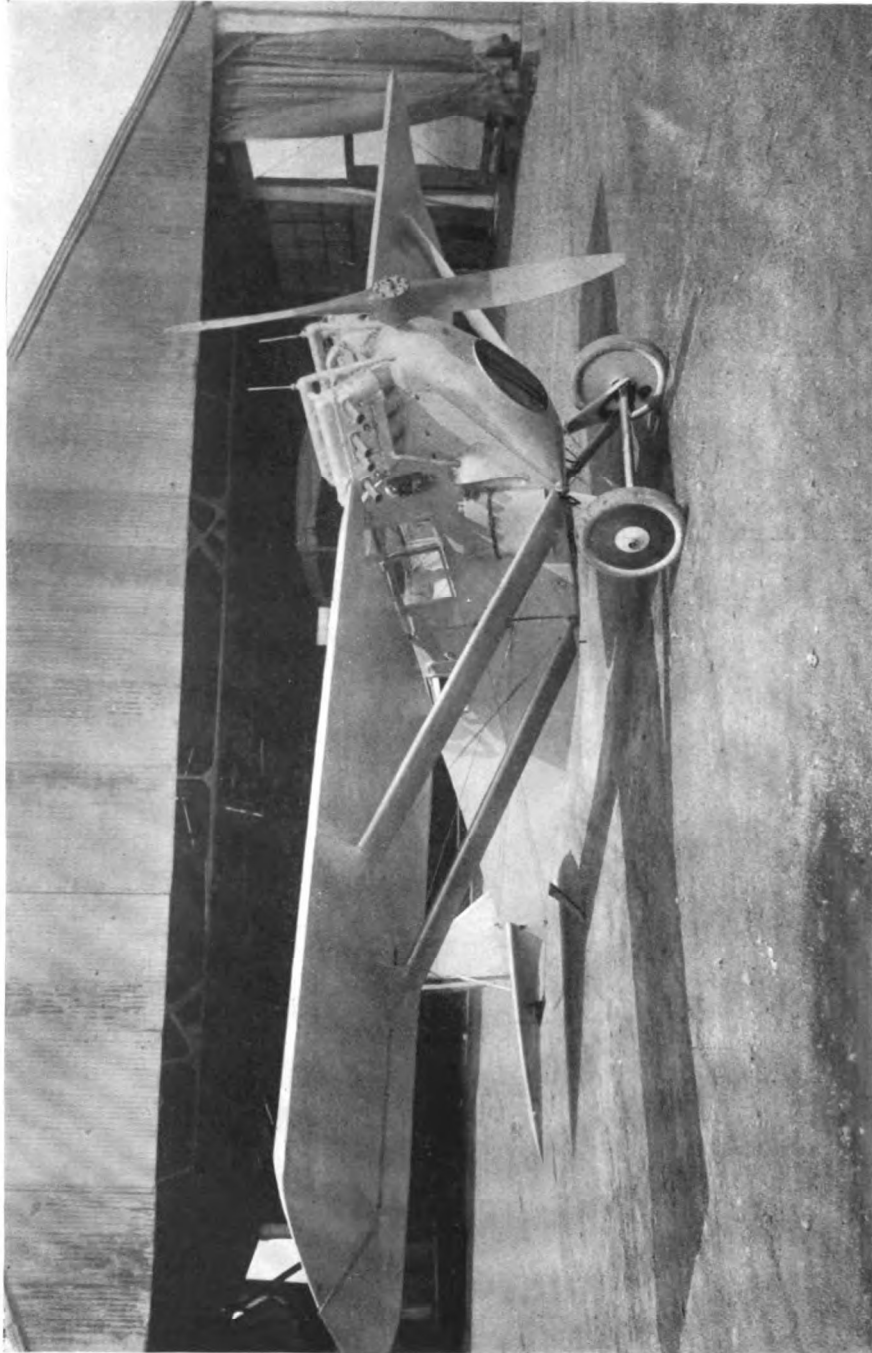


**ORGANIZATION INSIGNIA USED BY MARINE CORPS AVIATION AT THE FRONT**





THE NEW VUGHT VE-7 MARINE CORPS PLANE



THE LATEST LOENING M-8-O MONOPLANE USED BY MARINES

After having landed, the following are a few of the ways the planes can be useful to the troops:

They can locate quickly bodies of the enemy and communicate instantly their approximate strength, location, disposition, and actions. The enemy can be watched and any movement instantly reported. In this connection there has been developed a portable radio and radio-telephony ground set which is so small and easily set up that one can be carried by two or three men or on the back of a mule, horse, or donkey. In future operations, every unit which has one of these—and every unit should have one—will be in instant communication with the planes and through them with any other station.

Photographs of enemy defenses, proposed battle terrain, or any other object or area of reasonable size within a radius of fifty miles can be taken, developed, and the desired number of prints delivered to the troops in time to use them in the plan of attack or defense. I have personally seen photographs distributed to the various organizations forty-five minutes after the plane which took them had landed.

Planes continuously in communication with headquarters can patrol wide areas daily or hourly, which duty would require large bodies of troops and much fatigue to accomplish otherwise.

By bombing and machine gunnery the enemy can be harassed and prevented from making orderly dispositions.

Enemy troops and population well in rear of the line of resistance can be kept in a demoralized condition, and enemy ammunition and supply depots and other military objects destroyed.

Any railways, bridges, and roads within a radius of one hundred miles can be quickly made impassable.

Rapid communication can be furnished between detached bodies of our troops in difficult country, and officers can be quickly transported anywhere on urgent missions.

In thick and rough country the planes can keep headquarters informed at all times of the disposition, progress, and needs of our troops.

In the event the enemy has planes, we can protect our troops from observation and annoyance and prevent the enemy from securing benefit from his planes.

For the field artillery the following are some of the ways in which we can be helpful:

Difficult and temporary targets can be located quickly, accurately described and changes in targets promptly reported.

The bursts of our shell can be accurately spotted and corrections for the next shot instantly reported.

Targets invisible from the ground can be kept under accurate fire by corrections given by the planes.

Photographs of targets can be furnished showing progressively the results of artillery fire.

The location of hidden artillery batteries causing damage can be discovered and reported.

At night designated areas can be kept lighted by parachute flares, etc.

Through its speed and remarkable visibility, and by the use of its radio and radio-telephone, together with visual signals which must be developed, the airplane will cooperate with the signal and communication troops so as to greatly increase their effectiveness.

For Advanced Base Work:

In addition to the duties mentioned above which aviation will perform—and nearly all these will enter into advanced base work as well—the planes will cooperate in the following ways:

Offshore patrols to prevent surprise raids by enemy light forces.

Anti-submarine patrols.

Spotting for shore batteries in attacks by enemy ships.

Communication between the base and our vessels offshore.

Photographing, bombing, and torpedoing enemy craft and bases within reach.

On account of the aviator's ability in most localities to pick up and chart enemy mine fields, airplanes should furnish valuable assistance in countermining and mine sweeping.

A large part of the work performed by the Marine Corps is to combat guerrilla and bandit warfare, usually in tropical countries where roads are few and ground communications almost *nil*. We must not overlook the valuable assistance aviation can render in this kind of fighting or fail to realize its many helpful possibilities in the occupation of such territories whether fighting is in progress or not. The enemy encountered under these conditions are usually unstable and can not withstand punishment. They are nearly always superstitious and easily stampeded or cowed by methods of warfare with which they are unfamiliar. They base

their hope for success on their ability to make raids and get away before the necessary number of our troops arrive. When an attempt to round them up is made their knowledge of the country and their ability to travel light and fast allow them to lead our troops an exhausting chase for some time before they are dispersed, if that is accomplished. The work of the Marine Corps aviators in Haiti and Santo Domingo has abundantly shown the possibilities in this class of operations. Difficult country can be patrolled so completely and frequently that it is impossible for bands to form without being discovered. To cover an area as thoroughly and frequently as can be done by airplanes, would require a prohibitive number of troops and a weary amount of "hiking." The planes in Haiti have already proved that they can, without assistance from the ground, disperse and almost destroy bands of "cacos" with gunnery and small bombs. When these insurrectos realize that they can not congregate without being attacked within a very short time thereafter by our planes, their enthusiasm quickly disappears and the unfamiliar form of attack from the air greatly assists in their discouragement. If the planes could perform no other service for our expeditionary troops than to make unnecessary the long marches formerly required in searching for "cacos" they would be worth their keep, but a little imagination will suggest to any experienced Marine officer numerous duties the planes, on account of their special abilities, can perform for them.

It is believed that enough has been said to show those who are students of Marine Corps operations that an intelligent development of aviation and an encouraging spirit of coöperation between it and our troops can only result in enabling the Corps to perform its function much more quickly and efficiently. Marine officers very properly "like to be shown," and nothing is more desired by Marine Corps aviation than a chance to work out with our troops the problems suggested above, as they feel assured that such an opportunity can result only in mutual respect and confidence.

Before closing this article I would like to mention something which might interest prospective pilots. Above all, aviation is a young man's game. It requires a young heart, nerves, lungs, eyes, and reflexes. It has been said that after a man reaches a certain age he has too much sense to do what an aviator is

required to do. There are exceptions, of course, and older men have been good fliers, but I believe they are exceptions, and my eight years' experience and observation has shown me that, provided they have the necessary amount of judgment, the younger the pilots are the better. I believe it is good policy to set the maximum age for applicants for pilot's duties at around twenty-five years. I am also led to believe that the average term of usefulness for a pilot flying regularly is not over five years. At the end of that time they know the work thoroughly, but those who are still alive have lost the "pep" and enthusiasm which is essential.

The established policy regarding pilots is that they will not be ordered to aviation duty until they have had enough experience with troops to have become thoroughly qualified Marine officers. The ordinary length of the detail will be five years, after which they will return to duty with troops.

Aviation is probably the most highly technical branch of the military service. It differs from other arms in the unusually fast development of its equipment, planes, motors, etc. The administrative and technical part of it is really a profession which requires long experience and constant study to fit one to properly make decisions, which decisions must necessarily be correct, as the life of the pilot, even in peace times, depends upon their soundness. For self-evident reasons it is necessary for any aviation organization to have enough old experienced aviation officers to run the technical part of it on sound principles proved by experience, and to prevent the enthusiasm and inexperience of younger pilots from causing harm. This necessity for officers of long experience is recognized and unquestioned, and for this reason a very small number of pilots who show special aptitude will be continued in aviation duty indefinitely to furnish the number of expert and experienced officers required.

The men in aviation are enlisted especially for aviation duty, and are sent through the regular recruit course at Parris Island or Mare Island, after which they are given a thorough education in gasoline motors, as shop machinists and in practical and theoretical airplane repair and upkeep. Our main trouble with enlisted men has been that, after giving them an excellent education, they discover that men performing identically the same duties in the Army and Navy draw much more pay than they. As a result they



become dissatisfied and do not reënlist. It is hoped and believed that this will be remedied shortly and their pay put on a par with men doing similar work in the Army and Navy.

For fear that by mentioning in this article the skeptical feeling regarding aviation which is supposed to exist among some officers, I have given an erroneous impression, I would like to state that I believe the number of officers who hold this attitude constitutes a small minority of the officers of the Corps. The subject is only mentioned here because the whole article is an effort to show Marine Corps officers that, with encouragement and coöperation, we can be of real service to them, and to show commanding officers what parts of their problems they can use aviation to perform. Naturally, the ones we wish most to convert are those who at present do not fully believe in us.