FICTION

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Direct Hits From the Air While Traveling at Speed of Ninety Miles an Hour

THE Sunday Star's Representative Goes Up in a Martin Bomber at Langley Field and Describes Work of the Air Service in Dropping Explosives on Targets Five Thousand Feet Below—Three Direct Hits Within a Fifty-Foot Danger Zone. Targets Located Thirteen Miles Out in Chesapeake Bay—Following the Bomb on Its Downward Course—Three Waves of Airplanes in Scheme of Attack—Work of the Bombardier.

BY DONALD M'GREGOR.

LANGLEY FIELD, HAMPTON, Va., April 30.

THE giant Martin bomber is flying a mile high over Chesapeake bay, speeding at ninety miles an hour in the direction of a tiny speck of a battleship below.

At the forward end of the airplane sits an Army captain, the bombardier, his hand on the bomb release and his eye on the battleship. Just behind is the airplane pilot, to whom he signals with the other hand—the whirl of the two propellers makes it far too noisy to talk—so that the powerful aircraft may be driven directly in line with the battleship.

All about are other airplanes, in battle formation, some of them, the smaller types, flying lower to protect the heavy bombers. The deafening noise is muffled by the heavy helmets strapped tightly over the ears of those who fly.

The airplane is nearing the battleship. In two minutes more it will be directly over it. The bombardier, crouching in the pit, pulls the release. Out from below, from the carrier contrivance, swings the heavy bomb, on its trip to death. It is painted white, to assist in its observance, and there are fins at its tail to guide its course to the battleship below.

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THE bomb seems to follow the airplane, keeping pace with it on its downward course. This is due to the momentum it had with the great fighting machine, and while a certain lag develops, due to the laws of gravity as it speeds to the earth, this is hardly perceptible.

Down goes the bomb, seemingly contracting into a smaller and smaller object as it nears the battleship. Everybody aboard the airplane watches intently, the bombardier through a small open space in his pit, the pilot through a tiny glass in the floor, and the rest of the crew of five get their vision over the side.

The bomb is going straight toward the object below, as if drawn there by a magnet. By this time it is a tiny speck of white, but easily seen against the hazy blue-gray of the water.

There is a splash at last! The bomb has hit!

The bombardier looks back toward the pilot and grins. The pilot smiles back a compliment.

Had it been a battleship below instead of a floating target and had the ammunition been live and of sufficient weight the navy craft would have been blown out of the water.

All this I have just observed from the Martin bomber itself in a seat beside the pilot. It occurred thirteen miles out over Chesapeake bay, as a part of the Army Air Service preparation to prove its assertion at the formal tests in June that land aircraft might easily destroy battleships and other naval vessels even if operating at a considerable distance from shore.

This Martin bomber in which I rode dropped four bombs under similar circumstances during the maneuvers, which lasted an hour. The bombs weighed 100 pounds apiece. All four of them were hits, three direct and one indirect—that is, within the danger zone of fifty feet from the supposed battleship. And, what is more, the indirect hit might easily have been the most effective of all the shots, since its detonation would have come six or eight feet under the water below the armor line of the battleship.

A total of twenty-three airplanes, operating as a squadron in battle formation, participated in the maneuvers. Altogether they dropped 112 bombs on the target from this dizzy altitude—virtually a mile—and of them 73 per cent were hits.

The target below, a raft riding the waves of Chesapeake bay in tow of a tug, measured twenty by sixty feet, but it was sufficiently large to permit the careful aiming of bombs. The ordinary battleship presents a much larger surface, at least 100 by 600 feet, so that this was used in registering the hits. Any shot which fell within the area was a hit direct, and any shot within fifty feet, commonly accepted as the danger zone, also was a hit indirect.

The squadron of airplanes were off the ground for an hour and twenty minutes under what might be supposed to be typical battle conditions. During the hour they were over the water—itself a commendable feat for land craft—they circled and recircled over the target, attacking and reattacking.

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THERE were three distinct attacks the same tactices being employed in each instance with satisfactory results. In that period of time, unless some unknown counter attack had been launched by the navy, an entire fleet might easily have been destroyed.

The plan of attack in this maneuver—unquestionably that which would be primary in time of hostilities—provided for three waves of airplanes, of graded sizes and with specific duties to perform. The first wave, made up of the small or pursuit planes, had to sweep the decks clear of personnel; the second, made up of light bombers, had to put out of commission such armored anti-aircraft artillery as might be operating, and the third to sink the battleship. In theory this was accomplished.

In the first wave arrived the single-seater planes known as the SE-5, of which there were five in these maneuvers. As they approached the battleship they dipped to within 200 feet of the deck, dropping twenty-five-pound bombs, those intended to clear away the personnel. This accomplished, they made off again in a wide circle to avoid what might have been a counter fire of aircraft guns.

In the second wave came the light bombers, the DE4B type of airplane so common in the Army Air Service. These have a single motor and carry two men, the pilot and the bombardier dropping 100-pound bombs from an altitude of 5,000 feet. In actual operations these bombers might easily carry bombs weighing from 250 to 300 pounds, capable of sweeping the decks of battleships clear of all superstructure and armored anti-aircraft guns, virtually putting the battleships out of commission. Thirteen of these light bombers participated in the maneuvers.

The third wave brought the Martin bombers, with crews of four or five men, a pilot, an extra pilot, a bombardier, a mechanic and a radio operator, as a rule. In the tests that I witnessed the Martins each carried four 100-pound bombs, but in actual warfare they probably would carry two 100-pound bombs, loaded with TNT, the type which are at present the last word in ordance construction of this character.

Still another, and even heavier bomber, known as the owl L.W.F., the largest airplane in the Army Service, is at this flying field and being prepared to participate in the tests which are to be held in June. This giant aircraft, operating with three motors, whereas the Martin operates with two, is capable of carrying two 1,100-pound bombs and two 600-pound bombs—possibly two 1,700 or 1,800 pound bombs if they should be developed.

Such an array as this—except that the bombardment wing, which is the term for the Air Service unit corresponding with the regiment of infantry, is to consist of 100 airplanes instead of twenty-three—is to be sent out for the demonstration against the naval forces in June, on a day and at a place yet to be fixed, so that it will be possible to determine the effect of land aircraft on warships within a reasonable distance from the coast, at present one of the uppermost questions of debate in army and navy circles.

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THESE bombing tests by the Army have been going on over a period of about three months and, as the records show, have brought about remarkable results. They have been conducted entirely at Langley Field, the location of which, at the mouth of Black river, between Old Point Comfort and Newport News, is ideal for such experiments. As the practice has progressed there has been a corresponding improvement in the bombing.

Live as well as dummy bombs are used in the practice. The dummy bombs, made of clay, are far less true than the live bombs, so that the records made with the dummy bombs are not to be accepted as a real indication of the possible results. Most of the live bombs which are used weigh 100 pounds.

The people in the vicinity of Langley Feld have complained against the use of this heavy ammunition to such an extent that of late where live bombs are used the safety pin has not been removed, so that there will be no detonation when they hit. The bomb merely sinks to the bottom of the bay.

The tests have been in progress with several targets, among them the battleship Indiana, which has been sunk in the bay for use as a navy target, and the cruiser San Marcos, which is used for the same purpose. The Navy objected recently to the use of these vessels as targets, so that lately the Army flyers have been using the raft, which is located midway across the bay on a line between Langley Field and Cape Charles. It is twenty-six miles across the bay at this point.

There is another target range, no longer used, owing to the desire of the officers to become accustomed to flying for a long period over water. This target is in a great marsh a mile or two beyond the aviation field, where, with sticks, the flyers drew the outline of a battleship. Great holes are in the ground—shell holes, like those in France—grim evidence of the accuracy with which the Army flyers have been dropping the charges.

Here is a tabulation of the result of the bombing in recent weeks:

Week.	Bombs dropped.	Kind of bombs.	Hits on target.	Within 50 ft.	P.C. in danger zone.
March 19	278	Dummy	54	52	37.9
March 26	137	Dummy	29	22	37.2
April 2	122	Live	29	29	47.6
April 2	238	Dummy	48	67	48.6
April 9	51	Live	14	15	56.7
April 9	199	Dummy	28	26	54
April 16	208	Live	19	52	34.1
April 16	31	Dummy	6	14	64.5

The altitude from which these bombs were dropped ranged at from 3,000 to 4,000 feet. The dropping of bombs from an altitude of 5,000 feet was attempted for the first time in the maneuvers in which I participated as an observer.

With the sighting apparatus carried aboard the airplane, which takes into consideration the elevation, the windage and the velocity, the altitude at which the flight is being made is not a bothersome factor. The bomb upon its release is carried forward with the velocity of the airplane, except for the "lag," which is the easily computed straightening of direction caused by the laws of gravitation and the wind. The officers who have been studying the bombing insist that it is possible to obtain a truer aim from an airplane than it is with a regulation Army rifle sight, which considers, of course, windage and elevation. It is a matter of mechanics.

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IN such operations the pilot and the bombardier constitute a team, in competition with other teams. Some of the teams, after a period of practice, become highly proficient, at times making 100 per cent. Brig. Gen. William Mitchell, assistant chief of the air service, who started the discussion as to the ability of the Army flyers to operate successfully against naval vessels within a reasonable distance from shore, tried his hand at bombing not long ago and succeeded in making a score of 75 per cent.

It is with grim determination and remarkable spirit that the Army flyers at Langley Field, under the command of Maj. William M. Hensley, jr., have entered into the contest, which is now attracting so much attention in both the military and naval service. The flyers are under the direction of Maj. T. D. Milling and Maj. Davenport Johnson, who map out the operations and keep the score.

Equipped with a flying suit, headgear and goggles, I joined the group before the start in the operations building, where Maj. Milling, before a large blackboard, was outlining the day's maneuvers. He assigned the leader of the group, explained to the pilots what would be expected of them, gave the time for taking off and for the assembly in the air. Maj. Johnson supplemented these instructions all with chalk on the blackboard, giving flying details along military lines.

The single seaters, one at a time, got into the air and, after some jockeying for place, took positiien over the marshlands beyond the flying field. The light bombers, thirteen of them, followed the single seaters into the air and the atmosphere was charged with the continuous hum of the motors.

Meantime the Martin bombers were being tuned. Capt. W. R. Lawson, as the pilot, and Capt. A. E. Easterbrook, as the bombardier, were in charge of the ship to which I was assigned, and I took my place beside Capt. Lawson in the pilot's cockpit. Capt. Easterbrook entered the bomber's cockpit just ahead. Into the observer's cockpit at the rear got two enlisted men, one to operate a radio telephone—intership as well as ground communication is maintained—and the other to do such mechanical work as might be required.

This airplane led the group of five Martins off the ground, circling over the marshes behind the single seaters and the light bombers that had gone ahead. There was a little maneuvering until the ships all were in position, some swinging back and forth, and then, at a signal, a dash out over Chesapeake bay toward the target.

As the airplanes kept on, the altitude increased until the 5,000-foot level, that prescribed for the day's bombing, was reached. Later for a time the ship went to 7,000 and then 8,000 feet, but dropped back again to the 5,000-foot level for firing.

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CAPT. Easterbrook, who was to do the bombing, located the target, signaling—nobody could talk against the hum of the two great liberty motors—to Capt. Lawson when a change in the direction seemed desirable to get over the target. There is a small open space in the bomber's cockpit to aid in the sighting and the dropping of the bombs.

The beautiful scenery at an elevation of 5,000 feet has many of the characteristics of a gray-green desk blotter, one perhaps that has been in use for a couple of weeks, touched up here and there with a few ink spots. The target, a mile below, looked like such a spot. There was the customary haze that hangs over Chesapeake bay and Hampton roads. The sun was bright enough, but the rush of air when the speed was ninety miles an hour was severely cold. The furlined flying suits were comfortable, although on the flying field half an hour before they had been too hot.

It was a full minute, maybe two, before we passed over the target the first time that Capt. Easterbrook, peering through the hole in the cockpit, released the bomb. We had barely passed over the target when the bomb, after its long slide through the air, hit the water near the raft.

The Martin swung into a wide circle to the left, a circle with a diameter of fifteen miles at least. We were following the other airplanes, which were setting the pace. By this time the circle was almost directly over Cape Charles, which is more than twenty-six miles from the airplane base, all the way over water.

It was a good fifteen minutes before the airplane swung around to the target for its second attack. The signals between Capt. Easterbrook, who was closely observing the course, and Capt. Lawson at the wheel put the machine directly in line with the target again.

This time, without a pause, Capt. Easterbrook swung forward another bomb, and then another. The two seemed to chase themselves on a definite track toward the target, gaining momentum as they went.

Splash! Splash!

They hit in quick succession—again within the area that would have been the deck of the battleship.

The airplane kept on in the circle to the left as before, following the twenty-two others and leading them at the same time. It was a remarkable demonstration of aircraft. The machines seemed almost within touching distance of one another, yet they were separated by a mile or more.

The heavy bombers maintained a higher altitude than the lighter bombers, while the single seaters kept on a track still lower, but doing more climbing and dipping, as it was part of their work to go to within 200 feet of the target in order to place their twenty-five-pound bombs.

Around and around went the circle, shifting from one direction to another, now describing the figure "8" and then getting into line again, as they all might be forced to do under battle conditions. In time the signal came for a fresh attack and the bombardiers made their preparations as before. Signals from the bombing pit put the Martin into line with the target and the bomb was released, starting like the others on its downward course.

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IT started, though, the fraction of a second too late and instead of registering a direct hit as had the other three it fell into the water approximately fifty feet beyond the line of the supposed battleship. Still, under the rules, it had to be set down as a hit, for certainly it was well within the prescribed danger zone.

Capt. Easterbrook and Capt. Lawson were the only team which made a perfect score of 100 per cent in this demonstration. One of the teams made but 50 per cent, but the average for the group for the 112 bombs dropped was 73 per cent.

When the signal came to withdraw from the supposed battle line the Martin in which I rode withdrew with the others, but the officers in charge, before the bomber finally returned to the field, traveled over the marsh lands to obtain a view of what had been done with the land target there. The Martin was flying low, so that it was possible to see the destruction that had been wrought by the 100-pound bombs within the battleship area, which had been described by the sticks. Perhaps 100 holes were showing, great holes in the earth, caused by the detonation of the bombs, specified evidence of the sure aim of the bombers. There were a few of the holes outside the lines, but very few. These had been dropped from a lower elevation, in the neighborhood of 3,000 feet.

Back on the landing field again the officers obtained charts, blocked off in 100-foot squares, on which they marked the spots at which the bombs had fallen. These they intended to submit to the commanding officer for the permanent records. The honor system is employed. Each bomber, with his pilot, observes the bombs dropped from the airplane in which he operates.

In the June tests it is the purpose of the air service to enter 100 airplanes, composing a bombardment wing, which is to consist of twenty-five pursuit or single-seater planes, fifty light bombers of the DH-4 type and twenty-five Martin bombers, with the Owl type now on the field. In all, this fleet will be manned by 1,700 enlisted men and 200 officers, all of them trained in bombing. The personnel at the field is far from complete at this time, but officers and men are being shifted here as rapidly as possible from other stations in preparation for the work. The details of the problem are yet to be received from the War and Navy departments, but it generally is understood that the tests will be in three parts: First, the airplanes will be assigned to the duty of locating the fleet at sea, at some point perhaps within a hundred miles along the coast and within comparatively short distance from shore, say twenty-five miles. There then is to be an attack, under battle conditions, such as has been described.

Part two of the problem, then, as it is understood, will consist of firing live ammunition at a battleship in actual operation—probably the Iowa, radio controlled—and it is expected that two hits will be allowed. The third part of the problem, when the heavy ammunition is to be used, will be when some of the German ships which have been assigned to the United States government are to be turned loose for the bombing by the American air forces. Heavy ammunition will be used in these experiments, and the ships will be sunk—if the air service theory is carried out.

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ARMY air service officers are willing to go through these tests to prove their assertion that their airplanes will be effective against fleets operating in coastal waters. They say that in actual warfare they would not be compelled to include in the problem that of locating the enemy fleet, since its location naturally would be known, with the improved use of radio, before an attack were undertaken. Yet they are willing that they should be called upon to find the fleet first before attempting the attack.

Among all the officers at Langley Field there is the utmost confidence that the assertion of Brig. Gen. Mitchell that aircraft is able to destroy battleships under the conditions prescribed will be demonstrated clearly to the board assigned to observe the tests. They take the view that a navy would have virtually no defense against such an attack for reasons they are willing to set forth in detail.

So far as they can figure, the chief defense of a fleet would be with aircraft in superior numbers, but they set down as a grave question whether a fleet of battleships would be able to transport with the fleet a sufficient number of airplanes to be really effective. They believe it would be a simple matter for land forces to overpower the air forces of any fleet.

Anti-aircraft guns figure but slightly in the consideration. The Army tests indicate that guns of this character are not effective beyond 3,000 feet, so that the attacking aircraft would be reasonably safe at 4,000 or 5,000 feet. The Army aviators say that the use of anti-aircraft guns would bother them but little.

There is a possibility, of course, in the use of poison gas against such an attacking party, but gas, the Army service recognizes, has its limitations. It would be an easy matter for the flyers to get above or below any dangerous layer of gas, according to this theory.

It is a well known rule of warfare, however, that whenever some means of destruction is developed a way to combat it also is found, so that there is no doubt that the Navy, sooner or later, will hit upon a way—perhaps it already is the case, although the Navy just now is silent on the subject—to remove the peril of hostile land aircraft. Yet the Army service in striking high is convinced that even a partial accomplishment of the theory advanced will be an important development in modern warfare.

The limitations of the effectiveness of land aircraft in operations against a fleet are recognized, but faith in the future is maintained for the extension of the present possibilities. For instance, it would now be virtually impossible for a fleet of airplanes to attack an enemy fleet. The limit is established by the length of time it is possible for the airplanes to remain in the air.

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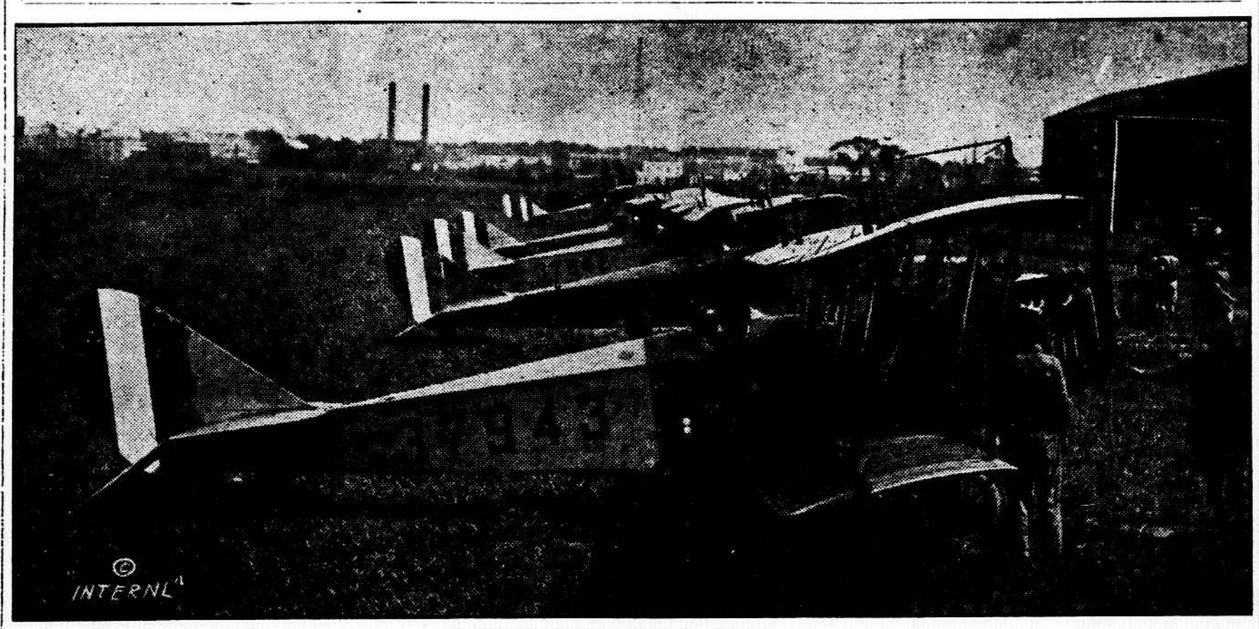
THE Martin bombers, which are at present the standard heavy bombers in the service, have a gasoline capacity of about five hours. They travel, as a rule, at ninety miles an hour. For this calculation it is sufficient to say that they would be able to travel a total of 500 miles provided the motors functioned properly. This would place a natural limit of safe travel at about 100 miles from shore, since sufficient mileage would have to be conserved for the return trip and for the necessary maneuvering in the vicinity of the hostile fleet. For a land airplane to go beyond that distance would be hazardous in the extreme, so long as the present types of bombing machines exist.

Future development, on the other hand, is expected to take care of the situation to an extent that aircraft with one "hop" would be able to go out and attack a fleet at a much greater distance than 100 miles.

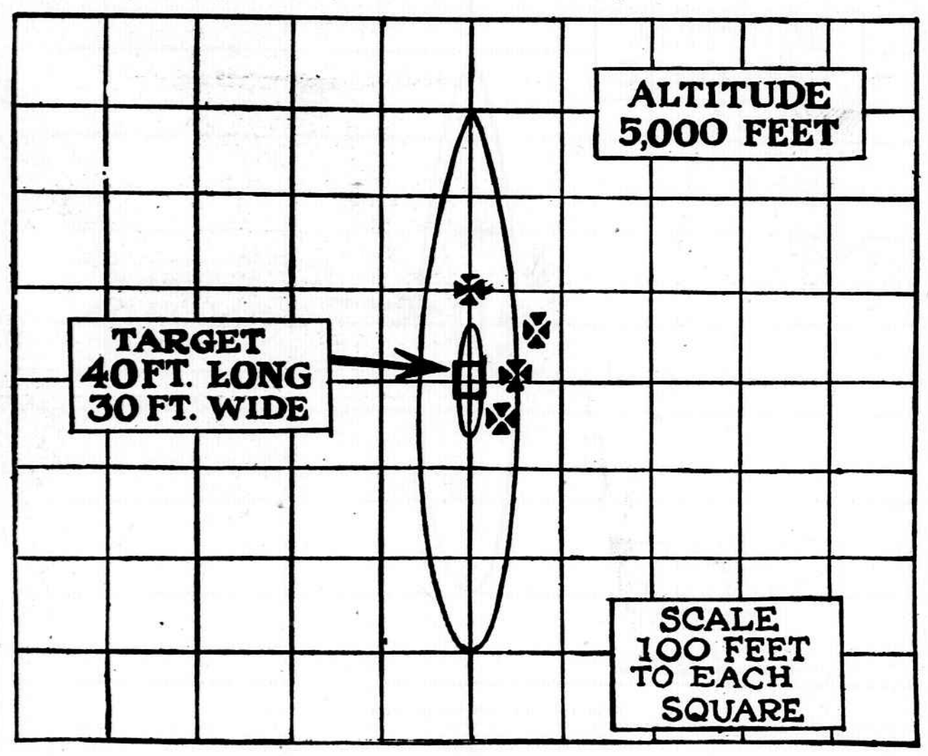
It is impossible to find any responsible officer connected with the air service who believes that it ever will be possible to do away with the Navy, replacing it with aircraft even of the most remarkable cruising radius. They believe that the value of land aircraft will be confined to an area within a reasonable distance of the coast line, but see the possibilities of so co-ordinating the Navy and the air service as to bring the maximum results.

The real underlying purpose of the desire to demonstrate the possibilities of aircraft operating against battleships is to further the consideration of the air service. Those whose hearts and whose souls are in the military flying branch of the national defense believe they are on the right track in the future development of warfare.

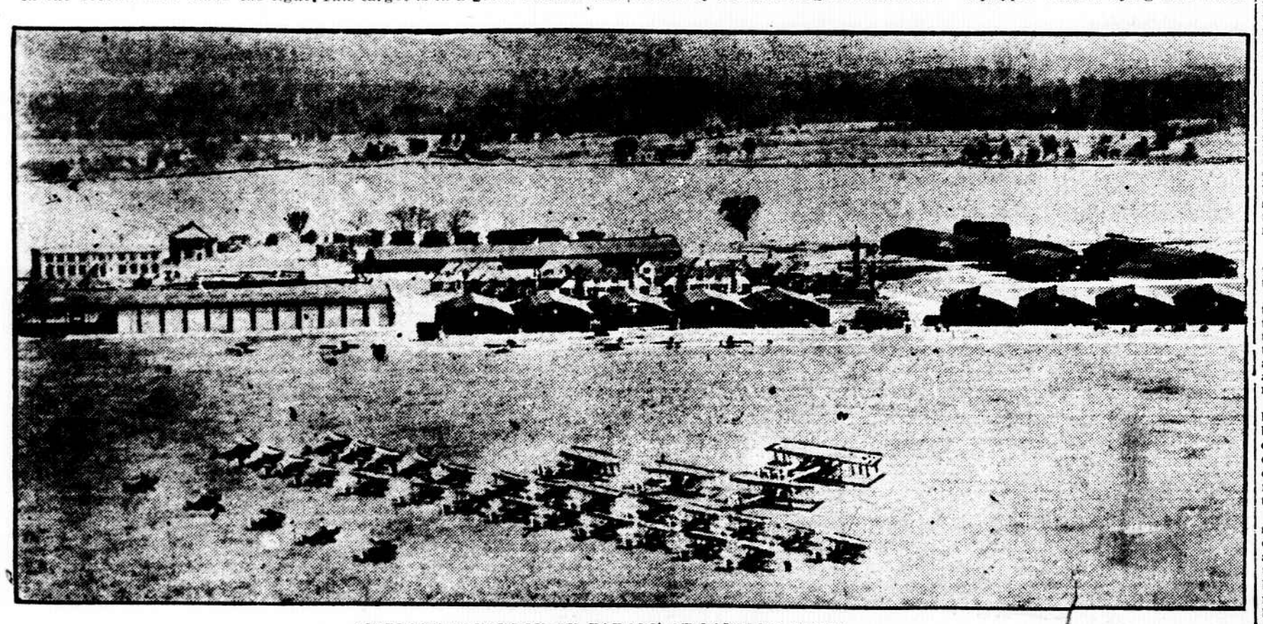
The dream of the flyers is that some day the government will authorize the creation of a separate air service, on a par with the Army and the Navy—a service for land, a service for water and a service for the air. Such might come about, those who advocate the idea declare, through the institution, in the new scheme for reorganizing the government departments, of a single department of defense, with three independent but closely co-operating bureaus, one for each of the combat arms.



NAVY PLANES AT BOLLING FIELD.



HOW THE TEST SHOTS HIT THE TARGET.



AIRPLANE SQUADRON ON PARADE AT LANGLEY FIELD.

A MARTIN BOMBING PLANE.
(U. S. Air Service photo.)

ONE OF THE MESSENGER, OR "HANDY," PLANES OF THE NAVY ABOARD A BATTLESHIP.
(International Film Service.)

The New Flowers.

THE list of varieties of flowers grows longer every year, and generally speaking, many of the new varieties are more beautiful than the old. New roses, new carnations, new dahlias come into being every spring and fall.

Grandma, as she walked through her beloved garden, could very likely name all varieties of the rose that bloomed in her day. She had the hundred-leaf pink rose, the bride's rose, the tea rose, the cabbage rose, the English wax rose, the moss rose, the yellow rose, the Marechal Neil, the Jacqueminot and a few others. The rose list has lengthened almost beyond belief. Perhaps no man who devotes himself to roses—a rosarian—could name, much less identify, all the varieties of the rose that bloom now. He has to keep the names and descriptions in a catalogue, and new roses come out faster than cataloguers and printers can deal with them. Not only have new varieties of old roses been evolved, but now races of the rose, like the pink and red ramblers, and the rugosas have been introduced from distant parts of the world or produced by breeding.

Grandma knew all her dahlias. They were stiff, formal flowers, but of radiant color. They are still growing, but dahlias have been brought into being with soft and waving petals and wonderful coloring. Some are almost as graceful as a rose and as eccentric in their appearance as the mammoth long-haired chrysanthemums.

Even the list of varieties of the lilac has been extended by hundreds. In grandma's garden there were two kinds of lilacs, one purple, the other white, and it is a fair bet that she called them not "ly-laks," but "lay-locks." That was the pronunciation of the name of these old and fragrant and beautiful flowers in the day of Elizabeth of England, and that was the pronunciation which was brought to the colonies in America. Grandma had one species of gladiolus which grew in the flower border by the side of the gravel walk. It was a stiff stalk with little pink flowers. Now the gladiolus, or the "gladioli" may not be so numerous as swords were in ancient Rome—this flower was given the Latin name for "sword"—but their numbers and their species are legion—that is, if "legion" means a great many.