

Fighting in a Three-Decker Airplane

Fokker produces a fast triplane in
which von Richthofen is killed

By Carl Dienstbach

VON RICHTHOFEN, the German flyer who had more victories to his credit than any other living or dead rival, was killed in a triplane. It was a Fokker of a new type, which the German army had rejected, but which von Richthofen thought was well worth trying. The Fokker is not the first triplane. Both Roe in England and Curtiss in America had experimented with the type before the European war. Why did Germany's best flyer select a type that had been discredited?

The two lower surfaces of a triplane do not give as much lift as they would if there were no third plane above them, while their drift—in other words, resistance against propulsion—is the same. Then, why does the triplane idea persist? Because triplanes are stronger than biplanes of the same surface and weight. By sacrificing some of this inherent strength, Fokker made striking improvements possible.

Obviously, triplanes contain a large surface area within a small span of wings. The entire surface closely surrounds the load it has to support. In a fighting plane, above all, the load must be condensed in order to oppose a minimum resistance to the turns and twists that occur in aerial dueling.

Now, what did Fokker do? He turned the framing of the wings, the hollow, box-shaped beams, and the deep-webbed ribs into a truss. Like a bridge, this structure needed no external bracing wires. The framing was tucked away between the smooth upper and under surfaces of the wings. A single light strut, thin and sharp so that its air resistance is negligible, aligns rather than braces the triple wings on each side. The absence of bracing struts and cables reduces the machine's head-on resistance so much that the triplane as a whole became as efficient as a biplane.

The commercial flying-machine of the future will probably be a triplane, be-

cause we need compact machines in our cities. The military machine of the future may also be a triplane, because its small span permits quick maneuvering.

The greater the span, the greater the difference in speed between the two sides of a quickly turning airplane. As this difference must not exceed a safe limit, the triplane, with its smaller span, is obviously preferable. A small span accelerates turning.

The triplane's ability to maneuver quickly was the reason why it became von Richthofen's tool in a duel in which sudden turns are paramount.

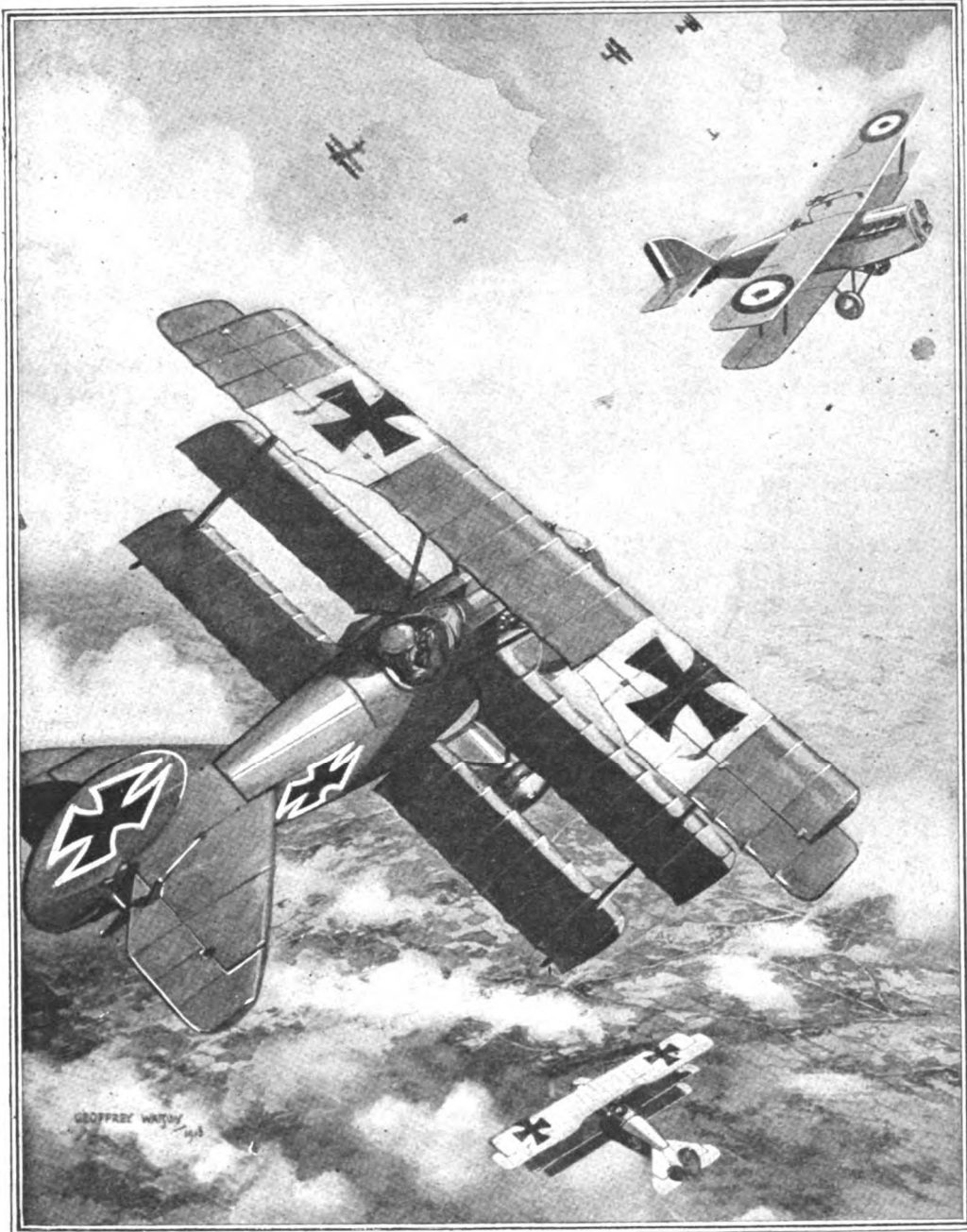
Surface can be piled on surface and certain specifically military advantages obtained. From below and from above, multiplaned machines offer a smaller target. They are safe even after one of the wings has been badly damaged. In a Fokker triplane Captain Boelke would have survived the accident—the tearing away of part of a wing in a collision—that was fatal to him in his Fokker monoplane.

It is a small step from a triplane to a quadriplane or multiplane. The greater the number of planes that are superposed, the less relatively important becomes their reduced efficiency in comparison with their structural advantages.

The Fokker triplane is really a quadriplane. Fokker turned the under frame supporting the landing and starting wheels into a fourth wing. He could give considerable depth and area to this wing, in spite of its necessarily small span. The wheels were disks, forming flanges on each side. This gave to the underframing a certain lifting power, which compensated in a measure for its unavoidable resistance. This fundamental improvement will probably be adopted.

Such a machine has a great speed-range and stupendous climbing power. If it attacks the air at a steep angle it will have great lift at low speed, thus robbing the "airhole" of its terrors and making turning easy while climbing fast.

Von Richthofen Flies to His Death



It was in this formidable-looking three-decker Fokker fighting-plane that von Richthofen, the greatest of German airmen, flew to his death. On this Fokker triplane head-on resistance has been cut down by eliminating all wires, and

by a new form of landing wheels, mere disks of a stream-line design. Some day an inventor will provide a landing gear that will fold back like a bird's legs. At the moment, the birds are still one hop ahead in this respect