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Article Summary: Colonel Cass Hough of Plymouth, Michigan, an American fighter pilot, tested the new P-38 under the most extreme of dives in order to figure out how pilots could properly survive in the combat plane.

Fifteen Seconds to Live

FRANCIS VIVIAN DRAKE *

This is the story of an American fighter pilot who deliberately exposed himself to one of the most dangerous experiments in aviation history — the airman's equivalent to sitting on a keg of gun powder and lighting the fuse. Our fighters throughout the world have a warm place in their hearts for Colonel Cass Hough of Plymouth, Michigan. But for him, hundreds of them might now be dead, and to him must go at least part of the credit for the fabulous score of enemy planes chalked up by the now-famous Lightning P-38.

When this two-engine, twin-fuselage fighter arrived in England the British tried it out, shook their heads, said it wasn't good enough to fly against the Luftwaffe. . . . But Hough refused to be discouraged: he *knew* the American plane was basically a super fighting machine. Grimly he set to work to sweat out improvements, using every trick of engineering know-how. Then he appeared at the testing depot for another mock battle.

This time it was an entirely different story. Hough put on a performance the English skies had never seen before — a foreign plane giving points to a Spitfire. Then the RAF pilots tried captured Fock-Wulfs and Messerschmitts against him, and saw the remodeled American plane outperform them all.

But then the blow fell. An experienced pilot, putting one of the new Lightnings through a standard routine, got into a vertical power dive. When he tried to pull out his wings came off.

This pilot had been dead only a few hours when another American slipped his Lightning into a similar dive seven miles above the earth. Hurtling down at unprecedented speed, he too was unable to pull out. Desperately he grabbed the emergency brake, . . . whereupon the whole canopy was snatched away. Monster suction tore him from his seat, breaking both his legs, whipping him up through the hatch like a straw in a tornado, and flinging him, at 700 miles per hour, onto the screaming air.

With extraordinary presence of mind, the young pilot waited to *decelerate* before pulling his parachute ring. If he had pulled it at once, the jerk of the opening chute would have ripped him limb from limb. As it was, he survived the landing and returned practically from the grave to give Cass Hough a blow-by-blow account of his experience.

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Hough went back to headquarters and pondered. The Lightning was a military weapon of great potential value if some way could be found to make it survive the vertical dive which is a necessary maneuver in air fighting. After days and nights of unsparing work he arrived at one possible solution: to use, as a brake for the dive, the trim tabs of the tail whereby the nose of a plane can be raised or lowered to keep it in level flight. That *might* work.

The next morning Hough took his own Lightning up to 43,000 feet—eight miles into that pale, thin air where it is sixty degrees below zero. . . . He proposed to send seven tons of airplane, with two 1200-h.p. Allison engines wide open, hurtling down a 43,000-foot plumb line. Today, American airmen all over the world, streaking after outclassed Zeros and Messerschmitts, marking up Lightning victories at the rate of five for one, have profound cause to be grateful that there was nothing the matter with Cass Hough's nerve that morning.

After one last look around, he dived. For the first 5,000 feet everything was normal. Then "all hell broke loose. . . ." In an instant he reached that fabulous speed at which tail surfaces flap in a weird vacuum. The needle on the altimeter, which makes one revolution every thousand feet, was spinning like a wheel. . . . The plane started into the dreaded outside loop which spells certain death. Quickly he resumed full throttle. The Lightning tore on. . . .

The earth was racing toward him at incredible speed. He was traveling about 800 m.p.h., faster than the speed of sound, *faster than any living being had ever traveled before.* The pain in his ears was torture. If he was going to get clear by parachute, this was the last instant to jump.

But Hough was hurling himself down through space to try one particular thing, and he was determined to go through with it. He turned the little reel which controls the trim tabs, then waited to see if they would bite into the air. . . . As he flashed below 20,000 feet he had slightly over 15 seconds to live.

It was then that he felt the initial sign of recovery. The split second had arrived when seven tons of runaway metal, streaking out of the blue, gave the first faint intimation of willingness to come under control. . . .

But the scorching plane had still to be brought safely through onrushing tons of air pressure. One uncertain move meant tearing the wings asunder. No plane had ever before been successfully subjected to such a fearful test.

Forcing himself to move deliberately in this madhouse of speed and sound, Hough eased up on the trim tabs just as the nose started to sweep up in real earnest. Then all the controls took hold at once, . . . and the tremendous force of pulling out from the great dive blacked him into unconsciousness. When he came to, he was 5,000 feet higher up, with the plane climbing almost vertically. He looked around. Everything was still there. His faith in the Lightning had been justified. . . .

That Hough's heroic dive and his scientific brain had at last made the P-38 a superweapon was proved a short time later when ten young Amer-

ican pilots, armed with his hard-bought experience, took their revamped Lightnings down in a blinding dive at 25 Messerschmitts. They shot down sixteen for a loss of only one Lightning.

As for the man whose patience and supreme daring were responsible for this and for hundreds of victories that followed, from the English Channel to New Guinea, his Air Force citation said: "Colonel Hough achieved . . . the longest terminal velocity dive in history. . . . He knowingly and deliberately entered unknown regions of the air. . . . "

Accompanying the citation was the Distinguished Flying Cross.

. . . It's the music a man's spirit sings to his heart, when the earth's far away, and there isn't any more fear. It's the high, fine, beautiful song of an earthbound creature who grew wings and flew up high and looked straight into the face of the future, and caught, just for an instant, the unbelievable vision of a free man in a free world. But if you haven't heard it, there's no way I can talk to you.*

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* Excerpt from the screenplay of "A Guy Named Joe" — a Metro-Goldwyn-Mayer production, copyrighted 1943 by Loew's Incorporated.