= Gordon P. Saville =

Gordon Philip Saville (September 14 , 1902 ? January 31 , 1984) was a United States Air Force major general who was the top authority on US air defense from 1940 to 1951 . Blunt and direct in manner , Saville had been an outspoken proponent of tactical aviation in the 1930s against a brotherhood of airmen who promoted strategic bombing .

Saville succeeded Claire L. Chennault as America 's leading fighter aircraft tactician . With Benjamin S. Kelsey , Saville co @-@ wrote the technical specifications which led to the Lockheed P @-@ 38 Lightning and the Bell P @-@ 39 Airacobra fighters . In 1949 he selected the North American F @-@ 86 Sabre as America 's main defense fighter , and in 1950 he approved a guided air @-@ to @-@ air missile system that would be carried aboard the proposed supersonic 1954 interceptor ; the missile produced was the AIM @-@ 4 Falcon .

Saville was a technical and scientific @-@ minded leader who helped pioneer advanced mathematics for operations research , and computer systems for centralized coordination of air defense . He advocated the expansion of radar installations to create an unbroken air defense network . He explored the concept of a military aircraft designed around an integrated electronics fire @-@ control system built by various subcontractors . After retiring from the military , Saville worked in the defense industry .

= = Early career = =

Gordon Philip Saville was born in Macon , Georgia , on September 14 , 1902 . His Regular Army officer father propelled Saville 's older brother to enroll at the United States Military Academy at West Point , and he urged Saville to accept an appointment to the United States Naval Academy . However , Saville wanted to fly so he rejected formal military schools . Instead , he attended the University of Washington , Antioch College , and then the University of California and was commissioned a second lieutenant in the United States Army Reserve on November 5 , 1923 , in the infantry , seeing active duty in August 1924 and August 1925 . While on reserve duty at Crissy Field in San Francisco , Saville watched Army Air Service pilots training on military aircraft . He determined that he would join them or leave the military .

Saville became a flying cadet with the Army Air Service in March 1926 , and entered the primary flying school at Brooks Field , Texas . During this time his service branch reformed as the United States Army Air Corps (USAAC) . In September of that year he was transferred to the advanced flying school at Kelly Field , Texas , from which he graduated on February 28 , 1927 , gaining a commission as second lieutenant in the Air Reserve . He was assigned to the Fifth Observation Squadron at Mitchel Field , New York and in June 1927 , he was appointed a second lieutenant in the Air Corps of the Regular Army . At Mitchel , Saville served ably as adjutant to Lieutenant Colonel Benjamin Foulois , but Foulois was unhappy with Saville 's absence during weekend train trips to Connecticut to see Ina Isola Hards , his girlfriend . Hards was an honors graduate of Wellesley College where she had performed in theatre plays and had served as class officer . Foulois ' wife successfully addressed the problem by inviting Miss Hards to stay at the Foulois home on weekends . Saville married Hards in the Church of Transfiguration in New York City in September 1928 ; her father , Ira A. Hards , producer of the Mae West Broadway play Diamond Lil , walked her down the aisle . As a wedding present , Foulois granted Saville 's request for a transfer back to Crissy Field .

Saville was made adjutant of Crissy Field in December 1928 . He and his wife produced a daughter in July 1930 , Ina Gordon Saville . Later that year Saville transferred to Mather Field , California , where he was appointed adjutant of the field and of the 20th Pursuit Group . The Savilles welcomed a son in October 1931 : Edward A. Saville . In 1932 , Saville and family traveled to Barksdale Field , Louisiana , along with the 20th Pursuit Group .

= = Tactics and theory = =

At Foulois ' recommendation , Saville entered the Air Corps Tactical School at Maxwell Field ,

Alabama , in August 1933 . Saville graduated in May 1934 , at the top of his class , and remained at the school as an instructor in the Maps and Photographs Section . At ACTS , Saville joined Claire L. Chennault in favoring an air defense strategy hinging on a strong fighter force . Saville argued against the so @-@ called Bomber Mafia ; he did not believe that fleets of bombers were unstoppable , and he considered close coordination between ground units and tactical air power a key part of Army doctrine . In July 1935 , at the temporary rank of captain , he was named recorder of the Air Corps Board at Maxwell Field , in addition to his duties as fighter aviation instructor . Saville removed a degree of independent command from fighter squadron leaders who previously could ignore instructions radioed from the ground . Backed by Brigadier General Henry Conger Pratt , Saville 's unpopular control methods proved their worth , as ground controllers were often in possession of better information than squadron leaders in flight . From 1935 to 1937 , as Chennault was eased out by the bomber advocates , Saville took his place as the top fighter proponent . Saville avoided Chennault 's fate by refraining from disputing the bomber 's important role in offensive operations . He felt that the fighter aircraft was undervalued in its defensive role .

In February 1937 , Saville paired with Lieutenant Benjamin S. Kelsey , Project Officer for Fighters at the USAAC , to find a way to get around the USAAC 's arbitrary 500 @-@ pound (225 kg) limit on the weight of fighter aircraft armament . The two men settled on the term " interceptor " , creating a new Army classification for fighters , not a new mission . They issued a specification for two new heavily armed fighters via Circular Proposal X @-@ 608 and Circular Proposal X @-@ 609 . These were requests for fighters having " the tactical mission of interception and attack of hostile aircraft at high altitude " . Specifications called for at least 1 @,@ 000 pounds (450 kg) of heavy armament including a cannon , one or two liquid @-@ cooled Allison V @-@ 1710 engines each with a General Electric turbo @-@ supercharger , tricycle landing gear , a level airspeed of at least 360 miles per hour (580 km / h) at altitude , and a climb to 20 @,@ 000 feet (6 @,@ 100 m) within 6 minutes ? the toughest set of specifications USAAC had presented to that date . From these specifications a competition was held , and eventually the single @-@ engine fighter became the Bell Aircraft P @-@ 39 Airacobra , and the twin @-@ engine fighter became the Lockheed P @-@ 38 Lightning . Saville 's rank of captain was made permanent in June 1937 .

Saville entered the Command and General Staff School at Fort Leavenworth , Kan . , in September 1938 , and graduated the following June . He then was assigned to Washington , D.C. , as assistant to the chief of the Plans Division in the Office of the Chief of Air Corps . He assumed the role of assistant intelligence and operations officer of the Air Defense Command (ADC) at Mitchel Field in March 1940 . Led by Brigadier General James E. Chaney , the ADC was tasked with testing various air defense measures to determine what worked . Chaney was unfamiliar with air defense , and he made Saville the coordinator of all projects . This was the first time Saville was able to test and implement his theories on a large scale . New SCR @-@ 270 radar units were tried out and incorporated into the command scheme , giving greater reach to ground controllers . Army maneuvers held at Watertown , New York , in August 1940 allowed Saville to prove that fighter aircraft could protect a domestic target from air attack long before anti @-@ aircraft artillery could fire , a result that Chaney said " astonished " high @-@ ranking Army observers .

In October 1940 , Saville flew to London with Chaney for temporary duty as a military air observer studying British air defenses , and returned to Mitchel Field after two months to become executive officer at the temporary rank of major of the First Interceptor Command . He began drafting a comprehensive air defense doctrine which combined features of the British system with those advocated by Chennault and himself . Saville was promoted to the permanent rank of major in February , 1941 , and from March 25 to April 12 , he conducted an intensive course in air defense given to 60 fighter group staff , including Kenneth P. Bergquist , posted to Hawaii 's fighter wing . In August 1941 , he returned to London and observed British air defense measures until December 1941 . During this time , Saville 's Air Defense Doctrine draft was reviewed by the USAAC , but it was not approved or published . Saville 's proposed defense involved rigorous round @-@ the @-@ clock coordination between ground observers , radar installations , and centralized command posts to filter reports to defense forces consisting of anti @-@ aircraft artillery batteries , barrage balloons , and fighter wings . Unusually , Saville proposed that fighter wings involved in air defense be

completely separate from fighter wings making attacks on enemy air forces .

= = World War II = =

After the attack on Pearl Harbor , Saville was assigned to United States Army Air Forces (USAAF) headquarters in Washington as director of the country 's air defenses , which he considered inadequate . Because of the greatly increased civilian interest in air defense , much of Saville 's unpublished air defense doctrine was copied into the War Department 's Training Circulars No. 70 and 71 , published nine and eleven days after Pearl Harbor , respectively . These training materials emphasized regional command and control of air defenses . Fighter group commanders were to direct the efforts of anti @-@ aircraft artillery officers ? one of Saville 's suggestions that had been a sticking point , resisted by artillerists . Before these plans were implemented , British radar pioneer Robert Watson @-@ Watt surveyed West Coast defenses and found them " dangerously unsatisfactory " , a confirmation of Saville 's assessment . Saville found Watson @-@ Watt 's report " a damning indictment of our whole warning service . "

Saville was made lieutenant colonel on January 5 , 1942 . In tackling the problem of air defense of the Panama Canal Zone , he brought together civilian mathematicians and military defense experts to organize the first operations research group in the Air Corps , following two such groups formed by the Navy . Saville was promoted to brigadier general on November 2 .

Once it was clear that U.S. territory was not in danger of being attacked by enemy air units , Saville 's expertise in air defense was not needed . In March 1943 , he was made director of tactical development at the Army Air Forces School of Applied Tactics (AAFSAT) at Orlando , Florida , where he reorganized the Army Air Forces Board by July 2 , 1943 . Saville 's structure put tactical and strategic development on equal footing , and tied together the efforts of the Chief of Air Staff for Operations , Commitments , and Requirements (OC & R) , the Proving Ground Command and the School of Applied Tactics . Saville charged the AAFSAT with developing air defense doctrines and tactics , and with the testing of air defense equipment and methods .

Later that month he was ordered to the North African theater , where he served as chief of staff of the Mediterranean Air Command . Under Carl Andrew Spaatz , Saville argued against the plans for Operation Tidal Wave in August , the air attack on oil refineries in Ploie?ti . After the operation resulted in heavy American casualties with little effect on oil production , Saville described it as a " goddamned thing ... ridiculous and suicidal . "

In October 1943 , he was appointed commander of the XII Fighter Command (XXII Tactical Air Command) , and in January 1944 was named deputy commander of the XII Air Support Command (XII Tactical Air Command) in the Mediterranean . There , Saville achieved close coordination between air power and the infantry . Tactics used by Saville were employed again during the Normandy Invasion , with fighter aircraft clearing enemy units from roads behind the front lines . He took part in Operation Strangle , the effort to deny roads and rail to German supply columns . In this , Saville was critical of the inaccuracy of high @-@ altitude bombing ; he wrote privately to a friend in April , " Our waste of effort in trying to hit railroad tracks and bridges is simply fantastic . " Saville was promoted to major general on June 30 , 1944 , distinguishing himself during Operation Dragoon , the invasion of Southern France . He assumed command of the First Tactical Air Force in January 1945 .

The following month , Saville returned to the United States for temporary assignment to USAAF headquarters , and in March 1945 became commander of the III Tactical Air Command at Barksdale Field . Two months later , he was appointed deputy commander of Air Transport Command at Washington .

= = Cold War = =

In January 1947 , Saville was sent to Brazil to serve as chief of the Air Section of the Joint Brazil ? United States Military Commission , stationed at the American Embassy at Rio de Janeiro . Saville took his family with him to Brazil ; he enrolled his daughter in the American School of Rio de Janeiro

, where she graduated high school in June . During this time the USAAF reformed as an independent service branch ; United States Air Force (USAF) .

In May 1948 , Muir S. Fairchild was made vice chief of staff of the USAF . In light of the developing Cold War and the threat of Soviet long @-@ range bombers , Fairchild determined that Saville 's expertise was critically needed . Fairchild ordered Saville , the top U.S. authority on air defense and a scientifically minded pragmatist , to return stateside in June 1948 , for assignment to the ADC headquarters at Mitchel Air Force Base .

Saville evaluated the ambitious Radar Fence Plan of Major General Francis L. Ankenbrandt , which had recently failed in Congress because it was too expensive in manpower and material , and would take too long to put in place . Fairchild and Saville determined to devise a more practical radar defense plan , one that would bypass the slow approval methods previously established . In pushing his plan to fruition , Saville angered other officers who expected to have a say in air defense ; he said , " I wasn 't going to stand in line and wait . " He first focused on a foundation of radar systems , and concluded that the U.S. should spend $ 116 million in 1949 and 1950 , to build 75 radar sites and 20 control centers in the continental U.S. , with 10 more radar sites facing the Soviet Union from the Territory of Alaska , controlled through a territorial center . The radar sites would primarily be composed of older World War II @-@ era microwave units , but these would be augmented by a few advanced radar units , carefully positioned . Dubbed the " Lashup " plan (from " lash @-@ up " , meaning " hastily improvised ") , it was about 20 % of the cost of Ankenbrandt 's Radar Fence Plan , and it was more flexible in terms of future expansion .

In September , Saville told Secretary of Defense James Forrestal , Secretary of the Air Force Stuart Symington , and the assembled Air Force staff that America 's air defenses were wholly inadequate . The Chiefs of Staff agreed that air defense was second in importance only to a strong retaliation force , one that would give pause to an aggressor . In November , Saville was named commanding general of ADC . He worked to combine it with Tactical Air Command (TAC) to form the backbone of the Continental Air Command (CONAC) organization . In February 1949 , Saville updated the House Armed Services Committee on the necessity of radar air defense , and in March the Lashup plan was approved by Congress .

Earlier , in mid @-@ 1948 , Saville asked Colonel Bruce K. Holloway to evaluate existing fighter aircraft defense capabilities . Holloway teamed with Major General William E. Kepner , commander of the Air Proving Ground at Eglin Air Force Base , to measure interceptor performance under realistic conditions . Tests showed that the Northrop P @-@ 61 Black Widow , the Lockheed P @-@ 80 Shooting Star and the North American F @-@ 82 Twin Mustang , then in service , were completely inadequate to stop high @-@ altitude bomber attacks at night or in bad weather . Fairchild learned of this failure and formed a team to evaluate two prototype interceptors , the Northrop XP @-@ 89 Scorpion and the Curtiss @-@ Wright XP @-@ 87 Blackhawk , in October 1948 . As a member of the team , Holloway was disappointed with the performance of the prototypes , and he recommended that both aircraft be refused for air defense . Fairchild canceled the Curtiss machine but the Northrop , the " best of a poor lot " , was pushed into immediate service . Holloway and Saville agreed that America needed a fighter that could take off under " zero @-@ zero " conditions of no visibility , and they felt that such a design should be in production by 1954 , when the Soviets were expected to have fleets of bombers . Until then , an interim solution was sought . In a May 1949 meeting of the USAF Senior Officers Board , Saville recommended that the North American F @-@ 86 Sabre be procured in quantity , as it was in his opinion the best available American all @-@ weather fighter for air defense . The government quickly ordered 124 F @-@ 86Ds , as a start .

In April 1949 , General Ennis Whitehead was put in charge of CONAC . He devised his own command methods rather than those established by Saville , making Saville redundant in his role as air defense chief . In support of Saville , Colonel Jacob E. Smart , assistant to USAF Commander Henry H. Arnold , wrote that Saville 's unorthodox methods since the end of World War II provided " the only tangible results toward building an air defense system " of any worth . Smart said that Saville , though a " thorn in the side to many people " , should be credited for all recent air defense progress in the U.S. Saville was moved from air defense operations to long @-@ range planning

and research . In September 1949 , Arnold appointed Saville head of the newly established Directorate of Requirements in the Office of the Deputy Chief of Staff for Operations at USAF headquarters . The following January , Saville became Deputy Chief of Staff for Development , Air Research and Development Command , a new staff section at USAF headquarters . To equip the U.S. with a fighter that could defend against the new threat of Soviet nuclear bombers , Saville initiated a design competition for a fire @-@ control system (FCS) codenamed MX @-@ 1179 , the basis of a guided air @-@ to @-@ air missile system simple enough that it could be operated alone by the pilot of a supersonic fighter rather than by a weapons officer . The proposed fighter concept was referred to as the 1954 interceptor , resulting directly in the 1956 Convair F @-@ 102 Delta Dagger , and several other fighter models indirectly . Saville was less concerned with the aircraft details than with the weapons system ; regarding the FCS he said , " when that system is developed , we 're going to put aluminum around it , engines on it , and a pilot to run the aluminum , and that is the interceptor . "

From a handful of company designs , Saville selected Hughes Aircraft to make the FCS . Saville worked closely with Dr. Ruben F. Mettler of Hughes , to lay out the desired strategy of the weapons system and to describe the expected fighter tactics . This weapon would eventually be developed as the AIM @-@ 4 Falcon after much urging by Saville . The Falcon was used successfully for more than a decade , beginning in 1956 . Designing an aircraft around a weapons system was something Saville had witnessed in the development of Bell 's P @-@ 39 Airacobra around a large autocannon , but he further refined the concept and made it a requirement for government contractors , a practice that is continued to this day . Saville put an end to specific design goals in aircraft requests for proposal (RFPs) ; instead , he briefed potential designers on general requirements and discussed with them the defense problems the aircraft was to solve .

In early 1950 , Saville served on the Guided Missiles Interdepartmental Operational Requirements Group (GMIORG) , a military and civilian committee tasked with the coordination of research on guided missiles , as well as the development of tactics and overall strategy . In his role as USAF Deputy Chief of Staff for Development , Saville helped direct missile work , but soon replaced himself on the GMIORG with Major General Robert M. Lee , commander of TAC . Saville was more interested in air @-@ to @-@ air guided missiles than in ground @-@ based ballistic missiles , which became the focus of the committee .

Saville and Fairchild went to Congress in 1950 , and obtained $ 114 million for the development of an electronic computer @-@ based air defense system , a project headed by George E. Valley Jr , who was a physicist at Massachusetts Institute of Technology (MIT) . The computer , named Whirlwind , helped the USAF develop the Semi Automatic Ground Environment (SAGE) air defense system .

In March 1950 , Fairchild died . Fairchild had been Saville 's champion in the USAF , and Saville had used Fairchild 's influence as a shield to " get things done " , according to Smart . In the process , Saville had made enough enemies in the Air Staff that he realized Fairchild 's absence would greatly limit his career advancement . He began planning his retirement , finishing ongoing projects , and first selecting then grooming his replacement : Brigadier General Laurence C. Craigie . In June 1950 , Saville gave a lecture on air defense at the Air War College , Maxwell AFB , Alabama , telling the students that the optimal air defense system as he envisaged might be able to destroy 60 % of an attacking bomber force , but that realistic results would be closer to 30 % reduction . He emphasized the need for better intelligence regarding Soviet offensive airpower capabilities , to increase the accuracy of air defense predictions .

In late 1950 , USAF Chief Scientist Louis Ridenour initiated Project Charles at MIT to study problems of air defense . The study determined that Valley 's methods were the best option . In May 1951 , the project was reformed as Project Lincoln to investigate unusual reconnaissance methods ; this group met at Beacon Hill , Boston , and became known as the Beacon Hill Study Group . Saville expanded the group by naming 15 men to the project , all experts in their fields , including Edwin H. Land , James Gilbert Baker , Edward Mills Purcell , Richard Scott Perkin and USAF Colonel Richard S. Leghorn . The project led to the establishment of Lincoln Laboratory , a research and development project of the Defense Department .

= = Civilian career = =

In the Army , Navy , Air Force Journal , Saville announced the engagement of his daughter Ina Gordon Saville to James R. Pitts , a cadet at West Point . Ina graduated from the College of William and Mary in 1951 , with a degree in English , then married Pitts on June 17 . In July 1951 , Saville retired from the USAF .

Saville was invited to join a November 1952 experimental commercial flight from Los Angeles to Copenhagen , flying to Denmark in a Scandinavian Airlines System (SAS) DC @-@ 6B named Arild Viking , stopping first in Edmonton , Canada , then at the newly operational Thule Air Force Base in Greenland , which Saville had previously approved for major construction . The 28 @-@ hour , 5 @,@ 940 @-@ mile (9 @,@ 560 km) flight plan pioneered a polar route for SAS . Saville accompanied Colonel Bernt Balchen , the Norwegian @-@ born commander of Thule AFB .

In 1953 , Saville wrote a feature for Air Force Magazine , describing a strong air defense as one of the essential elements for preventing wars . He said " only a fool would run into a hornet 's nest of opposition . " However , he emphasized that a perfect air defense could never succeed in preventing an attack by itself , only in blunting it . A powerful counterattack force was required .

In December 1954 , Saville celebrated the marriage of his airman son Edward to Lettice Lee von Selzam , a debutante from Wisconsin . Saville 's younger son John served as best man . Edward was a lieutenant in the USAF , and among the eight ushers were five other USAF lieutenants .

Saville was hired in November 1954 , to work for Ramo @-@ Wooldridge , a company that formed from the FCS team at Hughes . Saville was made Director of Military Requirements , a new position tailored to his unique background . In this liaison role , Saville met regularly with military leaders to ensure that Ramo @-@ Wooldridge projects answered America 's defense needs . When Thompson Products merged with Ramo @-@ Woodridge to form TRW , Saville became vice president of the new company . Saville retired in 1963 , and became a consultant to TRW and to other government agencies . In the mid @-@ 1960s Saville invested in cattle ranches , embarking upon what he called a " third career " as a cattle rancher . He was invited to participate in a panel discussion at the annual Conference on World Affairs in 1966 .

= = Death and legacy = =

Saville died on January 31 , 1984 . His ashes are interred at Arlington National Cemetery . His wife , Ina Hards Saville , died in 1995 , and her ashes joined Saville 's .

In his career , Saville was awarded the Distinguished Service Medal with oak leaf cluster , the Legion of Merit , the Distinguished Flying Cross , the Bronze Star Medal and the Air Medal . He was rated a Command Pilot , Combat Observer , Aircraft Observer and Technical Observer .

Saville 's daughter Ina bore four daughters in the 1950s , and died in 2005 . Saville 's son Edward produced two sons and a daughter . He retired from the USAF at the rank of Lieutenant Colonel and lives in Beaufort , South Carolina ; his wife " Letty " died in 2000 .