DOWNLOAD PDF REFLECTIONS FROM A FLYING FALCON

Chapter 1 : Ahmad H. Sakr | LibraryThing

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Every successful company has to start somewhere, but the remarkable thing about Pacific Aero Productsâ€"today known as Boeingâ€"is that it went on to design and build some of the most influential airplanes in the world. And it accomplished that in more different categories of aircraft than did any other company in the history of aviation. That pioneered the pressurized airliner. That designed and built almost half of all the heavy bombers the U. That invented the high-speed jet bomber and the jumbo jet, and created the mold that to this day shapes jet airliners. Yes, there were stumbles along the way, some of which threatened to sink the company. That first floatplane was a clean-looking airplane for its time, and it grew into a small family of single-engine seabirds. William Boeing right and pilot Eddie Hubbard stand before the Boeing C in which they flew the first international airmail run, miles from Vancouver, Canada, to Seattle, Wash. It was the biggest single postwar aircraft contract up to that time. Boeing outbid everybody, including Thomas-Morse itself, which was so confident of winning that the company had already set up the jigs for the project. The contract saved Boeing from becoming a small furniture-manufacturing firm, a fate that company executives had already begun to explore. An earlys deal to rebuild Army de Havilland DH-4s introduced Boeing to the intricacies of steel-tube fuselage construction. Army officials had examined a steel-tubed Fokker D. In Boeing introduced its Model 15 biplane. The FB-2 had a Boeing innovation that survives to this day: Boeing also went to school on the Fokker D. VII, which lent some of its key features, particularly the steel-tube fuselage, to the Model The new fighter also pioneered a concept that became part of every liquid-cooled American design thereafter: The Curtiss P-6 Hawk, handsome though it was in its falcon-taloned paint scheme, could hardly compete; Boeing built eight times as many fightersâ€"nearly â€"as did Curtiss. The P was light, simple and cheap but slow and possessed little firepowerâ€"typically two rifle-gauge guns firing through the prop disc, earning the airplane its nickname. Meanwhile, Boeing was also pursuing a quite different goal during the fighter years: Mail, not passengers, was where the government contracts were, but Bill Boeing foresaw that if you could make a good mailplane, you could design it to piggyback pax as well. The 40 was succeeded by the Model 80, a conventional trimotor biplane that carried 12 passengers in unconventionalâ€"for the timeâ€"comfort: By this time, Boeing had formed its own airlineâ€"Boeing Air Transport, which soon became United Air Linesâ€"to utilize the new passenger plane, and the Model 80 would make history as the first airliner to carry stewardesses. The did contribute one small but important development: Early s had draggy reverse-slant windscreens, intended to eliminate confusing reflections from lighted cockpit instruments. Unfortunately, those beetle-browed windshields instead reflected ground lights, so Boeing went with a conventional windscreen on later s and eliminated instrument reflections by creating the glareshieldâ€"that overhanging, rooflike panel today found on everything from Cessna s to Boeing s. It was the first proven case of air sabotage. Furious that the government had accused him of monopolistic practices, Boeing resigned from the company he had formed. He became a thoroughbred horse breeder and established several upscale, strictly segregated housing developments in the Seattle area. Boeing was seen only once thereafter at an aviation eventâ€"the May Seattle rollout of the famous Dash 80 progenitor. The B was by far the largest and heaviest aircraft to be built in the U. The B had been designed to mount 2,hp liquid-cooled Allison V Wsâ€"essentially two Allison V Vs on a common crankshaft. That over-hyped engine never achieved mass production, so only one XB was built. Boeing would become famous for its wings, which aeronautical engineers properly think of as the most elegant part of any airframe. Despite having no flying boat experience beyond a single tandem-engine patrol biplane that it tried unsuccessfully to sell to the Navy the Model 50, one of the first aircraft to use the then-new Clark Y airfoil , the company set out to design and build what at the time was the largest seaplane on the planet. The Model had one unusual feature that Boeing copped from the German seaplane specialist Dornier. Rather than relying on draggy or complex retractable wingtip floats to keep the airplane upright on the water, Boeing equipped the Clipper with sponsonsâ€"a set of small, thick, wing-like

projections at the waterline that served as stabilizers, long-range fuel tanks and convenient boarding ramps, and that probably provided a bit of lift, since they were airfoil-shaped. Dornier had patented flying boat sponsons, but Boeing locked in its own design patent for the Until the Bâ€"the Model in Boeing factory parlanceâ€"was laid out, bombers were twin-engined. Air Corps officials actually believed at the time that the B was too large and complex an airplane for service pilots to fly, and many procurement officers urged that simpler and less expensive twin-engine bombers be bought instead. The B went through several not-ready-for-prime-time variants until the BEâ€"the first version with the classic dorsal-fin vertical tail plus top and bottom power turrets and a tail-gunner positionâ€"found its footing, and the chin-turreted BG became the gold standard. But the B marked the border between the old Boeing and the new. The sturdy old Fort contained elements of Boeing airplanes extending as far back as the Model airliner, and it certainly was a scaled-down XB that shared characteristics with the Clippers. It was a mids design, with s technology and manufacturing techniques. It was the door through which Boeing stepped into the future of commercial flight. Boeing built the B around a particularly elegant, high-aspect-ratio wing with high loadingâ€"69 pounds per square foot. That wing weight relied on enormous single-slotted Fowler flaps for reasonable approach and landing speeds, and even more sophisticated high-lift devices would become a characteristic of Boeing jetliners decades later. The heart of the B wing was an airfoil that the company had developed for a very-long-range maritime patrol bomber, the PBB Sea Ranger. The Model airfoil was said by some to be the fastest of its time. Only one XPBB-1 was ever built, in part because Boeing needed the new factory that had been intended for the Sea Ranger so that it could turn out Bs. After a pair of Bs helped put an end to the Pacific War, further Superfort production was canceled. The best thing the B ever did is begat the double-bubble C cargo plane, which quickly begat the KC tanker and then the two-deck Stratocruiser airliner. The KC refined that process. Boeing believed that it could be a player in what many think of as the golden age of airlinersâ€"the last of the piston-engine giantsâ€"by converting the Model C into the Model Stratocruiser. Everyone could see that jets were the next step, and Boeing had begun work on what would become the Model B Stratojet well before the end of WWII. Initially, the B was to be a scaled-down B with four jet engines. Schairer immediately cabled Seattle: Its jet engines were buried within the wings, but the Air Force objected to the potential for catastrophic failure if an engine exploded. Schairer came up with the now-ubiquitous concept of podded engines slung on underwing pylons, but if the idea was his, the impetus came from the military. The B, here making a rocket-assisted takeoff, was quickly eclipsed by the bigger B Air Force The B and B were developed largely simultaneously, though it is often assumed that their similar shapes meant the B medium bomber led directly to the B heavy bomber. Air-to-air photos abound of Bsâ€"and even Bsâ€"struggling to refuel, gear and flaps down, while a ponderous KC points its nose downhill to build airspeed. What was needed was a jet tanker. That, in fact, is what also gave us the It was a demonstrator rather than a true prototype. The Dash 80 had few windows, no seats and two big cargo doors. The Air Force got the KC tanker out of the deal, but what really changed the world was the first productive, profitable, long-range, high-performance, jet-propelled airliner. In reality the production and KC are two entirely different airplanes, though the design streams that created them moved in parallel. Which one was the chicken and which the egg is arguable. Boeing had by that time become the last man standing in the U. Neither company would ever make another airliner. Douglas was acquired by McDonnell and then Boeing, and Lockheed teamed with Martin Marietta to concentrate on military contracts. There are two mega-generations of Boeing airliners. One is bookended by the and the â€"aircraft that trace their roots to bomber technology first used on the B, including materials, manufacturing methods, systems and aerodynamic concepts. Few are aware of it, since the characteristic fuselage crease is largely faired over, but all Boeing airliners except the circular Triple-Seven have double-bubble fuselages that harken back to the Model C When Boeing lost the heavy-lifter competition, it took the Pratt engine and designed an all-new airliner around itâ€"the Some say the importance of the heavy-lifter competition was not that it created the troublesome and expensive C-5 but that it led to the engine that turned the jumbo jet into mass transit. The first is rolled out of the Boeing plant on September 30, The company thought the future of passenger travel lay with supersonic transports, and it was already hard at work on its own SST, the soon-to-be-canceled So Boeing designed the as a freighter that

would carry passengers for a few years and then segue to life as a cargo carrier, which is why the jumbo jet has its cockpit awkwardly sited atop the fuselage rather than in the nose. The company has always been good at coming up with endless derivatives of its existing fleet, with nearly 80 versions of its older-generation jets offered at one point. Some have criticized Boeing for its reluctance to pursue all-new designs, and it has sometimes put the company second to its European challenger Airbus. The Dreamliner, however, has helped to restore Boeing to its number-one position. Built around perhaps the most advanced wing yet to fly, the is a remarkable study in the benefits of the global economy. Perhaps the biggest question now is: What does Boeing have in store for the next years? And what will they call the airplane that follows the ? Contributing editor Stephan Wilkinson recommends for further reading: This feature first appeared in the September issue of Aviation History Magazine.

Chapter 2 : Pulse-Doppler radar - Wikipedia

Po Code Toyota Camry Western Digital Wd10eacs Storage Owners Manual Reflections From A Flying Falcon Color Crazy Millefiori Kaleidoscope Designs.

Infrared countermeasure An exhaust plume contributes a significant infrared signature. One means to reduce IR signature is to have a non-circular tail pipe a slit shape to minimize the exhaust cross sectional area and maximize the mixing of hot exhaust with cool ambient air see Lockheed F Nighthawk. According to the Stefanâ€"Boltzmann law , this results in less energy Thermal radiation in infrared spectrum being released and thus reduces the heat signature. Sometimes, the jet exhaust is vented above the wing surface to shield it from observers below, as in the Lockheed F Nighthawk , and the unstealthy Fairchild Republic A Thunderbolt II. To achieve infrared stealth , the exhaust gas is cooled to the temperatures where the brightest wavelengths it radiates are absorbed by atmospheric carbon dioxide and water vapor , dramatically reducing the infrared visibility of the exhaust plume. Radio wave In addition to reducing infrared and acoustic emissions, a stealth vehicle must avoid radiating any other detectable energy, such as from onboard radars, communications systems, or RF leakage from electronics enclosures. The F uses passive infrared and low light level television sensor systems to aim its weapons and the F Raptor has an advanced LPI radar which can illuminate enemy aircraft without triggering a radar warning receiver response. This does not equal geometric area. A perfectly conducting sphere of projected cross sectional area 1 m2 i. Note that for radar wavelengths much less than the diameter of the sphere, RCS is independent of frequency. Modern stealth aircraft are said to have an RCS comparable with small birds or large insects, [51] though this varies widely depending on aircraft and radar. Rather, by reflecting much of the radiation away or by absorbing it, the target achieves a smaller radar cross section. Enemy radar will cover the airspace around these sites with overlapping coverage, making undetected entry by conventional aircraft nearly impossible. Stealthy aircraft can also be detected, but only at short ranges around the radars; for a stealthy aircraft there are substantial gaps in the radar coverage. Thus a stealthy aircraft flying an appropriate route can remain undetected by radar. Many ground-based radars exploit Doppler filter to improve sensitivity to objects having a radial velocity component with respect to the radar. Mission planners use their knowledge of enemy radar locations and the RCS pattern of the aircraft to design a flight path that minimizes radial speed while presenting the lowest-RCS aspects of the aircraft to the threat radar. Airborne or mobile radar systems such as AWACS can complicate tactical strategy for stealth operation. Research[edit] After the invention of metasurfaces, the conventional techniques of reducing RCS have significantly been improved. However, it compromises the performance in terms of aerodynamics. Similarly, Negative index metamaterials are artificial structures for which refractive index has a negative value for some frequency range, such as in microwave, infrared, or possibly optical. Plasma stealth is a phenomenon proposed to use ionized gas plasma to reduce RCS of vehicles. Interactions between electromagnetic radiation and ionized gas have been studied extensively for many purposes, including concealing vehicles from radar. Various methods might form a layer or cloud of plasma around a vehicle to deflect or absorb radar, from simpler electrostatic to RF more complex laser discharges, but these may be difficult in practice. Two promising approaches are flexible wings, and fluidics. In flexible wings, much or all of a wing surface can change shape in flight to deflect air flow. Adaptive compliant wings are a military and commercial effort. In fluidics , fluid injection is being researched for use in aircraft to control direction, in two ways: In both, larger more complex mechanical parts are replaced by smaller, simpler fluidic systems, in which larger forces in fluids are diverted by smaller jets or flows of fluid intermittently, to change the direction of vehicles. In circulation control, near the trailing edges of wings, aircraft flight control systems are replaced by slots which emit fluid flows. FAA has conducted a study about civilizing 3D military thrust vectoring to help jetliners avoid crashes.

Chapter 3 : The famous article of LIFE Magazine, 7 April - There is a Case for Interplanetary Saucers

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The cover of this issue was an irresistible combination of sultry sex and saucers. It shows a dreamy Marilyn Monroe with her eyes half open and her luxuriously loose dress slid well down below her shoulders. For those who could remove their eyes from her provocative appearance there was, in the upper right hand corner of the cover, a statement which must have come as a shock to many people: There is a case for interplanetary saucers The American magazine LIFE is well known and serious and does not publish anything without great care. The article below made quite a fuss at the time of its publication in when the public interest for the "flying saucers" had strongly decreased, and before the flying saucers were again a hot topic for the media when they flew over Washington on several occasions at the end of the year. In addition to the fact that LIFE concludes frankly that the flying saucers are extraterrestrial crafts, the article indicates the remarkable and astonishing fact that US Air Force found nothing there to argue with, on the contrary, they actively collaborated and maybe even prompted the article. This is something that will never happen anymore in the future: For four years the U. Generally the tales have provoked only chills or titters, only rarely, reflection or analysis. Last week the U. As a result of continuing flying saucer reports the Air Force maintains constant intelligence investigation and study of unidentified aerial objects. A policy of positive action has been adopted to find out, as soon as possible, what is responsible for observations that have been made. As a part of this study, military aircraft are alerted to attempt interception, and radar and photographic equipment will be used in an attempt to obtain factual data. If opportunity offers, attempts will be made to recover such unidentified objects. Already all operational units of the Air Force have been alerted to report in detail any sightings of unidentified aerial objects. Other groups â€" scientists, private and commercial pilots, weather observers â€" all trained observers whose work in any way concerns the sky, and what happens in it, are urged to make immediate reports to Air Technical Intelligence Center at Wright-Patterson AFB, Dayton, Ohio of any unidentified aerial objects they sight. All reports will be given expert consideration and those of special interest will be thoroughly investigated. The identity of those making such reports will be kept in confidence; no one will be ridiculed for making one. There is no reason as yet to believe that any of the aerial phenomena commonly described as flying saucers are caused by a foreign power or constitute a clear and present danger to the U. This review has resulted from more than a year of sifting and weighting all reports of unexplained aerial phenomena - from the so-called flying saucers to the mysterious green fireballs so often sighted in the Southwest. For the first time the Air Force [while in no way identifying itself with any particular conclusions] has opened its files for study. Out of this exhaustive inquiry these propositions seem firmly shaped by the evidence: Let us first review some widely known facts: The shapes and inscrutable portents of the flying disks first broke upon the skies of the world in the early months of , with several sightings reported to the Air Force. The story first reached the nation on 24 June , when a private pilot named Kenneth Arnold was flying from Chehalis to Yakima, Wash. Some 25 miles away, Arnold saw nine "saucer like things They swerved in and out of the high peaks at a speed Arnold estimated to be 1, mph. Arnold told the whole story to his hometown newspaper, and like summer lightning it flashed across the country. Within a month, saucers had been reported by people in 40 states. For the public [as LIFE itself merrily reported in its issue of 21 July] the saucers provided the biggest game of hey-diddle-diddle in history. Any man, woman, or child with talent enough to see spots before his eyes could get his name in the newspaper. Nevertheless in serious moments most people were a little worried by all the "chromium hubcaps," "flying washtubs" and "whirling doughnuts" in the sky. Buried in the heap of hysterical reports were some sobering cases. Mantell on 7 January That afternoon Mantell and two other F fighter pilots sighted an object that looked like "an ice-cream cone topped with red" over Godman Air Force Base and Fort Knox, Ky. Mantell followed the strange object up to 20, feet and disappeared. Later in the day his body was found in a nearby field, the wreckage of his plane scattered for a half mile around. It now seems possible that Mantell was one of the very few sighters who actually were deceived by a Skyhook balloon, but the incident is still listed as unsolved by the Air Force files. There was no such easy explanation for the

strange phenomenon observed at 2: Chiles and Copilot John B. Whitted were flying in bright moonlight near Montgomery, Ala. They subsequently agreed that it was a "wingless aircraft, feet long, cigar-shaped and about twice the diameter of a B, with no protruding surfaces, and two rows of windows From the sides of the craft came an intense, fairly dark blue glow They said the weird craft "pulled up with tremendous burst of flame from the rear and zoomed into the clouds at about miles an hour," rocking their DC-3 with its "prop or jet wash". Just as inexplicable was the experience of Lieut. On 1 October Gorman was coming in at dusk to land his F at Fargo, when he saw an intense, bright light pass 1, yards away. Curious, Gorman followed the light and saw that it seemed to be attached to nothing. For 27 hair-raising minutes Gorman pursued the light through a series of intricate manoeuvres. He said it was about 6 inches in diameter and going faster than his F [mph]. It made no sound and left no exhaust trail. After Gorman landed, the light having suddenly flashed away in the upper air, he found support for his story - the chief of the control tower had followed the fantastic "combat" with binoculars. The occurrences, jarring though they must have been to the participants, left the official calm of the Air Force unruffled. On 27 December , after two years of operation, Project Saucer wrote off all reports of unidentified aerial phenomena as hoaxes, hallucinations or misinterpretations of familiar objects - that is, all but These stubborn 34, seemingly unexplainable, were briskly dismissed as psychological aberrations. While these assurances appeased most of the press and pacified the public, some elements in the Air Force just about this time began to worry a bit more seriously. Saucer reports continued to come in a rate of about one a day and were handled under the code name of "Project Grudge". Officers at policy level began to show concern. There was good reason to be serious. As review of all records has shown, these years have produced literally dozens of incidents defying simple explanation - and provoking the most incredible questions. The answer â€” if any answer at this time is possible â€” lies in the field of logic rather than of evidence. What the things are may be adduced partially by reviewing what they are not. Although the Air Force cheerily wrote off its 34 unexplained incidents with this pat theory, the explanation does not hold up. There is no evidence, beyond textbook speculation, for such a supposition, and there is the direct evidence already cited against it. To doubt the observers is to doubt the ability of every human being to know a hawk from a handsaw. LIFE investigated this possibility to exhaustion. Not fully satisfied by the public denials of President Truman, Secretary Johnson and others, the investigators put the question directly to Gordon Dean, chairman of the Atomic Energy Commission. Still unconvinced, LIFE checked the whereabouts and present business of every scientist who might have anything to do with the development of superaircraft. All were accounted for in other ways. Careful feelers through the business and labor world encountered no submerged projects of the immensity necessary to build a fleet of flying disks. And there is still the conclusive fact: It is inconceivable that the Russians would risk the loss of such a precious military weapon by flying a saucer over enemy territory. No man-made machine is foolproof; sooner or later one would crash in the U. Nor are they aberrations of the northern lights. Magnetic disturbances cannot account for them and neither can a notion recently fathered by Dr. Urner Liddel, the Navy physicist that they are "vertical mirages" â€” reflections from a vertical instead of a horizontal layer of heated air. This was the original Liddel explanation, and in a few instances it may have been correct. They could scarcely be "fireflies in the cockpit," as one Air Force colonel suggested, since most of the observers were not in a cockpit when they saw their saucers. And it is hard to believe that saucers could be the reflections of automobile headlights on clouds, when they are seen in daylight under cloudless skies. These being the dead-end alleys of negative evidence, is there hope of an explanation on the open avenues of scientific theory? The answer is yes. The rank of science has taken the saucers far more seriously than the file of laymen and, after five years of close watch on all reports, a number of scientists were ready with some conclusions. One of these was Dr. Walther Riedel, once chief designer and research director at the German rocket center in Peenemunde, now engaged on secret work for the U. Riedel has never seen a saucer himself, but for several years he has kept records of saucer sightings all over the world. Riedel has four points to his argument: The skin friction of the missile at those speeds at those altitudes would melt any metals or nonmetals available. In some descriptions the beast spirals straight up. If you think of the fact that the centrifugal force in a few minutes of such a maneuver would press the crew against the outside, and do likewise to the blood, you see what I mean. There are many occurrences where they have done

things that only a pilot could perform but that no human pilot could stand. Most observers report units without visible flame If it would be any known type of jet, rocket, piston engine, or chain-reaction motor, there would be a very clear trail at high altitude. It is from no power unit we know of Biot, one of the leading aerodynamicists in the U. From an aerodynamical viewpoint, says Dr. Biot, the saucer shape makes very little sense if the machine is to travel in the atmosphere. A disk has a high drag and is a poor airfoil unless stabilized; when whirled at high speed through the air, it "wobbles" distressingly â€” a movement observed in several of the saucers sighted. However, for space travel, where there is no atmosphere to oppose, the disk has significant advantages. The sphere, theoretically better, presents several difficult problems of construction and utilization.

Chapter 4 : Books by Ahmad H. Sakr (Author of Life, death and the life after)

Reflections From A Flying Falcon Ahmad H. Sakr S $ Selected Speeches & Writings of Maulana Maududi-1 tr A. Zakir Aijaz S $

Started when scout planes, the only type used before the Great War in a combat role, would bring pistols or small rifles in case they met an enemy scout. Then some pilots started fitting light machine guns to their planes, and it escalated from there. From World War 2 onwards, for guns and cannons to be effective against enemy aircraft, bombers in particular, they needed to be either very large calibre like. This lead to the revival of rotary cannons as the fire rate to damage, or to even hit, an enemy increased dramatically. Analysis after the war showed that somewhere between 20mm and 30mm seemed to be optimum in this role, especially if they contemplated using them against large bomber aircraft that could take a lot of damage and keep flying. The Eastern Bloc went mainly with 23mm, then since around , mostly 30mm autocannon of various designs. At one point the US military specifically, Secretary of Defense Robert McNamara deemed guns outdated and built a series of jet interceptors F-4 Phantoms armed with only missiles, using AIM-9 Sidewinder and AIM-7 Sparrow guided missiles as their primary air-to-air armament, based largely on promises from the contractors that the then-new radar-guided air-to-air missiles under development would display unprecedented lethality and utility. It should be noted though, that with updated rules of engagement and improvements in missile guidance systems, no fighter based gun pod has ever been fired. Thus potentially validating the idea of their obsolescence Advertisement: One of the most impressive of these is the Genie, a tactical nuclear rocket designed for shooting down bomber squadrons, though it is uncertain whether Soviet bombers approaching US airspace would have obliged by flying in conveniently vulnerable tight formations. S interceptor aircraft designed in the s carried launchers for large numbers of unguided 70mm rockets of a type normally used for air-to-ground use, instead of gun armament, on the theory that shooting down large Soviet jet bombers required more punch than even electric Gatling autocannon could provide. Fortunately this was never put to empirical test. Unguided rockets were much more common in World War II, and were a favored choice for ground-attack and close-support missions in the US and UK air arms, as an aircraft that might only be able to carry a single pound bomb could have racks under the wings for six or eight rockets. Rockets also caused less danger to friendly troops on the ground as their warheads were relatively small and so had smaller bursting radii. Infra-red guided missiles Fox Two! Before being launched, you need to have a lock on a target, indicated by a visual display and the characteristic tone Beeeeeeeeeeeeeeeeeeeeeeeeeepppppppppppppppppppp! Once detected, the defending aircraft can drop flares and try to trick the missile into tracking those instead. The success rate depends on the technology level of the missile with early models being fairly easy to spoof , but any defense requires that the defender be aware of the missile in the first place. They are standard on all fighters today and many a strike aircraft. They come in five Technology Levels: Tail-chasing Can only be fired from a narrow 30 degree area behind the target. This is fairly hard to do and requires a firing solution very similar to that of a firing solution for gun armament, though with the advantage of greater range. The earliest versions were created just after the Second World War and their circuitry was all vacuum tubes, no transistors. Their use in combat had mixed results at best. Rear-aspect These can be launched from a larger angle, but you still need to be behind the target. Tend to be smarter and more agile than earlier versions. This is a good place to note also that the Soviets in many instances designed air-to-air missiles with a certain "chassis" of solid rocket fuel engine, fuselage, and warhead, and then manufactured both a heatseeker and a radar-guided version, to offer their pilots greater tactical flexibility; typical loadouts might be two IR-homing plus two radar-homing. Off-boresight The problem with the older missiles is that you need to be pointing your nose at a reluctant target. With these, coupled with a Helmet-Mounted Sight , you just need to look at a target up to 60 degrees or so off your centre-line and fire. Imaging infra-red Can see "images" rather than single points of heat and can go for the more vulnerable targets rather than the exhaust. Considerably "smarter" than earlier designs, they are at least theoretically much less vulnerable to countermeasures like flares. Is also a high off-boresight missile, with a

full 90 degree search cone. The French Mica-IR, designed for the naval version of the Rafale jet, is reported by some sources to have this capability The Israeli designed Python-5 allows the Pilot to designate an point of impact or greatest fragmentation impact on the target aircraft, including the cockpit. Radar Guided Missiles "Fox One! Although longer range typically beyond visual range, or "BVR" , they have the disadvantage that any pilot equipped with a functional Radar Warning Receiver RWR will almost always know some combination of the following details: Radar-based missiles are defended against using chaff, a cloud of small metallic particles that creates a much stronger yet much more confusing radar return than the airplane itself. Flying laterally helps reduce returns from radars that depend on the doppler effect of the plane moving forward or away from the radar, and also requires that the missile "lead" the plane to account for the fast lateral movement. Turning hard at the end requires that the now low on fuel missile quickly cancel that lead and fly at the plane head-on, and it must do so in the very brief window before it passes behind the target plane and becomes useless. Beam-riders These missiles ride a radar-beam towards a target. This is a very unreliable system and these missiles were soon surpassed. These are mids technology. There were also tail-chasing infrared homing and semi-active radar homing versions of the AIM-4 Falcon, a small number of which were used in Vietnam. Their performance in combat was extremely unimpressive, and they were dropped from production in favor of the newer AIM-7 and AIM Semi-active radar-homing These missiles home on a radar reflections from a target aircraft that is being "painted" with the radar system of the jet fighter that launched the missile tactics were developed for one aircraft to illuminate the target while another fired the missile, but it is uncertain whether this was ever tried in actual combat, and this general category of guidance system is now obsolescent. This does of course require the firing aircraft to retain a lock on it, which is by no means easy if the target aircraft is maneuvering. This generation of radar-guided missiles was the first to have circuitry included that made them smart enough to home in on a radar jammer. These were introduced around and have been obsolescent since the advent of reliable active radar homing missiles in the mids. Note that this homing scheme is still relevant and commonly used in Surface-to-Air Missiles fired from ships and land sites. The chief disadvantage as an air-to-air guidance scheme that the attacker has to follow the target around while "painting" it with radar is not an issue for a large land installation or ship that has large radars that can look in any direction, and it allows for cheaper and simpler missiles to be used to the same effect. That in turn allows each site to have more missiles available for the same space and money. The US AIM-7 Sparrow early versions like the AIM-7D and AIM-7E used in Vietnam were mediocre performers, the late-production AIM-7M some US Air Force and US Navy fighters used in the Gulf War were much better performers, not only because the technology had improved, but also because they were no longer being used under restrictive rules of engagement requiring pilots to hold their fire until they were so close to the target that the missile could not lock on The "Aspide" manufactured in Italy is an improved copy built under license, still in service. The Soviets had a radar-guided version of the AA-2 "Atoll" using this technology. Active radar-homing "Fox Three! With some aircraft, one plane or an AWACS can light up the aircraft and guide missiles from multiple aircraft in before the missiles go active. This sort of guidance system is also very common on anti-ship missiles. The US AIM "Phoenix," developed in the early s, noteworthy for having an effective range well in excess of nautical miles, possibly the longest-range air-to-air missile ever produced. It and the F "Tomcat" jet fighter that carried it were developed concurrently. As far as can be determined, it was never used in combat by the United States. It was developed in the late s, and while it entered service just a touch too late to see action in Desert Storm, come Operation Southern Watch one year later it proved to be as lethal as the contractors had promised the AIM-7 Sparrow would be thirty years before. Smart, agile, and highly lethal, it appears to be everything they promised radar-guided air-to-air missiles would be back in the s. Russian AA "Adder," though publicly available information about it is almost entirely speculation and rumor, at least in the West; some sources describe it as comparable or superior to the AIMâ€”indeed, the Adder is sometimes nicknamed the "AMRAAM-ski". The under-development Meteor system for the Eurofighter Typhoon The French Mica-R air-to-air missile developed for the naval version of the Rafale has this technology. The Russian Vympel AA-X "Arrow" is reputed to have an operational range of up to nautical miles dependent on the shot profile. In general, directed-energy weapons are to the military what true general artificial intelligence

is to computer science: You release, the bomb falls, and hopefully it blows up what you aimed it at. The first ones of these, at least according to The Other Wiki , was from unmanned balloons sent over Venice. Then again, this was Most bombing was done by letting the ordnance drop and just free-fall down to the target. Very difficult to avoid, but also difficult to aimâ€”this is why the main methods were either to divebomb ride the bomb a slight way to the target in a dive, centering the target in the gunsight before releasing; can be very accurate, especially if the pilot waits until the last possible moment to drop the bomb and pull out of the dive, but also extremely dangerous to the pilot or to carpet bomb. The former limits it to high-performance and low payload aircraft; the latter tends to be hit and miss and miss and miss and hit and miss, which can get messy if you only have a single thing to destroy. The sheer inaccuracy of bombing with these things at night due to navigation problems only one in five bombs ended up within five miles of the target was a major factor in the British decision to area bomb German cities. The third method is the "lob-toss", which involves chucking the bomb while in a climb. This was once regarded as only really accurate enough for nuclear delivery, where it also serves the purpose of giving you more time to clear the area. The aim of these bombs are not usually to kill from the explosion though it is handy against armoured targets, or when the objective is to destroy, for instance, a vital bridge, or to make craters in the runways of an enemy air base but to kill and wound from shrapnel which can be deadly from several hundred metres away. Since some Western air forces have used "low drag bombs," a variant type of "iron bomb" that has a long, slender, pointed casing for maximum streamlining and minimum air resistance. This reduces drag on strike aircraft that are carrying them on external racks or hardpoints, permitting slightly higher speeds. They also fall faster with less air resistance once released, making them more accurate because they are less affected by wind; additionally they allow aircraft to dive-bomb accurately at shallower angles than older designs required. There are also "retarded bombs. These have some kind of parachute or balloon system built in to slow their fall, to allow the attack aircraft dropping them more time to get away; these are for very, very close, very, very low level work, for missions done at such low altitudes that the blast and shrapnel of the bomb would endanger the aircraft dropping it. They first appeared around , in the form of the "Snake Eye" system, a set of fins that could be bolted onto an existing bomb that would open up like an umbrella as it was released by the aircraft. Another variant on the "iron bomb" concept, in the sense that it is an inexpensive container of nastiness that an aircraft drops on target, lacking any particular guidance system other than the skill of the pilot, is napalm, basically gasoline or jet fuel mixed with a chemical gelling or thickening agent, put in a container with a fuzing mechanism designed to ignite it on impact as the contents splash out. Cheap, effective, and politically controversial, it was created during the Second World War and has been in very common use ever since. The FAE is deceptively simple. Imagine a half-ton canister of propane, liquified petroleum gas, or something similar. The canister will need to be modified, of course. The designs have been refined over the years but the basic concept remains the same. Instead of a solid high explosive filling, they use a mixture of flammable vapor and air, or in some newer Russian designs, small particles of highly flammable solids in air, to create the big bang boom. Smart bombs Everyone became an expert on this from coverage of the first Gulf War in the United States. This is basically the idea of somehow getting the bomb itself to adjust where and how it falls based on what the aircraft is doing. Typical targets for "smart bombs" may include anything from the foundation of a bridge to a single individual armored vehicle to an enemy command post building. Swap out the normal nose and fins for a GPS or laser guidance system and guidance fins, and voila, smart bomb!. Sadly, this is still subject to human errorâ€”the Chinese embassy in Belgrade was hit by one of these due to an out-of-date map. The bomb did its job, but garbage in, carnage out. GPS guidance is slightly less accurate than laser guidance, but the tailkits are cheaper than laser-seekers and the plane does not need to keep a laser pointed at the target. Cluster munitions These occupy a place somewhere between "iron bombs" and "smart bombs" in both technology and application. It is basically a bomb casing that is designed to split open fifty or a hundred meters in the air over the target and discharge hundreds or thousands of "submunitions," basically grenades. This idea is also Older Than They Think , having first been developed by the Soviets between the World Wars, copied by the Germans during the war, then developed further by all parties in the postwar era. Politically controversial because they sometimes litter the area with duds, which later endanger civilians in the

area. A notable example of its infamy was the massive drama created when Carlos Cardoen, a Chilean entrepreneur owner of Cardoen Weapons, sold this type of weapons to Saddam Hussein, though he argued that the transaction was well known for the US and it was done before the second Gulf War.

Chapter 5 : Books Mentioned in Hitch (books)

In Brief During a solar eclipse in , Guillaume Cannat was able to capture the sight from a Falcon 7X jet at 14, meters. The pictures and video are stunning, and offer an unusual view of a solar eclipse.

You release, the bomb falls, and hopefully it blows up what you aimed it at. The first ones of these, at least according to The Other Wiki , was from unmanned balloons sent over Venice. Then again, this was Most bombing was done by letting the ordnance drop and just free-fall down to the target. Very difficult to avoid, but also difficult to aim--this is why the main methods were either to divebomb ride the bomb a slight way to the target in a dive, centering the target in the gunsight before releasing; can be very accurate, especially if the pilot waits until the last possible moment to drop the bomb and pull out of the dive, but also extremely dangerous to the pilot or to carpet bomb. The former limits it to high-performance and low payload aircraft; the latter tends to be hit and miss and miss and miss and hit and miss, which can get messy if you only have a single thing to destroy. The sheer inaccuracy of bombing with these things at night due to navigation problems only one in five bombs ended up within five miles of the target was a major factor in the British decision to area bomb German cities. The third method is the "lob-toss", which involves chucking the bomb while in a climb. This was once regarded as only really accurate enough for nuclear delivery, where it also serves the purpose of giving you more time to clear the area. The aim of these bombs are not usually to kill from the explosion though it is handy against armoured targets, or when the objective is to destroy, for instance, a vital bridge, or to make craters in the runways of an enemy air base but to kill and wound from shrapnel which can be deadly from several hundred metres away. Since some Western air forces have used "low drag bombs," a variant type of "iron bomb" that has a long, slender, pointed casing for maximum streamlining and minimum air resistance. This reduces drag on strike aircraft that are carrying them on external racks or hardpoints, permitting slightly higher speeds. They also fall faster with less air resistance once released, making them more accurate because they are less affected by wind; additionally they allow aircraft to dive-bomb accurately at shallower angles than older designs required. There are also "retarded bombs. These have some kind of parachute or balloon system built in to slow their fall, to allow the attack aircraft dropping them more time to get away; these are for very, very close, very, very low level work, for missions done at such low altitudes that the blast and shrapnel of the bomb would endanger the aircraft dropping it. They first appeared around , in the form of the "Snake Eye" system, a set of fins that could be bolted onto an existing bomb that would open up like an umbrella as it was released by the aircraft. Another variant on the "iron bomb" concept, in the sense that it is an inexpensive container of nastiness that an aircraft drops on target, lacking any particular guidance system other than the skill of the pilot, is napalm, basically gasoline or jet fuel mixed with a chemical gelling or thickening agent, put in a container with a fuzing mechanism designed to ignite it on impact as the contents splash out. Cheap, effective, and politically controversial, it was created during the Second World War and has been in very common use ever since. Edit These were first put into service around , just in time for Vietnam. The FAE is deceptively simple. Imagine a half-ton canister of propane, liquified petroleum gas, or something similar. The canister will need to be modified, of course. The designs have been refined over the years but the basic concept remains the same. Instead of a solid high explosive filling, they use a mixture of flammable vapor and air, or in some newer Russian designs, small particles of highly flammable solids in air, to create the big bang boom. This is basically the idea of somehow getting the bomb itself to adjust where and how it falls based on what the aircraft is doing. Typical targets for "smart bombs" may include anything from the foundation of a bridge to a single individual armored vehicle to an enemy command post building. A new wrinkle from the Yanks is satellite-guided bombing, which comes in surprisingly inexpensive bolt-on kits for iron bombs. Sadly, this is still subject to human error--the Chinese embassy in Belgrade was hit by one of these due to an out-of-date map. The bomb did its job, but garbage in, carnage out. GPS guidance is slightly less accurate than laser guidance, but the tailkits are cheaper than laser-seekers and the plane does not need to keep a laser pointed at the target. Edit These occupy a place somewhere between "iron bombs" and "smart bombs" in both technology and application. It is basically a bomb casing that is designed to split open fifty or

a hundred meters in the air over the target and discharge hundreds or thousands of "submunitions," basically grenades. This idea is also Older Than They Think , having first been developed by the Soviets between the World Wars, copied by the Germans during the war, then developed further by all parties in the postwar era. Politically controversial because they sometimes litter the area with duds, which later endanger civilians in the area. A notable example of its infamous-ness was the massive drama created when Carlos Cardoen, a Chilean entrepreneur owner of Cardoen Weapons, sold this type of weapons to Saddam Hussein, though he argued that the transaction was well known for the US and it was done before the second Gulf War. Some types of cluster munition can be used to lay minefields from the air, using land mines that arm themselves shortly after reaching the ground. Since we have seen the advent of cluster bombs with smart submunitions, which have sensors allowing them to seek out and destroy armored vehicles as they fall from above. These have been used in combat and appear to be every bit as lethal--and expensive! Rocket pods Edit Commonly found mounted to helicopters or light attack aircraft, you just aim at the target and let off a salvo of explosive rockets. They are most often used to shoot up lightly armed ships and road convoys, as well as to give fire support for the infantry when carrying out an airmobile assault. Prior to smart bombs and air-to-ground guided missiles, they were once the weapon of choice for close support aircraft, as the larger rockets had a chance to at least damage even the largest, heaviest tanks. The Russians have always loved these, and bolt multiple huge cylindrical launch pods with dozens of these rockets onto helicopter gunships and close support aircraft. They are slightly less common in Western services than they once were, due to advances in guided missiles. Guns Edit Airplanes and helicopters can provide quite a lot of dakka. Also on board are a 40mm former ground-to-air cannon now air-to-ground and a mm howitzer plus extremely sophisticated sensors and fire control computers allowing it to find targets on the ground with great efficiency and engage them accurately. One of the more fun variants is the homing antiradiation missile, meant to find and home in on radar antennae used by antiaircraft missile installations--especially radiation-filled radar sites. And of course naval vessels also tend to bristle with anti-ship missiles also; analysts have called modern naval vessels "eggshells armed with sledgehammers," but that is perhaps a discussion topic for a different page. Anti-shipping missiles no, not that kind of shipping! Sometimes "cruise missiles" are also used against land targets, such as airfields. Some "cruise missiles" and anti-ship missiles in the Cold War era had tactical nuclear warheads. This was an area far more studied by the Soviets than the Americans, who had the naval aircraft to do closer-ranged attacks. From the s on, torpedoes have had built-in sonar guidance systems that allow them to track down even submarines under the surface. During the Second World War, a specialized type of attack aircraft, a "torpedo bomber," had to make a low, slow run in a straight line just above the ocean surface--an extremely risky tactic, as naval vessels even back then bristled with antiaircraft guns and tended to be protected by fighter aircraft as well--arm the torpedo, drop it into the water pointed at an enemy ship no more than a few hundred meters away, and hope that it hit the target. Nowadays hovering helicopters lower sonar search devices into the water and then send a homing torpedo and homing torpedoes have existed since World War II, but were expensive experimental weapons then, with crude vacuum tube sensor circuitry and even preset search patterns encoded as punched holes on rolls of paper like a player piano; the homing torpedo did not come into its own as a weapons system until the s on its way when they have a likely target, which will almost always be a submarine. American AirLand Battle doctrine during the Cold War envisioned use of large number of helicopter gunships heavily laden with, for some designs, up to sixteen long-range antitank guided missiles, for use not only as highly mobile antitank missile platform but also to go deep behind the forward edge of the battle area and attack Warsaw Pact second-echelon units before they got to the front. The Soviets also built helicopter gunships and armed transports but they were general purpose battlefield close air support platforms akin to a rotary Il-2 Shturmovik, as the antitank task fell upon other ground-based systems. There have been, of course, multiple generations of antitank guided missiles, and many designs can be set up to be launched from aircraft as well as from vehicles. The earliest were wire-guided, circa gunner squints into binoculars and attempts to steer the missile into its target with a tiny joystick on the first types, on later types gunner only has to hold the crosshairs on the target to make the missile home in on it. Then laser-guided designs appeared around , requiring only the latter, hold-the-crosshairs-on-target guidance by the gunner, and can also be fired

in indirect mode, in which the firing aircraft or vehicle lobs them over an intervening obstacle, such as a ridge line, while someone on the other side illuminates the target with a laser, allowing the firing unit to engage without a direct line of sight. Each of these systems had the disadvantage that the gunner could only control one missile at a time, reducing his practical rate of fire significantly--some have such long range that it could take half a minute or more to get from the launching aircraft to the target. Since the early s, true fire-and-forget antitank guided missiles have been available, allowing, under ideal conditions, the gunner to engage targets as fast as he can get a positive target lock and send them on their way; these missiles are smart enough to do the rest themselves. Guidance systems for air-to-ground guided missiles vary. Current trends for fire-and-forget systems are to imaging infrared TV cameras and high-resolution millimeter-wave active radar systems, interpreted by a small cheap onboard computer, but every imaginable system has been used. Laser guidance has the disadvantage of requiring target illumination but by the early 21st Century it has become very inexpensive indeed, at least for Western air forces. And for fixed-wing aircraft specifically, in the early s, the US Air Force and US Navy got the AGM "Maverick" air-to-ground missile, early versions of which were television-guided by the operator. Over time the design got newer and better guidance systems, and larger, more effective warheads to the point where current versions the AGMG are fire-and-forget weapons with a range of many miles, sensors that can function in total darkness, a warhead that is comparable to the high explosive filling of a pound iron bomb, and which is smart enough and versatile enough to follow moving targets, like an individual truck or tank, or to lock onto a particular building, or a parked aircraft, or track and strike a maneuvering ship, as examples. Many other nations have weapons of approximately comparable capabilities in inventory, at least on paper. Some are much lighter and smaller, like the Brimstone UK , allowing attack aircraft to carry significantly more of them, though the smaller ones, of course, lack the humongous warhead of something like an AGMG. Rocks Edit When training with bombs, sometimes an aircrew will use inert practice bombs. They weigh around the same, filled with roughly concrete, and are meant to act about the same, although without the environmental problems that blowing up a quarter-ton of explosives would bring, such as having to send people out to do the ticklish job of digging it up and destroying it if it turns out to be a dud. This still leaves some impressive craters. Then someone realised that if you can laser-guide a quarter-ton of concrete onto, say, a building, then what do you need explosives for? As an added advantage, this tends to kill fewer innocent bystanders. Coyote would be proud.

Chapter 6 : Upcoming Rocket Launches & Events Calendar

What does a solar eclipse look like from a fast-flying Falcon 7X jet at 14, meters (48, feet)? French journalist Guillaume Cannat described the Sun as looking black and "ruffled." Cannat.

The first eclipse of is coming right up on Friday, March 20th, and may provide a unique challenge for solar energy production across Europe. But first, a brief recap of the eclipse itself. The magnitude of the March 20th solar eclipse across Europe. But is there a cause for concern when it comes to energy production? A power grid is a huge balancing act. As power production decreases from one source, other sources must be brought online to compensate. This is a major challenge â€" especially in terms of solar energy production. Residential solar panels in Germany. Germany currently stands at the forefront of solar energy technology, representing a whopping quarter of all solar energy capacity installed worldwide. We recently caught up with Barry Fischer to discuss the issue. Fischer is the Head Writer at Opower, a software company that uses data to help electric and gas utilities improve their customer experience. A study published last week by Opower highlights data from the partial solar eclipse last October over the western United States. For example, during the August 11th, total solar eclipse which crossed directly over Europe, less than 0. Looking at the drop in power production during the October solar eclipse. What they found was intriguing. Along with a nearly 1, megawatt decline in utility-scale solar power production, these drop-offs were compensated for by grid operators ramping up traditional thermal power plants that were most likely fueled by natural gas. The projected effect of the March 20th eclipse on solar power production. How does the drop and surge in solar power output anticipated for the March 20th eclipse differ from, say, the kind presented by the onset of night, or a cloudy day? On a small scale, one area many be cloudy, while on a larger regional scale, other areas of clear or partly sunny skies can compensate. An eclipse â€" even a partial one â€" is fundamentally different, because the sudden onset and the conclusion are relatively uniform over a large region. The March 20th event offers an unprecedented chance to study the effects of an eclipse on large-scale solar production up close. And as opposed to the eclipse over the U. Such a reality may be only 15 years away, as Germany projects installed solar capacity to top 66 gigawatts by This eclipse may serve as a great dry run for modeling what could occur as reliance on solar energy production grows. Such is the modern technical society we live in. Join our patrons! See no ads on this site, see our videos early, special bonus material, and much more. Join us at patreon.

Chapter 7 : Foundation for Islamic Knowledge Products - Furqaan Bookstore

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Groups and individual researchers are asked to comment as to the nature of the object. I was in my garage searching for some information about my car when I heard the local bird life in an uproar. I went outside to see what was disturbing the birds, thinking it was the resident sea eagles or maybe a falcon flying about. The majority of birds were magpies, in all, crows and a couple of curruwongs with a few silver eyes. What struck me as being unusual is the number of magpies. Usually you see them in a family group of 2 adult birds with young ones flying around them. On further investigation to see what had made them become so distressed I saw an object drifting away from me at about metres above the ground travelling at about metres a second. It was travelling in an easterly direction and did not change course or alter its height above the ground. There was no noise. Thinking it was a drone no change of direction. When I first saw it, it was probably metres away. It was a dark colour with a round appearance in the top half with a ridge around this section and the lower section looked like a hoop hanging below it with some sort of grey object attached to the lower section of the loop. I managed to get some pictures of it and the best one is attached to this report. Do you think this is a UFO? Immediately upon seeing the pictures I thought that I knew what it was. Anthony spoke to the witness and emails were exchanged between the two of them. Here are the pictures. Close-up of object Do you know what it was? It was a Mylar, helium filled party balloon! The witness himself arrived at the same conclusion. I would like to thank the individual who took this latest photograph, for their permission to reproduce the photos and the text of their report to UFO Research NSW Inc.

Chapter 8 : Air-Launched Weapons | All The Tropes Wiki | FANDOM powered by Wikia

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This equation is derived by combining the radar equation with the noise equation and accounting for in-band noise distribution across multiple detection filters. The value D is added to the standard radar range equation to account for both pulse-Doppler signal processing and transmitter FM noise reduction. Detection range is increased proportional to the fourth root of the number of filters for a given power consumption. Alternatively, power consumption is reduced by the number of filers for a given detection range. Pulse-Doppler signal processing integrates all of the energy from all of the individual reflected pulses that enter the filter. This means a pulse-Doppler signal processing system with elements provides The energy of all of the individual pulses from the object are added together by the filtering process. Signal processing for a point filter improves performance by These improvements are the reason pulse-Doppler is essential for military and astronomy. Aircraft tracking uses[edit] Pulse-Doppler radar for aircraft detection has two modes. Scan Track Scan mode involves frequency filtering, amplitude thresholding, and ambiguity resolution. Once a reflection has been detected and resolved , the pulse-Doppler radar automatically transitions to tracking mode for the volume of space surrounding the track. Track mode works like a phase-locked loop , where Doppler velocity is compared with the range movement on successive scans. Lock indicates the difference between the two measurements is below a threshold, which can only occur with an object that satisfies Newtonian mechanics. Other types of electronic signals cannot produce a lock. Lock exists in no other type of radar. The lock criteria needs to be satisfied during normal operation. Weather phenomenon obey adiabatic process associated with air mass and not Newtonian mechanics , so the lock criteria is not normally used for weather radar. Pulse-Doppler signal processing selectively excludes low-velocity reflections so that no detections occurs below a threshold velocity. This eliminates terrain, weather, biologicals, and mechanical jamming with the exception of decoy aircraft. The target Doppler signal from the detection is converted from frequency domain back into time domain sound for the operator in track mode on some radar systems. The operator uses this sound for passive target classification, such as recognizing helicopters and electronic jamming. Helicopters[edit] Special consideration is required for aircraft with large moving parts because pulse-Doppler radar operates like a phase-locked loop. Blade tips moving near the speed of sound produce the only signal that can be detected when a helicopter is moving slow near terrain and weather. Helicopters appears like a rapidly pulsing noise emitter except in a clear environment free from clutter. An audible signal is produced for passive identification of the type of airborne object. Microwave Doppler frequency shift produced by reflector motion falls into the audible sound range for human beings 20 â€” 20, Hz , which is used for target classification in addition to the kinds of conventional radar display used for that purpose, like A-scope, B-scope, C-scope, and RHI indicator. The human ear may be able to tell the difference better than electronic equipment. A special mode is required because the Doppler velocity feedback information must be unlinked from radial movement so that the system can transition from scan to track with no lock. Similar techniques are required to develop track information for jamming signals and interference that cannot satisfy the lock criteria. Multi-mode[edit] Pulse-Doppler radar must be multi-mode to handle aircraft turning and crossing trajectory. Once in track mode, pulse-Doppler radar must include a way to modify Doppler filtering for the volume of space surrounding a track when radial velocity falls below the minimum detection velocity. Doppler filter adjustment must be linked with a radar track function to automatically adjust Doppler rejection speed within the volume of space surrounding the track. Tracking will cease without this feature because the target signal will otherwise be rejected by the Doppler filter when radial velocity approaches zero. Multi-mode operation may also include continuous wave illumination for semi-active radar homing. Radar signal characteristics fundamentals of the radar signal Doppler radar non-pulsed; used for navigation systems Continuous-wave radar non-pulsed, pure Doppler processing Fm-cw radar non-pulsed, swept frequency, range and Doppler processing Aliasing - the reason for ambiguous velocity estimates Doppler sonography - velocity measurements in medical ultrasound.

Chapter 9 : solar eclipse march 20 Archives - Universe Today

Dr. Ahmad H Sakr was born in Beirut, Lebanon. He received his academic education at the American University in Beirut, and the University of Illinois where he got his Ph.D.