DOOLITTLE FORECASTS AGE OF AIR WONDERS

Modern Electronic Brains Do Job That Pilots Can't Equal

Military aircraft now on the drawing board are capable of flying and fighting by themselves, with automatic equipment handling all essential control operations and the pilot riding along merely as a monitor.

In the all-weather fighter now operational, the pilot has only to squeeze a trigger switch when an enemy plane reaches a certain size on his radar scope. At that point, a mechanical brain starts operating. An automatic pilot takes over flight control. A computer goes into action, and at the proper moment, rockets are fired.

In this way, enemy planes can be spotted miles away, the target can be locked into a tracking mechanism, and the U.S. fighter will close, aim and open fire while the pilot and radar operator act only as monitors.

This last step before the true guided missile era is made possible by a science virtually unheard of outside laboratories 20 years ago.

The science—electronics—has become a key to many of the most complicated operations of advanced jet aircraft. In some of America's latest planes, electronics equipment represents 60 per cent of the craft's total cost (See ELECTRONICS, page 3).

Truman Air Travel Sets New Record—Over 135,000 Miles

Air transportation saved weeks of travel time which otherwise might have been spent in "getting there" for ex-President Harry S. Truman while he was the Chief at 1600 Pennsylvania Avenue.

At the time of his departure from office this month, Mr. Truman had logged 135,098 air miles in 61 Presidential flights. His banner year was in 1947 when he flew 26,778 miles, a mechanical brain starts operating. An automatic pilot takes over flight control. A computer goes into action, and at the proper moment, rockets are fired.

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To insure that America's combat airmen have the world's best planes, 16 entirely new aircraft models will be put into production by the U.S. aircraft industry in the next three years. These models, with speed, range and combat efficiency far exceeding that of present-day aircraft, stem from years of research and development—extending back as far as the first post-World War II year. Research and development underway today similarly will determine the quality of American aircraft in the late 1950's and early 1960's.

SOURCE: Office of Defense Mobilization

Flight Simulators Whittle Costs Of Training Modern Combat Crews

It's more than a thousand times cheaper to give a big jet bomber's crew an hour's training in a flight simulator than it is to send them aloft for the same amount of training in the air.

A typical bomber simulator can be operated for only 22.1c per hour, compared with $242 per hour for the jet bomber's fuel, oil and lubricant alone.

The tax dollars saved by these devices, which are being produced by at least four major companies, help keep the cost of maintaining America's air might at a minimum. At the same time, the simulators enable entire flight crews to be trained in many of the techniques of flying today's complicated aircraft without lifting a foot off the ground.

More important, the growing use of these modern simulators releases many more combat-type aircraft for line duty, and permits the training of countless additional men.

Simulators that reproduce the flight characteristics of almost all late-model planes either have been built, or are being built, by U.S. companies. At least one manufacturer is turning out separate gunnery trainers. Another has delivered a trainer that simulates not only the flying characteristics of a modern plane, but also simulates an approaching enemy aircraft. Using this device, the jet pilot of tomorrow may make his first "kill" before he ever gets in the air.

One manufacturer recently completed and turned over to the Air Force a flight simulator which duplicates characteristics of one of the latest jet bombers. The cost was $250,000, compared with a $2.1 million flyaway price tag on the bomber.

Sees New Vistas As Nation Marks 50th Anniversary

Written Especially for PLANES

By Lt. Gen. James H. Doolittle

America and the civilized world pause during this momentous year of 1953 to look back on the most astounding fifty years in recorded history. On December 17, 1903, began an era which we have called the Age of Flight. It has changed our thinking, our habits, our transport, our mails, our commerce, our industry, our agriculture—and our wars.

But more significant, the first fifty years of powered flight have brought the world abruptly into what can be termed the Age of Wonders.

This new era is with us now. In the field of air transportation, we are on the verge of keeping pace with the sun. I do not betray any confidence when I say, for example, that jet transports—which several American companies already have done design work—will be capable of linking New York and Los Angeles in four hours. In such aircraft, passengers will be able to take off from the East Coast at 5 p.m. Eastern time and land on the West Coast at 7 p.m. Pacific time.

It will not be long before operational jet fighters will be flying at speeds greater than 1,000 miles per hour, and jet engines will develop 25,000 pounds of thrust.

The Department of Defense announced some time ago that modern controlled air missiles have traveled at speeds in excess of 5,000 m.p.h. Secretary of Air Finletter in a recent speech said: "I believe we can foresee the time when we will have rocket engines producing 10 times the thrust of the original V-2, or about 500,000 pounds of thrust. Speeds can probably be obtained approaching 20,000 miles per hour, or more than 15 times the speed of rotation of the earth. Huge distances, perhaps half the circumference of the globe, will be reached by these rockets."

Today's problems—and the even more amazing challenges of the future—stagger the imagination, yet today's pioneers are solving them one by one and pushing outward the horizons of tomorrow.

For the year of 1953, while we (See GEN. DOOLITTLE, page 4)
Three Keys to Security

By DeWitt C. Ramsey (Adm., USN, Ret.)
President, Aircraft Industries Association

There is a growing conviction—reflected in the Congress, the military, and in a groundswell of public opinion—that this nation must never again denude itself militarily to the point where aggression is invited. The lessons of the past—when America undertook unilateral disarmament while world conditions remained chaotic—have imprinted themselves upon the national consciousness.

One is moved to wonder whether it was not the free world's military weakness which actually led to World War II and to the war in Korea. In the early phases of both conflicts, billions of dollars were spent in a desperate effort to buy lost time—but in both cases, lives and countless dollars, plus time, were required to regain military strength.

There is little likelihood that America will retrace the well-worn and perilous path of the past. Coupled with the country's recognition of the need for adequate defensive strength, is the growing feeling that the closest analysis must be given to our rearmament effort.

Long-term air strength can be achieved only through coordinated industrial effort in three major areas.

1. To insure that U.S. forces always are equipped with the world's best aircraft, we must have virile research and development programs geared to the high level of effort needed to maintain qualitative superiority.

2. To provide air strength in being adequate to discourage aggression, and capable of retaliation in the event that such strength fails to forestall an attack, we must have continuing production of late-model aircraft by experienced engineering and manufacturing teams.

3. To assure the ability of American industry to produce the weapons of war in time and in quantity should all-out conflict occur, we must have manufacturing capacity geared to the output of the most advanced weapons, and capable of turning them out without dangerous delays and interruptions.

A blueprint for attaining the latter objective has been given the nation by a distinguished advisory committee to the Director of Defense Mobilization. This group, headed by Mr. Harold S. Vance, reported this month that:

"Maximum capacity can be achieved with maximum economy by maintaining munitions production plants in a high degree of readiness, capable of rapid expansion of output in event of war, and relying upon such readiness as a partial substitute for stockpiling of reserves of munitions."

The Vance report calls for standby arms production equipment which would enable the United States to throw its full industrial might almost at once into any future all-out war.

Although such facilities are important, even more essential are the remaining two industrial elements—research and development, and a going rate of production—which contribute to America's air strength. Perhaps the best all-inclusive blueprint for action is contained in reports of the President's Air Policy Commission and the Congressional Aviation Policy Board. Five years ago, both reports urged that the Government adopt a long-range aircraft procurement program to assure adequate production of up-to-date aircraft, to eliminate the extravagant and violent fluctuations of past history. In such a program, research and development activities would be integrated with going rates of production to achieve maximum efficiency, production readiness, and industrial expandibility.

Congress can find no more fruitful ground for economy than that to be gained by adoption of a long-range aircraft procurement program.

Certainly the time is past when this nation can afford to match its direct defense expenditures with almost equivalent funds for recurrent expansions and contractions of defense production facilities.
Titanium May Be Key in Drive for Ultra-Sonic Speed

Titanium, the newcomer to the metallurgical world that some sources have already tagged the “middleweight champion” of materials, may be one of the keys to a drive for ultra-sonic flight at altitudes higher than any yet reached by man.

Five times as strong as aluminum, 40% lighter than steel, and capable of withstanding extremely high temperatures, titanium has been heralded as one of the possible answers to the “heat barrier” which today stands in the way of tremendous increases in flight speeds.

Before the metal can be generally used in aircraft, however, much remains to be done—by materials producers and the aircraft industry. Today, insufficient amounts of aircraft-quality titanium are being produced to allow wide-scale research and application to modern planes. Equally important, fabricated titanium costs more than other better established materials.

At present, titanium mill products cost between $15 and $22 per pound. Even if they were available at lower cost, aircraft engineers emphasize that much fabricating experience needs to be gained by industry before the material can be used to full advantage.

Increased amounts of sponge titanium are being produced, however, at a price of about $5 per pound (some $3 to $4 higher than steel). It is the conversion of sponge into ingots, then into mill products (the commercial forms) which remains a bottleneck.

The Aircraft Industries Association’s Technical Service and individual airframe and engine manufacturers are working side-by-side with Government and private agencies to speed up the development of titanium and at the same time to get the price down to a more practical range.

Some 95% of the fabricated titanium now being produced is flowing to the aircraft industry where it is being used for research and, in limited amounts, for various structural purposes. This amount doesn’t scratch the surface of what can be used when cost is lowered, fabricating experience is gained, and allowances for certain high-strength applications are made available.

MATS Planes Span Pacific Once Every Forty-Five Minutes

Every 45 minutes during 1952, a big transport of the Military Air Transport Service completed a crossing of the Pacific Ocean. Every 75 minutes during the year, MATS planes averaged an Atlantic crossing or an Arctic flight.

And every hour of 1952, an average of 10 tons of cargo, 58 military passengers and seven medical patients were being airlifted over MATS’ 115,000 miles of air routes.

Air Quotes

“With the end of the last war, air power faced a technological revolution brought about by advances in supersonic aerodynamics, jet propulsion, and electronics. The Air Force did not assimilate this technological revolution as rapidly as possible, because we were unable to give industry the research and development contracts which would have resulted in the prototypes that subsequent history has clearly shown we needed.

At that time there was a mistaken idea held by some that, considering the needs of the civilian economy, there were not enough scientists in the country to spend more than $500 million annually on military research and development. In actual fact, however, a large fraction of the Air Force research and development budget was being spent on engineering and manufacturing of prototypes—not on scientific research. Competent engineering staffs were available and, in fact, were begging for work. If we had pursued a sound and continuous program throughout the years, our air force today would be better equipped.

Unfortunately, we were not able to assure industry that we would give it the research it needed and the development contracts which would have resulted in the prototypes that the new technology required.” — Air Force Under Secretary Roswell Gilpatric, August 29, 1952.
Gen. Doolittle Says Air Supremacy 'Greatest Deterrent' to Aggression

(Continued from page 1)

strive for new achievements, we also review those fifty years which began on the sands of Kitty-Hawk, N. C., when Wilbur and Orville Wright first realized man's age-old dream of flight, and opened the Air Age.

In nationwide observance, we revere the Wrights, and also honor the other pioneers of flight, down to those who today are conquering the stratosphere at speeds faster than sound.

I have the honor to head a committee of distinguished citizens of the United States which is calling upon the nation to join in the celebration of the Fiftieth Anniversary of Flight. This national observance has the blessing of the President of the United States, of the Governors of the States, of the Armed Services, national organizations, and a host of national figures.

Throughout the year, major national events will pay tribute to the pioneers of the Air Age and their achievements. A committee is presently raising funds for a Wright Memorial Museum, to be erected at Kitty Hawk, N. C. The cornerstone of this museum is scheduled to be laid during the Golden Anniversary Year. A giant National Air Show will be held in Dayton, Ohio, the Wright Brothers' home and the cradle of aviation.

In addition to the national observances, there will be hundreds of regional events throughout the year. We want every citizen in America to think of fifty years of flight in terms of what it has meant to him, his community, his state, and his country. Most of all, we want our schoolchildren to learn and to know the significance of the past, the present, and the future of world aviation. We live today in a small world, only hours away from the farthest spot on earth. Travel that once took weeks, months, even years, of man's life is now accomplished in a day or two. Where trading areas once were narrow, today the resources of the whole world are at the command of the average man. Mails move at incredible speeds. The pace and radius of business has increased many-fold. Once-strange lands are now within reach in an ordinary vacation span.

From its beginnings as an experimental courier and scouting arm of the surface forces, air power has become the first line of defense. Today, aviation also provides the primary striking arm for national security. Air supremacy today is the greatest deterrent to aggression.

Answers to Planes Quiz

1. (c) 1,000 channels.
2. (a) 300 two-room houses.
3. (b) A Navy NC-4 seaplane arrived at Plymouth, England, on May 31, 1919, crossing the first trans-Atlantic flight.
4. True. On January 3, 1953, the Far East Air Forces announced that 66,350 enemy vehicles had been destroyed since the Korean War began.
5. (e) Estimated production of the U. S. aircraft industry in 1952 was 9,000 military planes, 2,000 utility planes, and 400 transports.
6. (a) True.
7. True.
8. (c) In a typical jet bomber's electrical system (including radio and radar equipment), there are 3,800 pieces of wire whose lengths add up to 875 miles and whose total weight is 650 pounds.

Fifty Years of Flight

Government Didn't Believe Planes Were Here to Stay in January '05

A pot of baked beans, a homemade radio transmitter, and a 48-year-old form letter written by a Government bureaucrat play little-known January roles in the history of aviation's first fifty years. These almost-forgotten sidelines are among hundreds included in a recent chronology of aviation, "Fifty Years of Powered Flight," published in cooperation with the National Committee to Observe the Fiftieth Anniversary of Powered Flight.

The bureaucrat's letter was a negative beginning to one of the 20th century's big stories—military aviation. Forty-eight years ago this month, the Wright Brothers wrote their Congressman asking whether the Government was interested in their experiments with a flying machine. A few days later they received a reply from a functionary on the Board of Ordnance and Fortifications: The Government was definitely not interested in "financing experiments."

Fortunately, the letter did not discourage the two young men from Dayton, Ohio. They continued working—and three years later, the Army agreed to buy one of their machines. The industry they pioneered today is the second largest manufacturing industry in the United States, employing more than 250,000 Americans.

The Air Force's Air Material Command (one of the evolutionary branches of the 1905 Board of Ordnance and Fortifications) today buys enough aviation equipment annually to make it one of the world's largest single business organizations with yearly purchases exceeding the total of General Motors, Standard Oil of New Jersey, American Telephone & Telegraph Co., United States Steel, and the I. E. du Pont de Nemours Co.

On January 11, 1911, a short radio message crackled from a flimsy plane 100 feet above Selfridge Field, California, to a station on the ground. From that beginning, with a homemade radio set in a tiny box-powered aircraft, emerged the aeronautical radio industry which today has equipped more than 20,000 operational civil aircraft in the United States with radio. Even more striking is the effect of radio on military aviation. Use of radio and electrical devices by the military has reached such proportions that a typical jet bomber today carries approximately 5,700 pounds of electrical and radar equipment. That in itself is more than four times the gross weight of the 1911 aircraft.

Perhaps no single piece of cargo ever carried by U.S. aircraft was as important as a pot of beans flown from Boston to New York by pioneer aviator Harry M. Jones in January, 1913. That pot of beans demonstrated the feasibility of cargo operations; and as Jones delivered the gifts of beans to state governors along his route, he pioneered an industry which last year flew some 623 million cargo ton miles in all parts of the world. The beans were the first of more than 2,000 different kinds of items now carried by cargo lines throughout the world.

More Punch Per Plane

In a 100-mission combat tour in Korea, the average pilot of a modern jet fighter-bomber fires more than 109,000 rounds of 50-caliber ammunition, drops 220 tons of bombs, fires 350 high velocity aircraft rockets, and drops 2,500 gallons of napalm.