

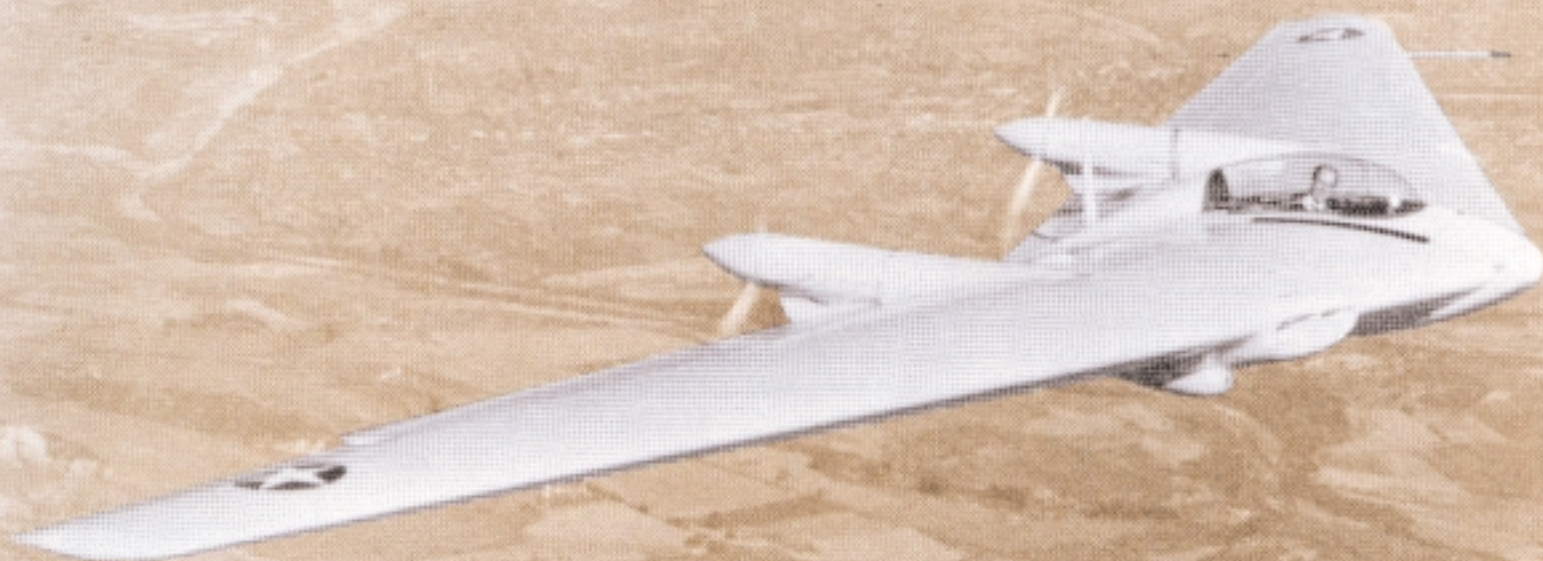
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# THE M.C.GILL DOORWAY

M.C. GILL CORP., 4056 EASY ST., EL MONTE, CA 91731 • PHONE 818-443-4022 • TELEX 67-7467 • FAX 818-350-5880

## *THE WING* *Coming to Life Again!*



A RECALL OF AVIATION HISTORY



# THE FLYING WING

## ...the scale model of the B-35 now being reborn

### **T**he Origin of the Flying Wing

As best as we can determine the concept of the Flying Wing aircraft (no fuselage, just a fuselage nacelle built for the crew around the centerline of a wing) originated with Vincent Justus Burnelli. Burnelli conceived the spanloader/flying wing that resulted in his RB-1 in 1921.

In the late 30's Jack Northrop brought the design to fruition. Northrop developed the flying wing bomber, the B-35. It was powered with four piston engines, achieved high performance in terms of speed and range, and was fully supported by the military. It was designed to have a 172 foot wingspan, 10,000 pound payload and a

10,000 mile range — approximately the distance to fly from the eastern United States to Berlin, drop the payload, and fly back.

### **Starcrossed to Say the Least**

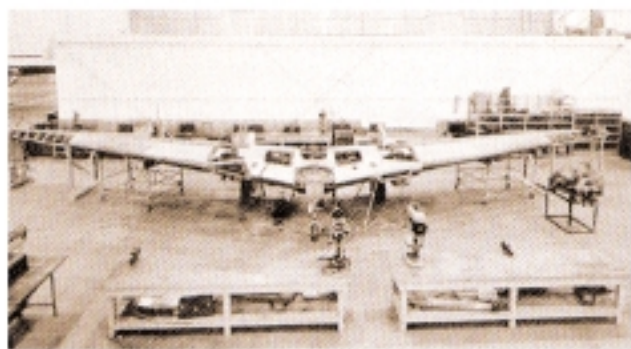
In retrospect, the program seemed doomed from the beginning. The results of the first series of XB-35 flights were, at best, disappointing. World War II had ended by the time the problems with the reversible-pitch pusher propellers were solved — between 1946 and 1948. Unfortunately, that was not soon enough to prevent the crash, during a test flight that killed Col. Glen Edwards (for whom Edwards AFB, California is named).

Moreover, the Air Force's attention was focused on jet propulsion. Conversion of the XB-35 to jet power had been foreseen and the Air Force ordered nine of them. Only one conversion had been completed by 1949, when the program was abandoned. It seems the Air Force favored the conventional Convair B-36 as more promising.

With the program's cancellation came the order to scrap all the existing B-35's. It appeared that a significant piece of aviation history would become extinct except for an early Northrop prototype, the N1M, which rests in the Smithsonian Institution.

### **A Wing is (re)Born**

Not so. As part of the B-35's early

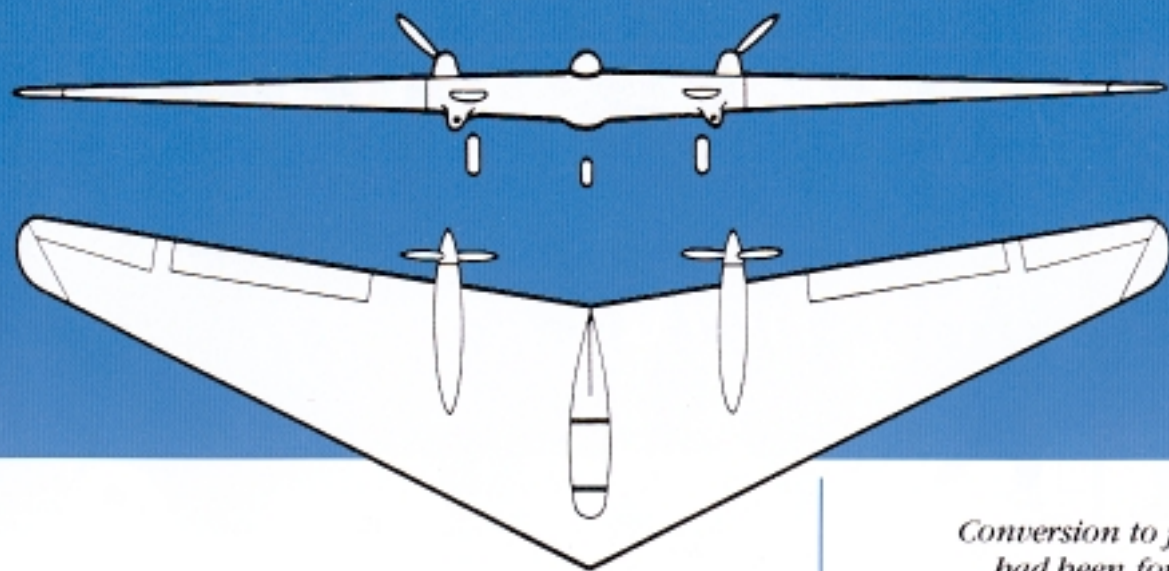


*N9MB, the "fourth" of the flying scale models, in final assembly. The "B" model was modified with a second seat for an observer.*



*The primary mission of these scale models was to provide flight test information from which performance data for the XB-35 could be predicted.*



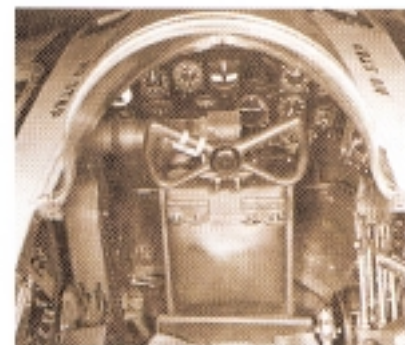


development, the Air Force contracted for and received four one-third scale prototypes with the designation, N9MB. They were included in the order to destroy all the Flying Wings, but for some unknown reason only three ended up in the scrap heap.

In the early 1950's, Ed Maloney, founder and president of the Chino Air Museum received a call from Edwards AFB informing him that they had come across the remaining N9MB and would he be interested in it? Maloney was selected because his interest in aviation was well known through, among other things, his non-profit aviation oriented museum. It was like asking a

drowning man if he'd be interested in a life preserver and Maloney jumped at it. The Flying Wing was aviation history and he considered himself fortunate to have a piece of it.

The "Wing" languished for almost three decades because Maloney had neither the time nor the money to restore it. Also, moving it from one air museum location to another, didn't do much for its physical well being and it had fallen into a state of disrepair. However, his interest remained keen, and over time convinced a few other aviation buffs that something should be done to return the Wing to its original condition.



*N9MB cockpit. Emergency bailout procedures required manual release of hatch, engine turn-off, and braking of the rear pusher props.*



*Test pilot instructs Air Force pilot in features of the N9MB control systems. This was a flying scale model of the future XB-35 bomber.*

*Continued on next page*

### *Conversion to jet power had been foreseen.*



*YB-35, third and last of the piston engine Flying Wings, in the air May 1948. Equipped with single-rotation, four bladed props.*



*Jet powered YB-49 on a test flight take-off October 1947. Four inlets on each side of the wing admitted air to the submerged engines.*



*Mock-up shows how the Flying Wing Bomber, either prop or jet, was envisioned as a passenger and cargo carrier...*



*... where 80 passengers could sit comfortably inside the Wing with "window views."*





## Thanks to a

**I**n November 1982, the first tangible step was taken toward restoring the Wing. A group of engineers employed by many of the major aerospace firms in Southern California met to map out a course of action that would culminate in a maiden flight of the reborn N9MB.

Little did they know of the magnitude of the project to which they had committed themselves. Given the condition of the N9MB, the first step in the restoration process was to obtain a set of plans to guide them in the reconstruction. For the most part, the aircraft's components were unsalvageable and would have to be reconstructed from scratch.

Much to their dismay, the reconstruction crew soon discovered that many of the plans had suffered the same fate as the Flying Wings themselves—they had been scrapped. To make matters worse, those that were available were of little use. They had not been updated when changes were made during the original design and production phases.

**Back to the Drawing Board**  
Given the minute amount of documentation, the dilapidated condition of the aircraft, and the

realization of the enormity of the task ahead of them, few would have faulted this group had they decided to devote their weekends to more gratifying pursuits.

Or perhaps they *didn't* realize the enormity of the task because they dug in and the restoration had begun. Their "plans" consisted of pictures from old magazines and books, cannibalized parts from the Wing that served as patterns for new ones, and a megadose of engineering skills.

Fortunately, there was no shortage of those skills because there was a scant supply of everything else, including money for new parts. The restorers have made every effort to remain faithful to the original materials used for the components in the Wing, virtually the entire aircraft consists of new parts.

The mahogany, poplar, and preg woods used to cover the entire outer surface of the plane are all new; so are the instrumentation and the approximately 1,000 feet of hydraulic plumbing. Both engines have been rebuilt as have 95 percent of the mechanicals.

**M.C. Gill Participates**  
More than 200 vendors have

donated either materials or finished parts to the reconstruction project. Space-Flex Company, a division of M.C. Gill Corporation, is pleased to be counted among the donors. The company has been manufacturing contoured parts for the aviation and aerospace industries for the past thirty years.

Space-Flex built all of the cylinder head cooling ducts for the Flying Wing as well as hoses and tubing for various applications throughout the aircraft. In addition, Space-Flex personnel have donated their time to the restoration and have been involved in the project for at least the past five years.

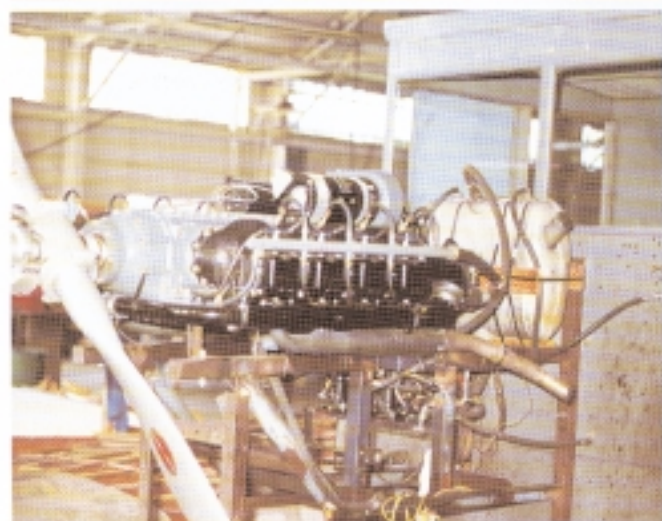
The real heroes are the engineers who have given freely of their own time on nights and weekends—literally tens of thousands of hours—at no cost to the project. Their labor of love is almost complete and if all goes according to schedule, the Wing will fly sometime late this fall.

Whenever it happens, look for an upgrade in the beautification of Southern California. Weekends will again be free to keep lawns freshly mowed; garages cleaned; houses painted; and, family cars washed and waxed.

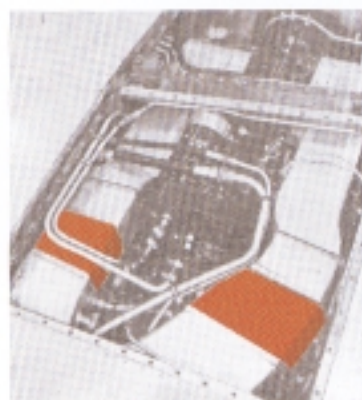
Until the next challenge.



# *fellowship of engineers, THE WING WILL FLY AGAIN!*



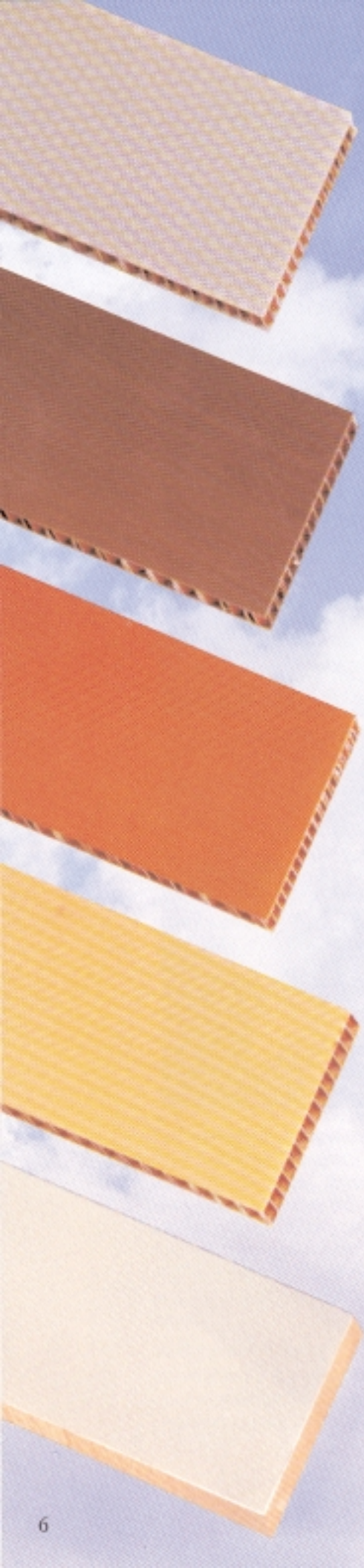
*Weekend after weekend, aircraft engineering buffs make progress toward restoring the Wing to flight condition.*



*At left, shown in red, are two of the engine cooling ducts provided by M. C. Gill's Space-Flex Division. The hoses shown at the right are typical of the ones Space-Flex made for the Flying Wing.*







Gillfab 4105  
Ty 1-Woven  
E-glass cloth  
reinforced  
epoxy resin  
facings/  
aramid  
honeycomb  
core.

Gillfab 4205-  
Woven glass  
fiber, uni-  
directional  
carbon fiber  
reinforced  
phenolic  
resin facings/  
aramid  
honeycomb  
core.

Gillfab 4322-  
Glass fiber  
reinforced  
phenolic  
resin facings/  
aramid  
honeycomb  
core.

Gillfab 4323-  
Glass fiber  
reinforced  
phenolic  
resin facings/  
aramid  
honeycomb  
core.

Gillfab 5007A-  
Glass fiber  
reinforced  
polyester  
resin facings/  
end grain  
balsa wood  
core.

# GILL FLIES AIRBUS



*As reported briefly in the last Doorway, Deutsche Airbus has approved three M.C. Gill Corp. sandwich panels as replacement flooring for the A320 and A321. And, as of this writing, they are the only replacement panels to have achieved qualification to Airbus specifications DA/MBB/AI Technical Specification Number 5360 MIB 000100 and ATS 1000.001.*

## **Approval Called For Adherence To Exacting Standards**

Almost two years of development and testing by M.C. Gill R&D personnel went into the qualification process. Because it was a joint effort, included in that time span were the several months Airbus personnel spent reviewing documentation and testing production samples supplied by our staff for the following three flooring panels for the A320 and A321.



Gillfab 4205 is qualified for the cockpit and passenger compartment flooring.

Gillfab 4322 is used as flooring in the containerized cargo compartment.

Gillfab 4323 serves as flooring in the bulk cargo compartment section.

All three products generally feature a construction of fiberglass cloth reinforced phenolic resin bonded to an aramid honeycomb core with a modified epoxy adhesive.

**The phenolic resin system ensures low smoke and toxic emissions in a fire.**

Among the many other features are high impact and corrosion resistant facings, light weight, good burn through resistance and a high flash point in a fire.

#### **A Family of Panels for the Airbus Family**

Qualification of the three panels makes the M.C. Gill Corporation the only

manufacturer approved to supply replacement flooring panels to the current Airbus family of aircraft.

Previously, Gillfab 4105 Type 1 and Type 2 qualified for replacement cockpit and passenger compartment flooring in the A300 and A310.

Gillfab 4105 Type 1 is constructed from fiberglass aramid honeycomb core. Type 2 features the same construction but a sheet of aluminum foil is bonded to the bottom facing.

Gillfloor 5007A was approved for replacement cargo compartment floor panels for the same two aircraft. These three panels qualify to Airbus Industrie specification TL53/5000/79.

Gillfloor 5007A consists of fiberglass reinforced polyester facings bonded to an end grain balsa wood core. It has served as the cargo compartment flooring prototype for a multitude of aircraft since its development and introduction in 1962 by the M.C. Gill Corporation.



**The M.C. Gill Corp. is proud of its status as the first vendor/manufacturer in the world to have qualified its replacement flooring panels for all currently certified Airbus aircraft.**

We may not be the last, but we are the first. We believe that our competent experienced personnel, modern equipment and production methods, and a resin chemistry capability second to none are among our

strong points. And of course, there is no substitute for almost 47 years' experience! We thrive on the difficult and try in every way we can to be of assistance. That's what we have going for us.



# THE FUNNY SIDE

There are two classes of cruise-ship passengers — the heaves and heave-nots.

★ ★ ★

Sign on a scandal magazine editor's door: "We take in rumors."

★ ★ ★

Man has developed a line that's virtually invisible to a fish, but he has yet to come up with one that's not immediately apparent to a woman.

★ ★ ★

Vision is definitely affected by glasses, especially after they have filled and emptied a few times.

★ ★ ★

Nostalgia is remembering the ten-cent hamburger. Reality is remembering how often you couldn't afford one.

Dentist to patient, "Here are your x-rays, or what we like to call, 'Previews of coming extractions.'"

★ ★ ★

Have you ever noticed that whenever someone has some time to kill, he or she always spends it with someone who doesn't?

★ ★ ★

One grad to another at their 40th reunion, "Have you realized any of your boyhood dreams?" "One of 'em at least," was the reply. "When Mom use to comb my hair, I always wished I didn't have any."

★ ★ ★

Pessimist: A woman who's afraid she won't be able to squeeze her car into a small parking space.

Optimist: A man who knows she won't try.

# Trivia

Mr. Potato Head received four write-in votes in a 1985 Boise, Idaho mayoral election.

★ ★ ★

The average female fashion model weighed 112 pounds in 1970. Today, she weighs 122.

★ ★ ★

China's top female fashion model earns \$70 per month.

★ ★ ★

The word "gas" was coined by a chemist, J.V. Heldman, who derived it from the word "chaos" — meaning unformed and weak.

The state of Mississippi ranks first in the number of professional football players produced per capita.

★ ★ ★

The diameter of television's Wheel of Fortune is 8 feet, 6 inches.

★ ★ ★

Osmium is the densest material on earth at 0.82 lb/cu inch. Gold weighs .698 lb/cu inch which is sixth highest.

★ ★ ★

Sixty-five percent of all Americans say that doctors in hospitals should wear white coats.

★ ★ ★

Seventy-eight percent of all Americans have been in a shopping mall in the last thirty days.



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