

## **Eyes in the Sky: Pan American Airways and Aerial Archaeology**

Eric H. Hobson, Ph.D.

On Pan American Airways' (PAA) inaugural mail run from Panama over the Yucatan Peninsula to Brownsville, Texas in February 1929, Charles Lindbergh fully understood the challenge archeologists faced when he spied pyramids jutting through dense, unmapped, inaccessible jungle. Reflecting on that flight, he concluded that scientists could understand Maya civilization in new ways if they left the ground. Archaeologist Alfred V. Kidder dreamed of a different perspective, too. While he and his colleagues had worked for decades in Maya territory, he believed they were "so stifled by mere weight of vegetation, that it has been impossible to gain a comprehensive understanding of the real nature of this territory, once occupied by America's most brilliant native civilization. Such understanding is absolutely necessary, because all people, ancient and modern, are largely products of their environment. Hill and plain, watercourse and cultivable land shape the destinies of nations more powerfully than do kings and battles." "Above anything else," archeologists wanted "an idea of what the Maya country really looks like." Lindbergh could grant Kidder's wish.

Maya civilizations intrigued PAA founder Juan Trippe too. Even as Lindbergh, PAA's Technical Advisor and Trippe's close friend, pitched roles for airplanes broadly, Trippe calculated the benefits more precisely: PAA + science = political goodwill across PAA routes (mail + passenger) + publicity (global + free). Still, Trippe risked a lot committing PAA to low revenue-generating, high personnel-risk, and equipment-demanding service with three Central

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and South American scientific expeditions during 1929-1931. In doing so, however, PAA helped add airplanes to scientific toolkits.

**Mayan preflight conference L-R: Charles Lorber, Charles Lindbergh, Juan Trippe, William Ehmer, planning Oct. 1929 Yucatan flights. (Reproduced with permission from John Haynes family collection.)**



Lindbergh-Carnegie Expedition, October 6-10, 1929

Charles A. Lorber (Co-pilot), William Ehmer (Radio Operator), and Charles and Anne Lindbergh met Carnegie Institution of Washington archaeologists Alfred V. Kidder and Oliver H. Ricketson in early October 1929 to make the first aerial archaeological survey of British Honduras (now Belize), northern Guatemala, and the Yucatan Peninsula. Trippe added William Van Dusen, PAA Director of Public Relations, as “historian” to chronicle the event via *New York Times* dispatches

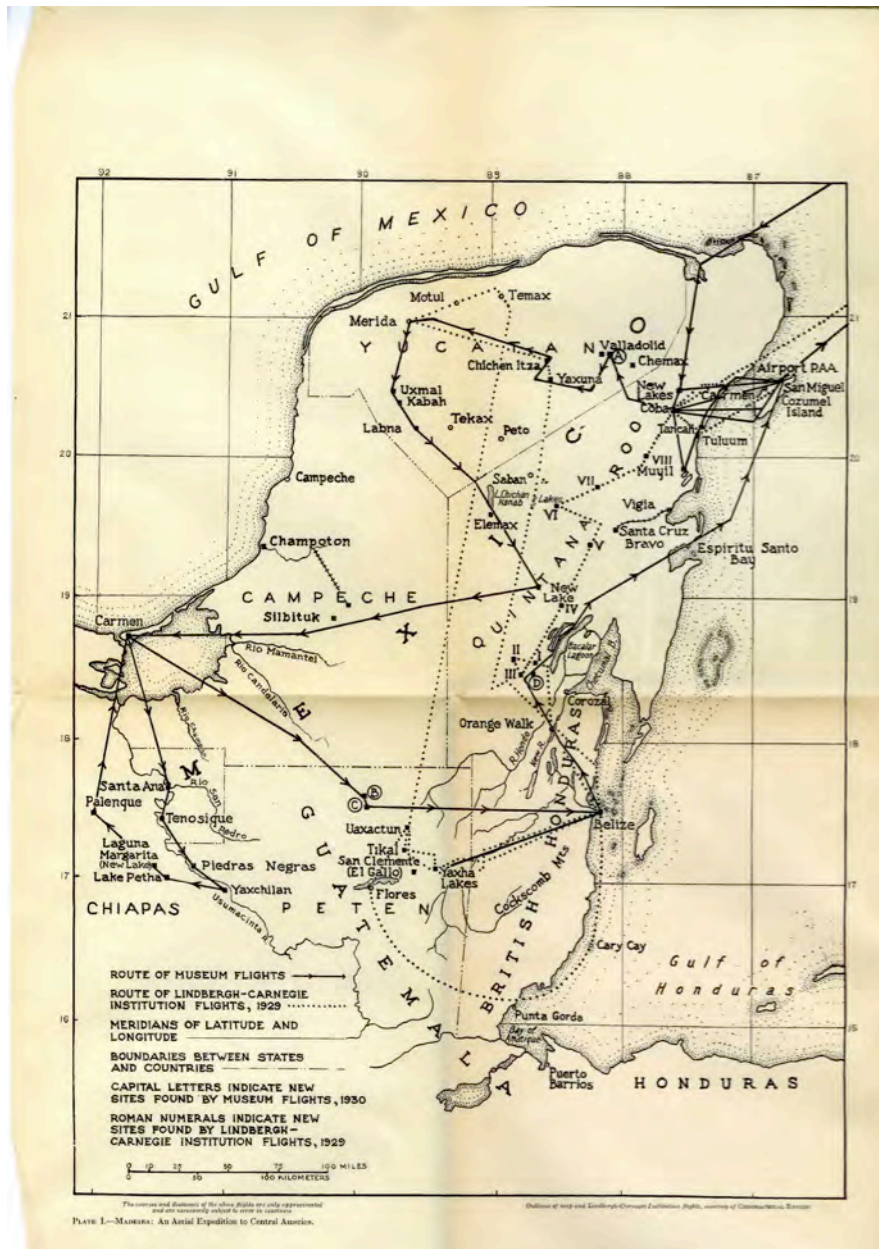
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and *Saturday Evening Post* photo-filled stories. The team flew PAA S-38 (NC142M) five days on routes to find undiscovered Mayan cities. As Van Dusen explained the plan to *Saturday Evening Post* readers,

“Three principal unexplored regions extend over the peninsula – one near the border of Guatemala; the second, eastward from the Gulf of Campeche; and the third lying inland from the Yucatan coast in the most easterly province of Mexico, Quintana Roo...It was hoped that the airplane would enable scientists to make a general reconnaissance of these dark areas, to find out what was there, and to study the general characteristics of the jungle vegetation and its relation to possible human habitation. Future expeditions then, directed by a definite knowledge of conditions, could make their way to important sections in a fraction of the time now required in hazardous, blind search. “

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Map: Flight Routes for Lindbergh-Carnegie Institution Expedition 1929 & PAA-Penn Museum Expedition 1930.  
(Source: Madiera, P.C. "An Aerial Expedition to Central America." *The Museum Journal* 22.2 (June 1932): pp. 93-154.)



The first foray (Sunday-Monday from Belize City) pushed the plane's limits over eight-hundred miles from Guatemala's Petén region, home to Maya cities Tikal and Uaxacrun, then

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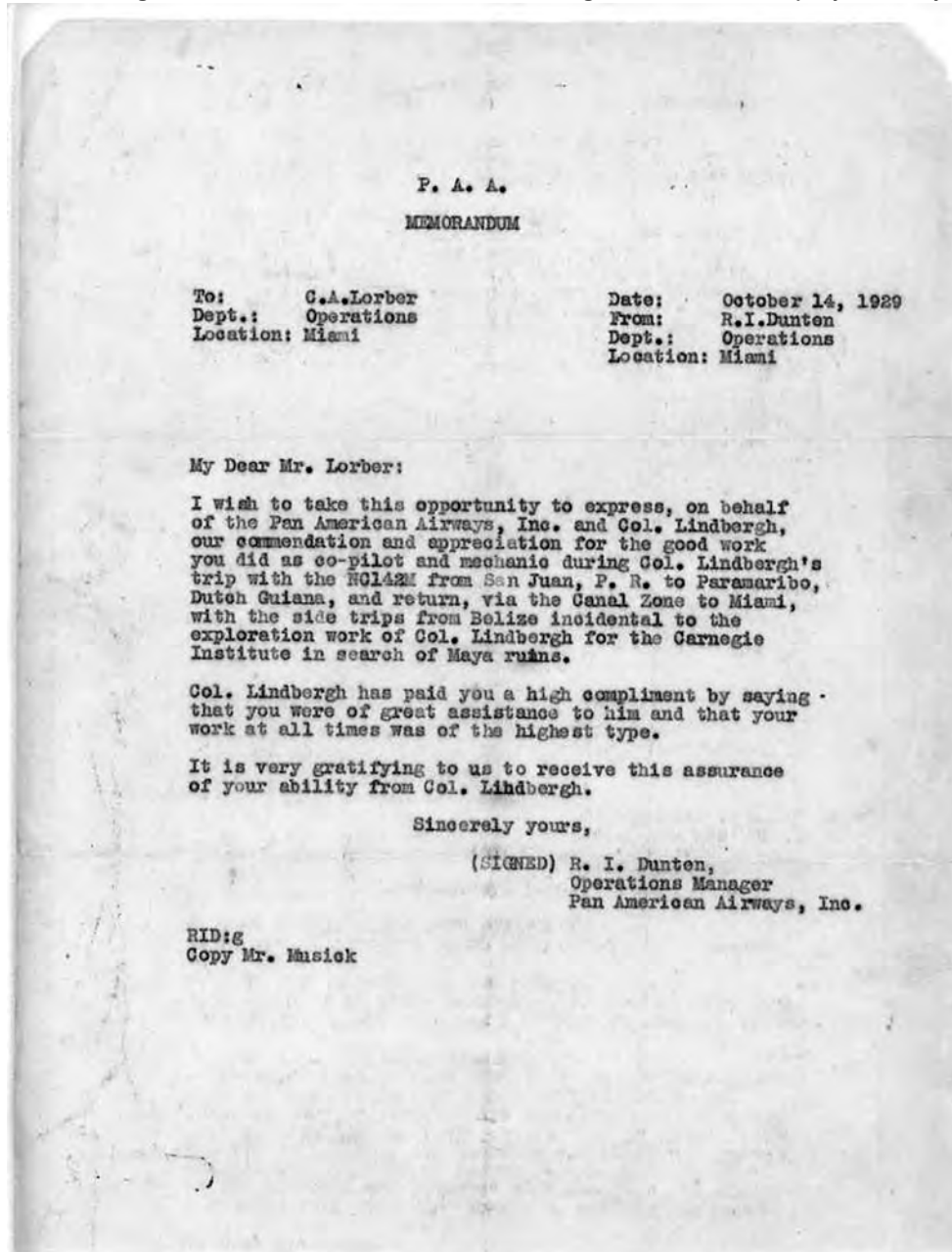
across Guatemala-Mexico's Yucatan border three-hundred miles north to Merida, their Campeche State overnight stop. Before leaving Belize, Lindbergh and Lorber stripped the Sikorsky of all unnecessary weight (including co-pilot, Pan Am's PR man, and one archaeologist), after which Dr. Ricketson helped navigate and Anne served as relief pilot. From Merida on Monday they flew east-southeast to the Maya city Chichén-Itzá then turned south toward Belize City. Half-way there, Lindbergh landed on a lake Dr. Ricketson thought looked promising; yet, their scouting yielded no Maya evidence and the team returned without new finds. Realizing they must learn to spot sites of interest from above, the full team flew to Tikal on October 8 to practice ruin-spotting and site photography over known sites, and returning to Belize City rewarded themselves with an offshore beach picnic.

Wednesday morning (Oct. 9) the six-person team (minus Dr. Ricketson who returned to Guatemala) flew north through the Mexican state, Quintana Roo, to Cozumel Island and their Tuesday practice paid off as they spied multiple sites, of which Dr. Kidder believed five were new. Although clouds kept Anne Lindbergh from photographing them all, Dr. Kidder and PAA Radioman Ehmer charted each using compass readings and flying-time intervals. Before reaching Cozumel Island, Lindbergh landed at the coastal Mayan ruin, Tulum, where Dr. Kidder led a two-hour tour. (See Map 1). On the team's exit from Central America the next morning, Lorber flew the S-38 inland to photograph the Coba ruins before turning toward Miami.

**Refueling an S-38 at Cozumel (Pan Am Historical Foundation photo)**



Memo commending Charles Lorber from PAA Division Manager Roscoe Dunten (Hayes Family Archive)



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PAA-Penn Museum Expedition, 1930

PAA returned to aerial archaeology thirteen months later with Frank E. Ormsbee (Pilot) and William Carey (Radio Operator) flying PAA S-38 (NC8044) on a University of Pennsylvania Museum of Archaeology and Anthropology (Penn Museum) reconnaissance project building off of Lindbergh-Carnegie Expedition reports and maps. Expedition Director, financier, and Penn Museum Board Member, Percy C. Madeira, Jr. stated that, "The objective of the expedition was to investigate the ancient Maya civilization of Central America from both air and land, particularly in those areas not previously covered by either method."

**Penn Museum team (Mr. Madeira; Dr. J. Alden Mason, Curator, American Section; Gregory Mason, writer; Robert A. Smith, aerial photographer) left Miami November 30, 1930 to Cozumel Island via a Havana, Cuba night stop. PAA-Penn Museum Expedition, 1930 (Source: Madeira, P.C., "An Aerial Expedition to Central America." *The Museum Journal* 22.2 (June 1932): pp. 93-154.)**





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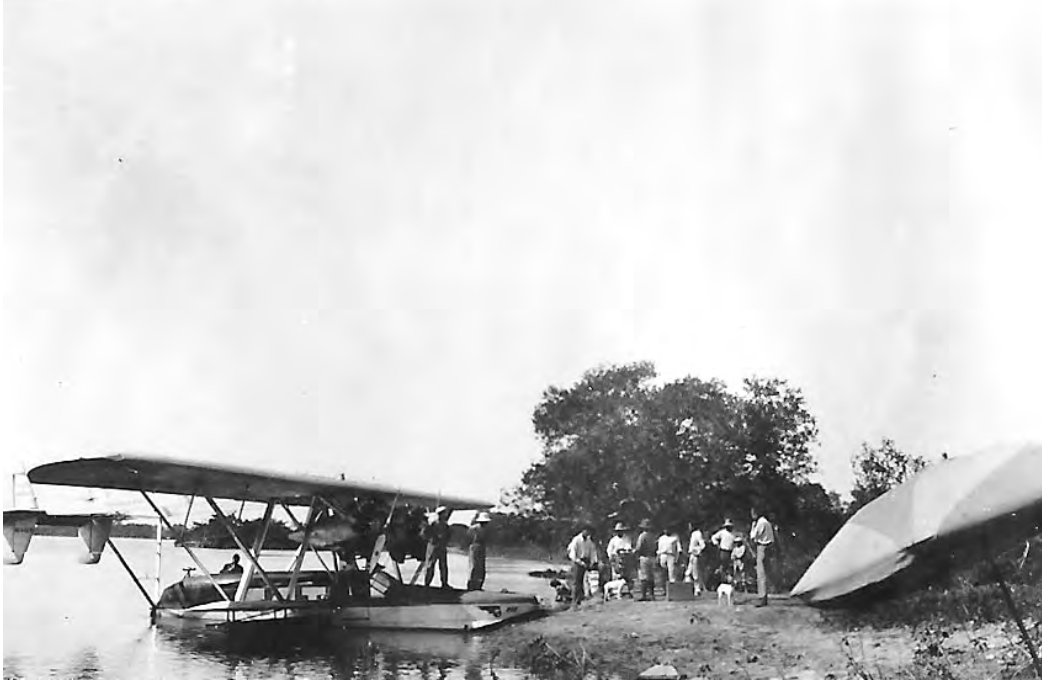
Once based, the team flew thirteen multi-hour surveys over the next twelve days across the Yucatan region -- some flights retraced Lindbergh-Carnegie Expedition routes; others overflew unassessed areas in Guatemala and western Yucatan. The team accrued 2,000+ air miles before PAA lease restrictions forced them home. In doing so, they identified four unmapped Maya ruins (two northeast of the Uaxactun-Tikal area; one on the Belize-Mexico border; one in north-central Yucatan parallel to Cozumel Island) and confirmed Lindbergh-Carnegie Institution expedition reports (See Map 1).

In his post-trip *The Museum Journal* report, Madiera argued that “the usefulness of an airplane in work of this kind seem worth stating as a matter of interest to those who are considering further exploration of the same general sort.” Continuing, he foresaw roles for varied aircraft:

The members of the expedition are unanimous in their belief that with the coming of the autogiro plane, a vast field of usefulness is now opened for this means of transportation as an aid to archaeological work. The airplane can cover in one hour a stretch of country which takes a week to travers by mule or on foot and the perfected autogiro can hover over, land on, and take off from an exceedingly small area of water or of cleared and leveled hard ground.

The Matto Grosso Expedition (1931)

**Pan Am S-38 NC-145M in Brazil during the Mato Grosso Expedition (Davis Family Archive)**



Four months later, Charles A. Lorber (pilot) Jose M. Saucedo (co-pilot/mechanic), and Hans F. Due (Radio Operator) in S-38 NC145M joined the Matto Grosso Expedition along the Brazil-Bolivia Pantanal border. Eldridge Reeves Johnson, Victrola Talking Machine Company founder and Penn Museum past-President, initiated this multi-month lease. The May 1, 1931 issue of *Pan American Air Ways* informed readers that

*The Matto Grosso Expedition, which is doing exploration and research work in the jungles of Brazil, has chartered a Pan American Airways Sikorsky amphibian to aid them in their work.*

*The plane took off on its first flight April 10<sup>th</sup>, piloted by Charles H.(sic) Lorber. Three members of the expedition were carried to Descalvados in the upper reaches of*

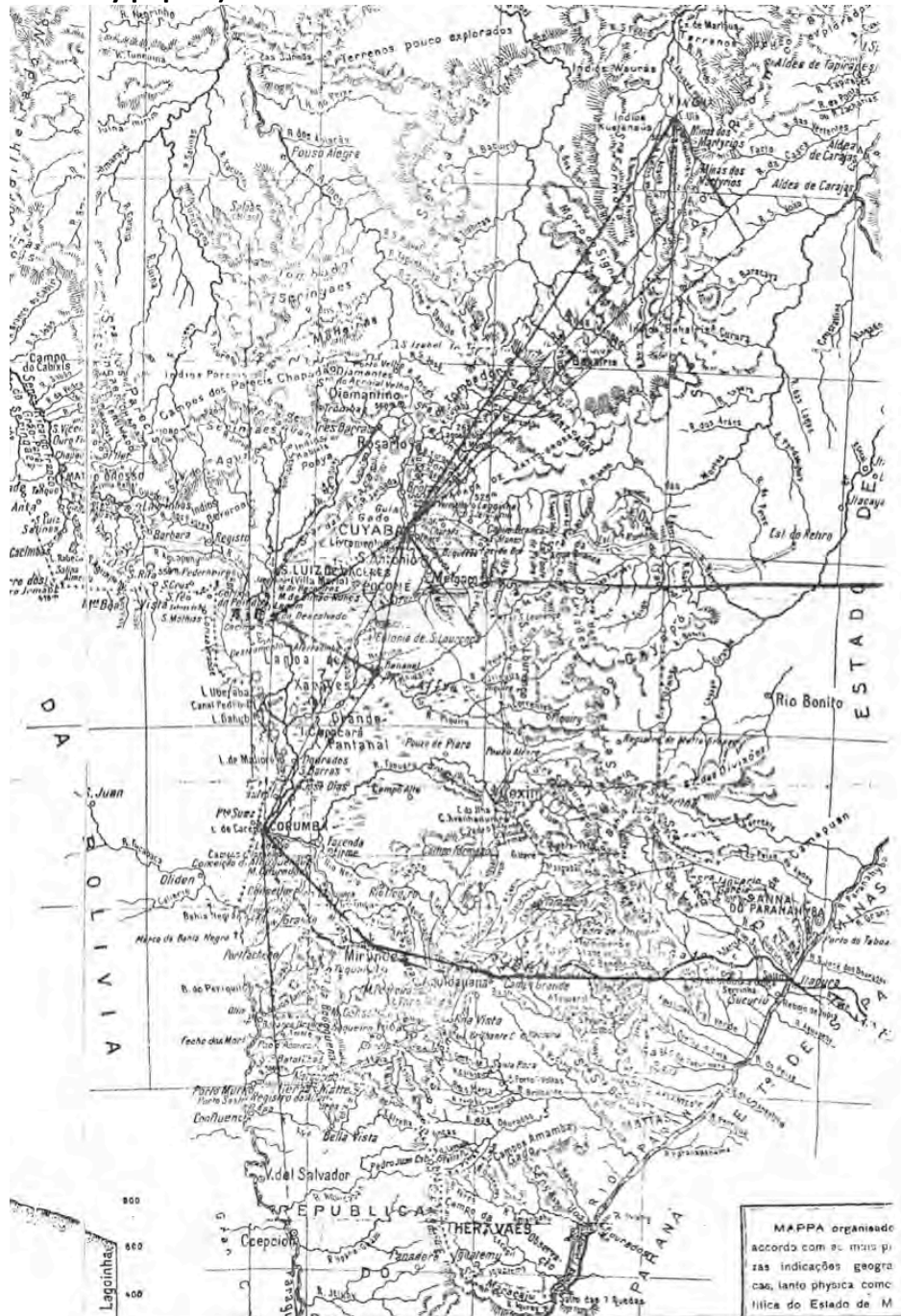
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*the Paraguay River. In addition to the explorers, Jose M. Saucedo, a flight mechanic and F. H. (sic) Due, radio operator, made the trip.*

*The expedition will make sound pictures of native and animal life of the comparatively unknown jungles. They plan to bring back specimens of South American animals and reptiles.*

Additionally, expedition members planned to hunt big game, film a “talkie” action-adventure film, and collect anthropologic, archeologic, and fauna artifacts for the Penn Museum and the Academy of Natural Sciences of Philadelphia.

**Map: Flight Routes for Matto Grosso Expedition, 1931. (Reproduced with permission from Han F Due, Jr. family papers).**



Between May and September 1931, Lorber, Saucedo, and Due proved Lindbergh's and Merida's ideas about how airplanes could support scientific expeditions. The team flew

repeatedly from barely established bases into uncharted airspace, logged 25,000 air miles (See Map 2) making aerial surveys, mail runs, doctor runs, supply runs, and one life-saving medevac flight; they ferried filmmakers and movie equipment, hosted dignitaries, dropped off emergency rations, fetched lumber, even hunting dogs. Their longest flight to the Xingu River headwaters to rescue the team's stranded ethnologist was flown not knowing if promised fuel caches in "Indian territory" were in place and could be spotted from the air. Without this fuel the rescue flight would be a one-way affair.

Charles Lorber brought Sikorsky and crew back to regular PAA service without crew loss or significant aircraft damage. PAA executives were pleased by the newspaper and magazine articles that heralded PAA's expedition role, and even more so several years later when novelist Lewis Theiss published *The Flying Explorer: How a Mail Pilot Explored the Jungles* (using Captain Lorber's flight logs) as an installment in his Ginger Hale adventure series.

### Fast-Forward

Although early PAA partnership with archaeological activity showed what airplanes offer, even with airborne "eyes" archaeologists still struggle to locate and access Central America's Maya sites.

Drs. Arlen and Diane Chase, lead archaeologists studying the Maya city at Caracol, Belize -- just south of Lindbergh's October 6, 1929 Tikal flight path -- partnered with NASA's National Center for Airborne Laser Mapping in 2010, to test if LIDAR (Light Detection and Ranging), an advanced radar developed to map the moon, could "see through" the thick vegetation that

hampered their archaeology activity. Four days of flights (in a forty-year-old, twin-prop Cessna Skymaster) over eighty-square-miles proved that LIDAR technology offered archaeologist an unparalleled eye-in-the-sky. The Chases, seeming to read from Dr. Kidder's 1929 assessment of the PAA S-38's ability, praised the team in the specially outfitted Cessna who "collected data surpassing the results of two and a half decades of on-the-ground mapping."

Had PAA's 1929 team flown over the Caracol ruins, no one onboard the Sikorsky would have spied the city beneath the forest canopy. Since 2010, however, LIDAR has located and mapped Maya sites in Honduras, Guatemala, Belize, and Mexico. Lindbergh's initial hunch was correct, and his eyes-in-the-sky idea tested by PAA crews over five days in 1929, twelve days in 1930, and five months in 1931, established aircraft roles in archaeology.