Photogrammetric Pioneers

George J. DeGarmo, Jr.

HARRY TUBIS, FORMERLY GENERAL MANAGER
STANDARD AERIAL SURVEYS, INC.

REPRODUCED below are photographs and a brief biography of George J. DeGarmo, as it appears in the New Jersey Aeronautical Heritage and published by the Aviation Hall of Fame, Teterboro Airport, Teterboro, N.J.

Teterboro Airport was the cradle of flying activities in the North Jersey–New York area. Here occurred many notable "firsts," as well as claiming the presence of some of the immortals of aviation. In 1972, the Aviation Hall of Fame was established,

Two Standard Aviation pilots, Bob Golem and Billy Diehl pose with owner/pilot George DeGarmo.

GEORGE DEGARMO
(1898-1971)

George DeGarmo was a pioneer in high altitude aerial photography and mapping.

In 1930, he purchased the New Standard Flying Service at Teterboro Airport from the estate of Capt. Ives MacKinney, a former Gates Flying Circus pilot who was killed in an air race at Teterboro on Decoration Day of that year.

Early in 1931, DeGarmo won a contract with the U. S. Department of Agriculture to map the Superior National Forest from the air. That was the first aerial mapping undertaken by the Department of Agriculture. At that time aerial surveys were in an experimental stage.

That same year DeGarmo was involved in a near fatal crash at Teterboro when the engine on his New Standard airplane quit cold on takeoff. He and his three passengers were spun into the ground from about 100 feet. Miraculously, they all survived.

In 1932, DeGarmo formed the Standard Aerial Surveys Company in Newark and sold the Teterboro aviation business to Ed Gorski. For 17 years his company specialized in aerial surveying and photogrammetric engineering.

George DeGarmo served his country as an airman in three wars.

During World War I, he was with the 341st Aero Squadron in England and France. In World War II, he commanded an aerial survey squadron in the Pacific, and during the Korean conflict he commanded a reserve aerial photography squadron at Willow Grove, Pa.

Due to his 14 years of civilian flying experience, DeGarmo received his Navy wings after just two months of flight training at the outbreak of World War II. He was commissioned a Lieutenant in 1941 and mustered out in 1945 as a Commander.

He was a Captain in the U. S. Naval Reserve when he retired in 1959 with 20 years of service.

His syllabus on aerial photography was used by the Navy as a basis for the first course in aerial photography for Naval Cadets.

He received the Air Medal and a citation for Meritorious Service for his outstanding work in aerial photography in the Pacific Theatre of Operations.

After the war, he was licensed as a Professional Engineer and Land Surveyor with offices in Freehold, N. J. and he flew out of Monmouth County Airport.

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followed by the induction of such distinguished early birds as Charles Lindbergh, Amelia Earhart, Bernt Balchen, Clarence Chamberlin, Floyd Bennett, Clyde Pangborn, Bert Acosta, Anthony Fokker, and Juan Trippe. (Ref. publications of the Aviation Hall of Fame.) George DeGarmo's memorial plaque notes:

> "A pioneer in high altitude aerial photography in the 1930s. Owned the New Standard Flying Service at Teterboro. Flew in World Wars One and Two. Elected 1975."

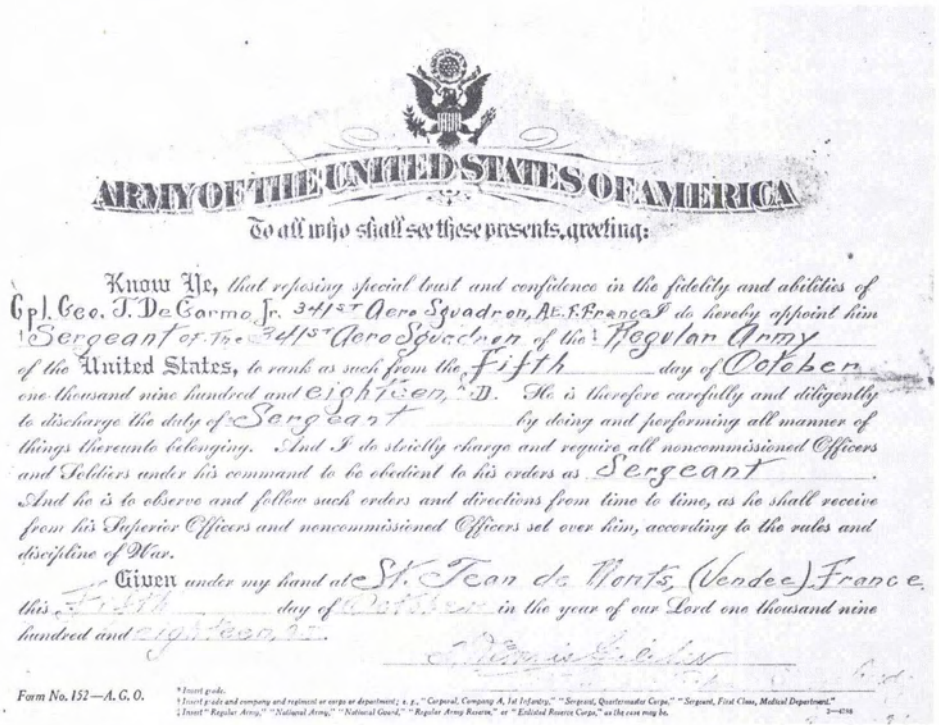
What follows is the fabric of the story, woven on the threads of history, particularly DeGarmo's pursuits in flying and commercial aerial photography.

In military service in World War I, in France with the 341st Aero Squadron, George was made a "Sergeant" (5 October 1918). The appointment indicates that "airmen" were part of the Regular Army (Figure 1). He returned at war's end with a prophetic love of flying. Several years later, he was enrolled at Tulane University of Louisiana. On 9 June 1926, he was granted the Bachelor of Engineering degree in the joint disciplines of Mechanical and Electrical Engineering. George did not forget his love of aircraft and flying. He took pilot training at Teterboro and gravitated, predictably, to a career in aviation. As the opening statement above indicates, DeGarmo became the owner of the New Standard Flying Service (1930).

In 1931, with the Great Depression at a point of deep gloom, a photographic project for a governmental agency was a matter of wonderment. Previous to 1931, some coverage had been accomplished for flood control projects along rivers, for the U.S. Corps of Engineers, but photographing the Superior National Forest area was a first for the U.S. Department of Agriculture. With this promising start in commercial aerial photography, DeGarmo's "flying service" changed its name to Standard Air Service, Inc., based at Teterboro. Laboratory facilities were installed in the loft area of a bank building in Hackensack, New Jersey (Figure 2). A second name change, to "Standard Aerial Surveys, Inc.," completed the firm's transition from flying service to aerial mapping. But that occurred a bit later, with its relocation to Newark, New Jersey.

DeGarmo's first cameraman was Charles H. Dean, who some years earlier had been employed by Hamilton Maxwell, Inc. of Stamford, Connecticut and New York City. Maxwell, also a veteran of World War I aviation, did commercial aerial photography as early as 1919. Dean served Standard for many years, as manager of photographic operations and laboratory processing, and continued with Robinson Aerial Surveys when that company acquired Standard Aerial Surveys in 1946. "Del Snyder" was DeGarmo's first alternate pilot.

Future-minded, and with his training as an engineer, DeGarmo enrolled in a graduate course in



ARMY OF THE UNITED STATES OF AMERICA

To all who shall see these presents, greeting:

Know Ye, that reposing special trust and confidence in the fidelity and abilities of Cpl. Geo. J. DeGarmo Jr. 341st Aero Squadron, A.E.F. France I do hereby appoint him Sergeant of the 341st Aero Squadron of the Regular Army of the United States, to rank as such from the Fifth day of October one thousand nine hundred and eighteen, A.D. He is therefore carefully and diligently to discharge the duty of Sergeant by doing and performing all manner of things thereunto belonging. And I do strictly charge and require all noncommissioned Officers and Soldiers under his command to be obedient to his orders as Sergeant. And he is to observe and follow such orders and directions from time to time, as he shall receive from his Superior Officers and noncommissioned Officers set over him, according to the rules and discipline of War.

Given under my hand at St. Jean de Monts, (Vendee) France this Fifth day of October in the year of our Lord one thousand nine hundred and eighteen, A.D.

Form No. 152—A. G. O.

* Insert grade.

† Insert grades and company and regiment or corps or department; e. g., "Corporal, Company A, 1st Infantry," "Sergeant, Quartermaster Corps," "Sergeant, First Class, Medical Department."

‡ Insert "Regular Army," "National Army," "National Guard," "Regular Army Reserve," or "Enlisted Reserve Corps," as the case may be.

FIG. 1. Appointment of George J. DeGarmo as Sergeant of the 341st Aero Squadron of the Regular Army.

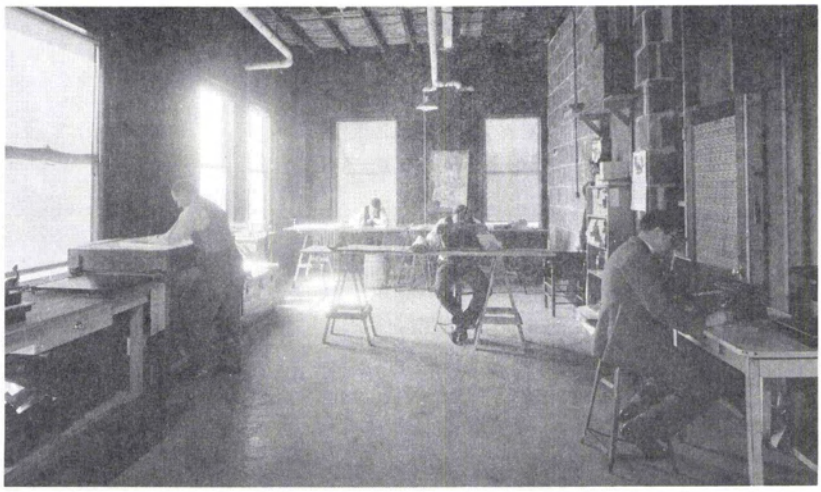


FIG. 2. Laboratory facilities of Standard Air Service, Inc., in Hackensack, New Jersey.

aerial photographic mapping methods at the Institute of Geographical Exploration at Harvard University. The year was 1935. An historic figure, Colonel James W. Bagley of the U.S. Geological Survey, was Director of the Institute, Bagley is best remembered for his design of the first American multi-lens, multi-chambered camera and for his innovative reconnaissance mapping methods utilized by the Survey. The story of this "institute" is one of great interest, but here we can only record the names of some of the participants: Dr. Hamilton Rice, noted surgeon and explorer, its founder; Dr. Erwin Raisz, cartographer; Bradford Washburn, pilot and explorer; Major Albert W. Stevens, of high-altitude-balloon-record fame; and Edward S. Wood, Jr., former Brock & Weymouth photogrammetrist. It is a matter of record, also, that Professor Earl Church of Syracuse University accompanied Dr. Rice on one or more of his South American explorations.

In 1936, Standard Air Service, Inc., was one of three aerial survey firms under contract to the Tennessee Valley Authority for photography of selected areas of the Valley watershed. Charlie Dean and Del Snyder, DeGarmo's first alternate pilot, operated at a base in Evansville, Indiana. This author coordinated the joint operations of the three companies for TVA.

In 1937, another graduate student at the Harvard Institute, Olmstead Peet, went to work for DeGarmo at the Hackensack location. Peet studied Civil Engineering at Cornell University and decided on aerial surveying as an interesting specialty. He was DeGarmo's first staff engineer. A year later, Standard relocated to larger quarters, at 54 Park Place, Newark, New Jersey. With Peet and other additions to the workforce, the company broadened its operations. Pilots Sam Barnitt and Ned Smith joined the company. Shortly after its move to Newark, Standard entered into a contract to photograph and prepare controlled mosaic maps for the entire area of the State of Rhode Island. It is not known at this time why the contract specified that the quadrangle-sized mosaic sheets be copied on glass plates. This presented a special challenge to production personnel. But specifications governing all phases of the job were successfully met and deliveries made on schedule. The State and many civilian and governmental agencies made extensive use of the maps.

A considerable portion of Standard's business was in pictorial, or oblique, photography for economic and developmental purposes. Over the years, a considerable library of such photographs was accumulated. It is well-known that many of the pioneers started with this bread-and-butter activity. With Standard, however, it was incidental to its main operations.

DeGarmo, himself a pilot, with his knowledge and experience in aircraft operations, sought to improve the performance of his planes and the efficiency of his flight crews. His first photographic plane had been a "Standard," believed to have been assembled at Teterboro Airport. This was followed by early models of the Cessna, but the best of the lot was a Lockheed Vega (later called the "Amelia Earhart" plane). With its bullet-shaped fuselage and its 450 HP Wasp engine, its stability and flight characteristics were exceptional. DeGarmo equipped the engine with a 10:1 blower, or supercharger, and a stainless steel exhaust manifold. The Vega achieved an efficient operating ceiling of 26,000 feet, a record of sorts at the time (1939). Much contract work was accomplished at over 20,000 feet altitude. For improving flight line tracking, DeGarmo acquired a British-made Aldis Camera Aiming

Sight. As the cameraman increased his skill in its use, flight lines were held more closely, and later, individual exposures were spotted with great accuracy.

In April of 1940, Harry Tubis joined Standard Aerial Surveys as manager for sales and plant operations. With the War in Europe at a serious stage, George DeGarmo foresaw that the United States would be drawn into the conflict. He believed that the civilian mapping organizations, like governmental agencies, would be called upon to assist with defense-related mapping projects. His foresight was correct. By mid-1941 Standard Aerial Surveys was involved in mapping work for the former Army Map Service and other agencies. But, by this time, George had offered his services to the Navy. This was long before the attack on Pearl Harbor and our entry into World War II. Commissioned a Lieutenant, his assignment was the organization of a recon photographic squadron for service in the Pacific theater. He assembled and trained his group at Pensacola, Florida and wrote the syllabus for the project. The Citation attesting the success of his mission is shown in Figure 3. He was mustered out of the service, in 1945, with the rank of Commander.

Utility Wing Pacific
United States Navy

Commendation

In the name of the President of the United States, the Commander Utility Wing, Service Force, Pacific Fleet, takes pleasure in presenting the AIR MEDAL to:

GEORGE J. DE GARMO
COMMANDER
UNITED STATES NAVAL RESERVE

for services as set forth in the following

CITATION:

"For outstanding airmanship and meritorious achievement while participating in aerial flight as the pilot of a single engine photographic airplane on numerous photographic missions over enemy held territory in the Marshall, Gilberts Area during the period from December 1944 to May 1945. His skill, resourcefulness and cooperation as the Officer in Charge of the Aerial Survey and Mapping Unit contributed greatly to the teamwork that resulted in the successful termination of a difficult and necessary task. His coolness in flight and devotion to duty during this period were in keeping with the best traditions of the United States Naval Service."

P. B. TUZO, Jr.,
Commodore, U. S. Navy.

Seal

TEMPORARY CITATION

FIG. 3. Commendation to George J. DeGarmo for service with the Pacific Fleet.

Standard had been engaged almost entirely, during the War years, on vital and classified projects. It had multiplied its personnel and facilities and sharpened its skills. But personal circumstances indicated that the company should be sold or merged with another organization. The purchaser, in 1946, was C. S. Robinson, owner and operator of Robinson Aerial Surveys of Ithaca, New York. William D. Hall, of the Robinson firm, became Production Manager and Harry Tubis was named Vice President for the combined operation. The business continued at the new, larger facilities at 418 Central Avenue, in Newark, which Standard had occupied in 1943.

DeGarmo was licensed as a Professional Engineer and Land Surveyor in the State of New Jersey, with offices at Freehold, New Jersey. He was engaged in civil engineering design and consulting work. He continued his interest and flying activity in the U.S. Naval Reserve and retired in 1959, with 20 years of service, with the rank of Captain. George was an early member of the American Society of Photogrammetry, serving as 2nd Vice President in 1941 and as a Director for the years 1937 through 1939.

This author wishes to acknowledge help provided by the following, with background material and personal recall: Mrs. George J. (Ruth) DeGarmo, Mrs. Chas. H. (Helen) Dean, Mr. Olmstead Peet, and The Aviation Hall of Fame.

William V. Kennedy of US Geological Survey, at right in photo. This was a project authorized and funded from a special appropriation to map the International Peace Garden. As the photo indicates, my party was made up of six men supported by two vehicles. I was very affluent in those days, a Junior Topographic Engineer earning $2,000 annually, plus a gracious stipend of $2.00 per day expenses.