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Wallace Sidney Park

Memorial Address*

I am honored to have been asked to present this memorial tribute to Sidney Park, who was one of the pioneers in aerial photography and one of the founding members of the American Society of Photogrammetry. He served as the Society's twenty-first president in 1955, was the recipient of the Honorary Member Award in 1969 and was also a Certified Photogrammetrist.

Sid was a sincere man with a friendliness and warmth that was felt by all who knew him. He was a leader who always received respect and loyalty, he was trusted by all and held a deep regard for everyone in his company.

Sid, as he was universally known, was born in Louisville in May, 1898. As a young man he was always interested in flying and had a boyish ambition to become a pilot in World War I. Sid learned to fly as a Cadet in the Army Air Corps. Upon completing his flying instructions, he was commissioned a Second Lieutenant. While he was too young to have flown in the war, he did some aerial photography work in the Army Air Corps immediately after the war. It was then that he became increasingly interested in combining this avocation with his vocation of flying. Not too many years ago Sid was asked if he ever "barn-stormed": "Sure," he replied, "I started out barnstorming; I got into this business in 1921, when I was 22 years old, and you had to barnstorm if you wanted food in your mouth."

BOWMAN PARK-AERO COMPANY

In 1920, Mr. Abram H. Bowman, a Louisville business man, became interested in commercial aviation and he and a World War I veteran of the Royal Flying Corps, a pilot named Robert H. Gast, formed a company called Bowman-Gast Aero Company. Gast soon left the company as his enthusiasm for aviation could not be satisfied by flying around the Louisville area, so he set out on his own, although often returning to the city.

In the early 1920s, interest in commercial aviation appeared to be waning and there was a chance that Louisville's airport, where Abe Bowman had set up a flying operation, would close like hundreds of other airports around the country. During this time Sid returned home to Louisville, after having worked a short time with the Glenn L. Martin Company. In 1921 Sid Park and Abe Bowman entered into a joint business venture that put Sid's pilot training to use in the Louisville area. They signed a contract with the Louisville Gas and Electric Company which was building a new plant and wanted progress photos of the plant construction, right-of-ways for utility lines, subdivisions, etc. The first airplane Sid used was a Canadian Jennie and the camera was hand-held

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Wallace Sidney Park
1898-1988

with a 4- by 5-inch format. Later K-5 cameras were used with 7- by 9-inch format and focal-plane shutters.

It was with this contract that the Bowman-Park Aero Company was founded and Sid Park's career in aerial photography was established. More important for the airport, Sid convinced Abe Bowman that an Air Corps Reserve squadron could be formed at the air field. This became a reality in 1922 when the 465th Pursuit Squadron (Reserve) began operations at Bowman Field. Obtaining the 465th gave new life to the air field and perhaps ensured that it would still be in Louisville today.

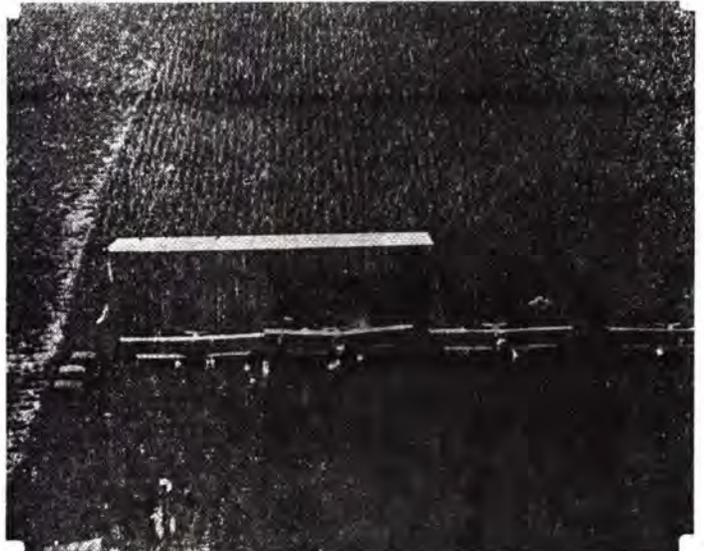


Figure 1. Early days at Bowman Field.

The first topographic maps in which the company was involved were produced under a 1928 contract with the Louisville District Corps of Engineers, for mapping approximately 1,500 square miles of the White, Wabash, and Eel Rivers in Indiana. The contract was awarded to W.N. Brown and Bowman-Park Aero Company. Brown was a Washington, DC engineer and surveyor



Figure 2. Louisville Gas & Electric Company, 1922.

and was one of the founders of the American Society of Photogrammetry. The procedures used in compiling these maps were, briefly:

1. Photograph the area.
2. Establish horizontal and vertical control.
3. Make scaled, rectified, enlarged negatives to map-publication scale on film.
4. Plot a grid and the horizontal control on ground glass.
5. Cut film negatives as necessary and combine in mosaic form, using rubber cement, so that the photo image matches the plotted control on ground glass.
6. Use this assembly to print a blue-line image on sensitized aluminum-mounted plane-table sheets, for field development of the contours.
7. Deliver materials to Corps of Engineers for production of standard USED sheets in color.

One of the most formidable projects the firm undertook in the early years was a photographic survey done for the Louisville Gas & Electric Company to designate rights of way for the eventual installation of pole lines.

In 1935, Frank Riley, a civil engineer, joined the Bowman-Park Aero Company shortly before Sid Park bought out Abe Bowman in 1937. The company name was then changed to Park Aerial Surveys. Riley had been an observer and computer on a Coast and Geodetic Survey sixty-five-man triangulation party establishing primary horizontal control throughout the Tennessee Valley Authority area. He was Vice-President and General Manager of Park Aerial Surveys until 1976. He and Sid Park were associated in business for 47 years.

INVENTION AND DEVELOPMENT

In the 1940s, as more and more aerial photography was being used by the US Geological Survey (USGS) and the US Depart-

ment of Agriculture (USDA), there was an increasing demand for more accurate aerial cameras. Because few were available, Sid Park decided to design and build his own. He equipped a machine shop and hired a tool-and-die-maker. The patterns and castings were made in a local foundry and stop watches, counters, and lenses were purchased from available sources. All other parts were made and assembled in the shop. The new cameras had a 9-by 9-inch format and rotary shutters. At that time, the Agriculture Department required principally an 8 1/4-inch-focal-length lens and occasionally a 12-inch-focal-length lens, while the Geological Survey required 5.2- and 6-inch-focal-length lenses. Therefore, different-focal-length cones had to be made. However, all Park cones and magazines were interchangeable and light-tight, so that a crew could take an extra loaded magazine for a quick change, or load and unload in flight. Early magazines had a 250-foot-roll capacity, but later 500-foot-roll-capacity magazines were built, so that it was seldom necessary to change while airborne.

All cameras used on Federal government contracts for mapping photography were required to be calibrated and tested, originally

by the National Bureau of Standards. At one time, more than 50 percent of the cameras approved by that agency and in use in the United States were Park cameras.

As the quality of the lenses was improved, mostly by the foreign manufacturers, Park bought Wild Heerbrugg Universal Aviogon wide-angle lenses and installed them in Park cameras. (Park cameras were used in the early days of Tennessee Valley Authority mapping.)

Into the early 1930s, aerial film was usually processed using the wind-and-rewind system, which produced negatives with uneven density. To produce uniform negatives throughout, Sid Park had built four stainless-steel tanks, 3 feet in diameter and 12 inches deep. These were put into a larger tank containing temperature-controlled water. Also built was a stainless-steel involute reel that held a 250-foot roll of film. After the film was loaded on the involute, it was immersed in a water bath, then processed in the developer, stop-bath, and rapid hypofixer. The involute was transported by a hoist on an overhead movable crane. After the hypo fixing, the film was removed and washed. This system was used with excellent results for several years.

As the company was operating as many as nine aircraft, it was necessary to increase film-processing and paper-printing-and-processing capacity, so Park bought the first commercially used LogEtronic strip printer. The company also obtained several PAKO processors and modified them to accommodate 9 1/2-inch film (black-and-white and color) and 500-foot rolls of 10-inch paper, also both color and black-and-white. For a number of years, the company was photographing more area for the USDA than any other firm.

In the 1950s, Russell K. Bean of the USGS conceived the idea of the twin-low-oblique convergent photography. This concept produced greater vertical accuracy and required less field control. The base-height (B/H) ratio was increased from 0.63 to 1.23, thereby decreasing the number of models (pairs of overlapping photos) by approximately 50 percent. This company and others built mounts to hold two standard 6-inch cameras, each tilted 20 degrees to produce the required 40-degree dihedral angle containing the lens axes. This arrangement was cumbersome, required a large hole in the aircraft, and it posed the difficult problem of synchronizing the shutters in the two cameras. Sid Park then built a Twinplex camera which consisted of a single camera body containing two divided chambers with a lens in each and two film magazines (a supply and take-up). One system tripped both shutters simultaneously. The magazines held a 500-foot roll of film. Park built four 6-inch and one 8 1/4-inch Twinplex cameras. For several years, it was not unusual for Park to have three or four Twinplex cameras in the air at one time on Geological Survey projects.

In the 30s and 40s, only a small part of the US was adequately mapped at 1:24,000 or 1:62,500 scales. These were the best available flight maps. Sid decided that something should be done about providing flight maps for areas not adequately mapped. He built a tri-lens camera using three short-focal-length lenses — one vertical and two obliques. The tri-lens photography was enlarged several times and the flight lines drawn on these photo-maps. This made it possible to have 5 or 6 flight lines drawn on one tri-lens flight, and resulted in better flight plans and a minimum number of reflights.

THE WORLD WAR II PERIOD

Just before World War II when the Army was training a great many men and women as aerial photographers, they required the trainees to be taken up in aircraft. To speed the job of training and save the cost of flying, Sid built a photo trainer. It consisted of a cabin which held the trainee, a camera magazine, and a view finder. Under the cabin was a piece of exposed film of an aerial negative which traveled and gave the trainee a ground image through the view finder. Also, a recording device would print an image representing a photograph. The trainee could then be taught to correct for crab, tilt and overlap. Five of the trainers were sold to the Air Force.

When Wild Heerbrugg build the RC-9 super-wide-angle 3 1/2-inch (88mm)-focal-length camera, the USGS bought two cameras of this type for use on some of its projects. After one or more private companies bought this type camera, the Geological Survey advertised their two cameras for sale. Park Aerial Surveys was the highest bidder, and these cameras were used extensively on Geological Survey and private contracts.

Over the years, Park operated various types of aircraft. Before World War II, the company had a Canadian Jennie, Lincoln Standard, Curtiss Robin, Cessna J6-7, and six Cessna Airmasters. After the war, the company used whatever it could find such as an old Airmaster and several AT 6s. Later, when the Cessna 195 was built, Park Aerial Surveys began using it and had as many as nine of these aircraft at one time. In order to get greater altitude and speed, Park modified four 195's by removing the Jacobs engines and replacing them with Pratt and Whitney 450 hp engines. After the 1960s, Park started using six Piper Twin Comanches. In spite of the many planes used and the thousands of hours flown, the company never had a fatality nor serious injury to its personnel, although it did lose two planes.

Park Aerial Surveys, Inc. was closed from 1942 through 1945. Sid Park had been ordered to active duty as a Colonel in the Army Air Corps (he served as an intelligence officer in England

on the General Staff of the European Theater of Operations). Meanwhile, Frank Riley joined the Marine Corps.

When Park closed in 1942, the armed forces bought the airplanes and cameras. One of the Park pilots, who was called to Air Corps duty, flew for the military the same airplane that he had flown for Park Aerial Surveys.

BUSY YEARS FOR PARK AERIAL SURVEYS

The company reopened after the War and began using husband-and-wife (pilot-photographer) photo crews. This proved to be very satisfactory with people like the Tolers, Blantons, Sauers, and others, who produced outstanding work. These husband-wife teams were sent out across the country for as long as five to six months at a stretch. That was one of the reasons Park Aerial Surveys preferred husband-wife crews. Not only did it keep families close, but added stability to the working conditions. The combination led to virtually "zero" employee turnover. Sid once explained, "We use the gals whenever we can, they do this type of work much better than men."

Before the advent of the Interstate Highway system, a number of consulting engineering firms, realizing the great value of accurate photogrammetric maps, started buying equipment and doing their mapping in-house. Park Aerial Surveys had been in the consulting engineering and photogrammetric mapping business for several years and they had experience and know-how in both engineering design and mapping.

The company had designed and prepared plans and specifications for many miles of highways and railroads. Park was awarded and successfully completed a contract with the Kentucky Highway Department to establish horizontal and vertical geodetic control for more than 600 miles of highway. This work was all done in accordance with Coast and Geodetic Survey specifications and was published by that agency. In order to measure longer distances, Sid built several survey observation-tower units. As opposed to the Bilby steel tower units built and used by the US Coast and Geodetic Survey, Park made his of aluminum. Each unit consisted of two separate towers, one inside the other. Also opposed to the Bilby unit, which had the instrument stand inside and the observation platform outside, Park's had the platform inside and the instrument outside. They were used very satisfactorily on the Kentucky geodetic work.

In 1967-1968, Park developed for Peabody Coal Company a monthly aerial inventory system which made use of an in-house IBM 1130 computer. The company furnished the client the amount of overburden removed, the amount of coal removed by grade or seam such as #9, #11, #13, by mine and by owner, the



Figures 4 and 5. Park's survey observation-tower units, at left in the upright position; above, the tower is being lowered.

area reclaimed, new haul roads, and other information. It required a year to develop the program. Park would start flying on the last day of each month and all work had to be delivered not later than the fifth of the next month, six days. At times, two photo crews were used as the area involved approximately 35 pits in six states. The process required seven plotting instruments, operated 24 hours per day. In a 13-year period, Park failed to complete the monthly work only two or three times, and that was due to adverse weather conditions. This was the most comprehensive mine production inventory program in use at that time.

During the many years when Park Aerial Surveys was doing a large amount of aerial photography for various United States Government agencies, it was the custom of the USGS and the US Forest Service to make inspection of aerial photographs and other products in the contractors' plants. I would be remiss if I did not pay tribute to their representatives, who would come to our plant and spend many hours in the photo-laboratory at night, on Saturdays and Sundays, inspecting the work to ensure timely completion.

Park was very fortunate in having an excellent group of employees. There was a very small turnover and many of these employees had more than 25 years of service with Park Aerial Surveys.

Park's area of operation was throughout the continental United States and Alaska. The company did only a small amount of foreign work, but did have contracts in the Bahamas and Vietnam.

Park Aerial Surveys, Inc. was sold to J. Edwin Rankin in 1973.

LOOKING BACK

W. Sidney Park was Bowman's second business partner in aviation. Perhaps the most pragmatic of Louisville's trio of aviation pioneers, Park readily admitted that the airplane had served as a fine tool in his business of many decades — aerial photography.



Figure 6. Bowman Field historic plaque.

Over the years the company was eminently successful. It employed approximately 100 people and owned 8 airplanes. After selling his interest in Park Aerial Surveys, Sid became a partner in Riley, Park, Hayden & Associates, a firm engaged in design, survey and construction supervision operations.

Park was one of the founders of the Aero Club of Louisville. In 1925, he married the former Margaret C. Joseph, of Louisville. He said, "She was the Secretary of the Aero Club for 8 years, and did all the work, while I got all the credit."

Park never took an active interest in student training and he said "Addison Lee (Chairman of the Air Board for its first 20 years) was my only student who eventually soloed." He noted that Bowman never learned to fly and that he took a back seat even in the early days of the business.



Figure 7. Sid Park confers before take-off with a company pilot.

Summing up his aviation-related accomplishments over his 62-year career, Park told an Aero Club audience, "My ambition was never to be the fastest pilot or the most aerobatic pilot — it was to be the oldest pilot, and it looks like I made it." In presenting Sid the Honorary Membership award of the American Society of Photogrammetry, Russell K. Bean of the USGS called him "the complete photogrammetrist — he builds his own aerial cameras, constructs the mount and installs it in his own airplane and takes the pictures, makes his own diapositive plates, operates his own stereoplotting facility, builds his own towers for field surveys, gets the control (ground measurements) with his own men."



Figure 8. W. Sidney Park, 72-year-old founder of Park Aerial Surveys, aims his first aerial camera much the way it was used back in 1921 in his Jennie. On the table is a modern aerial camera constructed in the company machine shop.

Sid Park's inventive mind was always active. He invented a boat trailer that facilitates loading via side panels that rise to a vertical position when the trailer hits the water. He said that a boat could be loaded in just 6 seconds. No manufacturer has yet bought the idea, but one will. Why? Because "it works fine" — and because Sid Park invented it.

In an interview, Sid was asked, "How do you prepare your bids for aerial photography contracts?" The answer was: "We check the best maps of the area, figure out how many miles we will have to fly, how many exposures we will have to make, what the weather outlook is, how long it will take the crew to do the job, what other expenses we are going to incur, and add a little profit above that. Then we throw the paper in the wastebasket and try to guess what will be the lowest bid among our competitors." It must have been a good system.

Sid was an avid boatman. He had a large cruiser for years which he kept on the Ohio River in the summertime, and took to Florida in the winter.

In 1920, when Bowman Field (Louisville's secondary airfield now) was being planned, Sid Park was one of the few people involved in getting it built. For his part in the project, one of the streets in the area was named Park in his honor. In addition he was made a "Distinguished Citizen of Louisville" by the Mayor for his participation.

In closing I want to recognize and thank Frank Riley, who wrote the original draft of this Memorial Address and asked me to deliver it for him and add anything I wished. I have added information in a few sections and I wish to add one more fact about which Frank would say, "Bill, that's not necessary."

Though the company did its first survey work in 1929, it wasn't until the mid-1930s that Sid Park got into it in a serious way. The key first step was to hire Frank Riley, as vice-president and general manager.

Mr. Riley was a civil engineer from South Carolina whom Sid Park met while the young man was camping near the Zorn Avenue Pumping Station of the Louisville Water Company with a surveying party of the US Coast & Geodetic Survey.

In anticipation of broadening his firm's survey and mapping operations, Mr. Park had requested from the Federal Government names of surveyors who might be available, listed in the order of their qualifications, as surveying crews were cut back in an economy drive. Frank Riley's name headed the list.

Mr. Park invited him to join the firm, train in aerial-survey photography and head the topographic-mapping operations. It is to Frank Riley that Sid gave the credit for development and management of the mapping functions, as well as being active in supervision of aerial survey photographic operations.

I wish also to express my appreciation to Al Quinn, Morris Thompson, Mary Draisker, Judy Peesel, and others for their help in editing, typing, having slides produced, etc.

Sid Park was truly a genius in the design of aerial cameras and other aerial-photo production instruments. His dedication to quality and love of service to his fellow man make him special to all who knew and worked with him.

I would now like to read a portion of Sid's Retiring President message that he delivered at the 22nd Annual Meeting of ASP in 1956: "Some people feel that the Presidency of an organization like this is something you are glad to have behind you. I can't say that I agree wholeheartedly, as being President has been a privilege which I enjoyed very much. It has been a pleasure to be associated with people who are so willing to undertake tasks which they know will take a great deal of their time and effort."

Sid died January 25, 1988. He is survived by his wife, Margaret, who now resides in a Louisville nursing home. They had been married for 63 years.

Wallace Sidney Park was truly a fine gentleman, a credit to our country, to Louisville and to our profession.



At the 1966 Annual Convention in Washington, DC (clockwise from the center back of the table) are Frank Riley, Dorothy Harman, Hugh "Red" Loving, W. Sidney Park, Gerry Loving, William Harman, James Hawkins, Hester Tayman, William Tayman, and Margaret Park.