

AAHS JOURNAL

of the

AMERICAN AVIATION HISTORICAL SOCIETY



VOLUME 14

NUMBER 3

Brewster F2A-3, No. 2-F-7 of Fighting Squadron Two in flight, 10 March 1941. (photo from National Archives Record Group 72, U.S. Navy File VF2A2/L11-1, Vol. 4)

FALL

1969



THE BREWSTERS of FIGHTING TWO

By JAMES V. SANDERS

Capturing some of the feeling of tenseness of the opening days of the War, this picture shows an F2A-3 being hoisted aboard the LEXINGTON in early 1942. (Photo - U. S. Navy #80G-64697 in National Archives.

INTRODUCTION: This is the story of one aircraft type in service with one squadron and it covers a period of only sixteen months. However, if history is really a guide to the future, then this period, the months immediately preceding the entry of the U. S. into WWII, deserve careful study by all persons concerned by the present controversy pertaining to defense policy. The aircraft, the Brewster Buffalo, is also of special interest. Praised before the war as an example of America's superior aviation technology, it was withdrawn from Naval operational service after only two years. The almost complete destruction of the Marine Brewsters at Midway resulted in condemnation so severe that only recently has any attempt been made to bring the story into proper perspective. Parallels with the development of many present-day weapon systems are obvious and the reader is invited to contemplate the ones of his choice.

All the material was drawn from government sources. Extensive use has been made of the LEXINGTON and VF-2 War Diaries. Information on the individual aircraft was obtained from the "Aircraft History Cards" and from BuAer "Trouble Reports." It is realized that, by relying on these official documents, it is possible to construct only a skeleton of the story. It is hoped that enough interest will be generated so that these "dry bones" can be fleshed out with a supplementary story based on personal experiences.

MONOPLANES AT LAST

The personnel of Navy Fighter Squadron Two watched with considerable interest as a powerful and pugnacious

appearing monoplane taxied up and took its place alongside their tubby little Grumman biplanes. The date was 7 October 1940 and VF-2 was about to become the second Navy fighter squadron to convert to monoplane fighters. The airplane was a brand new Brewster F2A-2, Bureau of Aeronautics number 1406.

To understand the importance of this event to Naval aviation in general and to the men of VF-2 in particular, it is helpful to recall the world situation at that time. Thirteen months previously Hitler had launched World War II, and he was already master of continental Europe. One foe remained and at that very moment, the Luftwaffe and the RAF were engaged in determining the fate of Britain. While the outcome was still in doubt, one thing was already obvious: The day of the biplane fighter was past. The fast, multi-gun, monoplane represented by the Spitfire and the Bf-109 has proven their superiority beyond all doubt.

Fortunately, the need for a monoplane carrier-based fighter had been foreseen by the Bureau of Aeronautics before the war in Europe had begun. The Grumman XF4F-2 had flown in September of 1937 followed by the Brewster XF2A-1 in December. The Brewster model was chosen as the standard Navy fighter but the F4F development was to proceed in parallel in case serious problems were encountered with the F2A. The production F2A-1 entered service with VF-3 in December 1939 but remained in service less than a year before being replaced by the F2A-2. The lessons being learned in the skies over Europe indicated that the F2A should be improved by weighting it down with more guns, armor protection for the pilot, and

self-sealing gas tanks.

On 18 July 1940, a letter from BuAer directed VF-2 to prepare to fly 18 of their old F2F-1s to Pensacola, where they were needed in the Navy's rapidly expanding flight-training program. Ferry pilots were to pick up new F2A-2s at Anacostia and fly them back to San Diego. The 18 F2F-1s were ready on August 1.¹ Difficulty was experienced in getting Brewster to deliver the F2As to Anacostia and the F2A-2s allotted to VF-2 (1406-1423) did not begin leaving NAS Anacostia until early October. After cross-country flights of from five to eleven days they arrived at NAS San Diego. Seventeen had been received by 28 October. The eighteenth aircraft (1411) experienced engine trouble and landed at Stinson Airport, Chicago on the 18th. Delay was experienced in obtaining replacement parts and 1411 did not reach VF-2 until 28 November, over a month later.

The pilots of VF-2 found the performance of their new aircraft an enormous improvement over their old F2F-1s. See Table I. (VF-2 had not used the F3F, but the new Brewsters were a great improvement over even this later Grumman biplane.) The F2A-2 had nearly twice the horsepower and the maximum speed was nearly 100 mph faster. Although the gross weight of the F2A-2 was some 55 percent greater than that of the F2F-1, the use of wing flaps on the Brewster produced a stalling speed only 10 mph higher while the takeoff distance in no-wind conditions was actually somewhat less. Armament on the Grumman

biplane had consisted of two .30 caliber machine guns with 1000 rounds of ammunition per gun. The F2A-2 was equipped with two .50 caliber guns in the fuselage each with 200 rounds and two .50 caliber guns in the wings with 400 rounds each.

After the initial excitement of receiving their powerful new monoplanes, the Squadron settled down to nearly four months of training to prepare for carrier operations. Considerable time was spent in field carrier landing practice (FCLP) where the object was to land within a section of runway marked off to simulate the deck of a carrier. While FCLP lacked realism in that the landing surface was stationary with respect to both forward and vertical motion, the fact that an aircraft which failed to remain within the boundaries suffered no damage, made this an important part of the training syllabus. Two additional F2A-2s (1438-1439) were added to the squadron on 10 December.

"TEETHING TROUBLES"

In common with all new aircraft, the F2A-2 had its problems. For example: On the F2A series, the life raft was mounted in a cylindrical container immediately behind the pilot's headrest. Three times aircraft were parked in the sun too long, and the life raft spontaneously began to inflate. To anyone familiar with the extensively glazed rear canopy of the F2A, the image of a life raft inexorably

(Photo - A. J. Bibee)



inflating within that greenhouse seems humorous. However, it must have been frustrating for the crew chief who had to replace all those transparencies. What, if anything, the Bureau suggested to eliminate this problem is not known.

At this time, VF-2 began experiencing the landing gear troubles that would plague the F2A throughout its Navy career. The landing gear of 1410 collapsed during a simulated carrier landing on 10 December. Bent landing gear struts were experienced on three other aircraft during December. The landing gear was reinforced and no further trouble was experienced until the much more punishing carrier landings were undertaken.

H. E. Rutherford devised his own method of avoiding the landing gear problem.² On 2 January 1941, he landed 1439 on its belly. In testimony to the strength of the F2A, damage was minor and all repairs were accomplished within the squadron. Then, while landing 1413 on 27 February, he remembered to lower the landing gear but forgot to lock it in the down position; the wheels retracted after landing. This time the motor was badly damaged by "sudden stoppage" and repairs had to be performed by NAS San Diego.

The squadron appears to have made the transition from biplane to monoplane rather smoothly. The fact that other units were having trouble is shown by a letter, dated 12 December 1940, from BuAer to the commander of VF-2:

"Information which has reached the Bureau from several sources has raised the question of whether or not a service pilot, trained and skillful in handling of biplanes, suffers a temporary loss in efficiency when shifted to a monoplane prototype."

The commander was requested to examine the problem in his own squadron and report back; the reply has not been located.

A potentially damaging accident was avoided on 23 January when during a field carrier landing approach the pilot of 1419 started a left turn with nose high and speed very low. The plane started to spin, the left wing dropped and hit the ground. The pilot succeeded in righting the airplane momentarily but again the left wing hit the ground. He then gave it "full gun" and pulled into the air, went around and made a safe landing.

On 24 February, the pilot of 1420 was not as fortunate. Experiencing a sudden loss of power due to carburetor icing, he lowered the landing gear and prepared to make a forced landing on a road adjacent to Silver Strand State Park. At the last moment, an approaching car caused the pilot to swerve and land on the adjacent beach instead. Since he had no time to raise the landing gear, a wheels down landing had to be made. The wheels sank into the soft sand and the F2A flipped over on its back.

In this era Navy fighters were expected to also perform dive bombing chores and were accordingly fitted to carry two 100 lb bombs. Dive bombing practice proved to be hard on the Brewsters. On 29 January, C. W. Brooks was practicing 45° dives on 1407. He had reached 400 mph and was performing a 6g pullout when he felt a sudden jar. Looking out, he discovered that both ailerons were missing and that the wing tips were bent upward about 45°. Failing to regain sufficient control of his airplane he pointed it out to sea and jumped. The ailerons landed on Norm Island, while both plane and pilot landed in the Pacific. Brooks was rescued but 1407 was lost with only 132 hrs total time. The opinion of the Board of Investigation was that the aircraft had not been loaded above the designed load, but that its distribution (160 gallons of fuel plus wing guns) had moved the center of gravity to the rear. They noted that NACA tests had shown that, with the e.g. too far

back, dynamic instability occurs at about 400 mph. (In a test at 1 lg, violent instability occurred and the pilot blacked out.) The board concluded that the airplane was sufficiently strong but that the pilot did not use proper techniques in recovering from the dive with the sensitive controls that existed due to the position of the e.g.

During the months while the personnel of VF-2 were working up to operational effectiveness, their home carrier, the U.S.S. LEXINGTON (CV-2), was engaged in cruises along the West Coast and to Hawaii. On 23 February, the LEXINGTON returned to San Diego and began preparing to take the VF-2 aboard. Carrier landings were undertaken resulting in further accident reports: (Airplane numbers in parentheses)

26 February. (1423) Oil line broken during raising of landing gear. Forced landing on carrier successful.

1 March. (1422, 1939) 1439 had landed and was taxiing forward on the flight deck under the direction of taxi signalman. This signalman passed the pilot on to the next signalman without first looking to see where the next signalman was or even if he was ready. The next signalman was not ready and when the pilot could not find him, he immediately applied the brakes. Before he could stop 1439 had run into the tail of 1422.

HAWAIIAN OPERATIONS

The LEXINGTON embarked its entire Air Group and set sail for Pearl Harbor in March 1941. On board were VF-2's 18 F2A-2's and 3 spares assigned to the LEX.

For the next five months, VF-2 operated over the waters around the Hawaiian Islands, alternating between the LEXINGTON and various shore bases. A sampling of the problems of this period gives some idea of the nature of this tour.

24 March (1431) Ground looped on landing at NAB Pearl Harbor.

31 March (1422) Landed hard and bounced 8 feet before catching wire.

16 April (1408) Ground looped due to brake failure at NAS Mauri.

12 May (1423) Shortly after takeoff, the propeller governor failed and the pilot began forced landing procedure on the LEXINGTON. Just prior to "cut," the governor regained control and the plane lurched forward; the pilot "cut" in a high position and the plane made a hard landing.

21 May (1419) The outboard landing gear strut failed during landing. Reinforcements had been installed.

25 June (1413) Pilot retracted wheels before becoming airborne from USAAF Luke Field on Oahu Island.

30 June (1439) Pilot had difficulty with the brakes and plane ground looped at Luke Field.

26 July (1414) Pilot, Rutherford, could not lower landing gear hydraulically so had to use the emergency release. On landing, the tail wheel collapsed, leading to a ground loop that the brakes could not control. Luke Field.

28 July (1408) Plane stalled while landing. Wing and elevator scraped the ground. Pilot righted airplane and completed landing. NAB Pearl Harbor.

From these reports it is seen that extensive flying was being done. Aircraft time was building quickly.

In July there was an exchange of aircraft between VF-2 and VF-3, five F2A-2s (1413, 1417-1418, 1421, 1435) going to VF-3 in exchange for five others (1401-1402, 1414, 1436-1437). The reason for this exchange is unknown.

LEXINGTON left Pearl Harbor and arrived at San Diego near the end of August where VF-2 was disembarked. The last accident to its F2A-2s was reported by VF-2 on 5 September when 1422 lost hydraulic pressure in flight.

The pilot used the hand pump to lower the landing gear but failed to pull the emergency lock; the gear retracted on landing. (Total aircraft time: 341 hrs)

At the beginning of September, VF-2 began turning its F2A-2's over to the Advanced Carrier Training Group (ACTG) to receive instead F2A-3's and on 12 September 1941, the last -2 was removed from the squadron roles. VF-3 had turned in their F2A-2s several months before. The F2A-2 served for many months more as an operational trainer for new Navy and Marine Corps pilots, first with the ACTG and then at NAS Miami. Only one other Navy squadron used the Brewster fighter in this period: VS-201 operated F2A-2's on the East Coast until February 1942.

LAST DAYS OF PEACE

On the second anniversary of the war in Europe, the situation was desperate. Frustrated in the air over England, Hitler decided that he could bring Britain to her knees without an invasion. He turned his attention to the East and to Russia. In quick succession, Yugoslavia, Greece, and Crete were overrun. The campaign in Russia proceeded smoothly and the fall of Moscow seemed only a matter of time. As part of the plan to destroy the British will and means to resist, the Germans were waging indiscriminant submarine warfare in the Atlantic. Any day could bring an incident that would draw the U. S. into the war. And in the Pacific, Japan, eager for the natural resources of the British and Dutch possessions, welcomed an opportunity to join her Axis partner.

Against this black background, VF-2 began receiving new F2A-3s in the early part of September 1941. This third model of the Brewster fighter offered no improvement over the aircraft they had just turned over to the training units. (See Table I.) Maximum speed remained the same. Gross weight was raised nearly 900 lbs, resulting in a slightly increased stalling speed. Takeoff run with no wind was increased by 66 ft. Armament remained the same. By 12 September, VF-2 had 18 F2A-3s on hand.

VF-2 was the only Navy squadron to use the F2A-3 version, and while some would see service with Marine Corps squadrons, the majority were assigned directly to training units.

F2A-2 #1419 at North Island, 10 March 1941
(Photo - National Archives, Box VF2A2/L11-1)



TABLE I
PERFORMANCE OF AIRCRAFT USED BY VF-2 (1940-1942)

	F2F-1	F2A-2	F2A-3	F4F-3A
Sea level power (hp)	650	1000	1000	1000
Takeoff power (hp)	700	1200	1200	1200
Gross weight (lb)	3863	5447	6321	6783
Wing loading (lb/ft ²)	16.8	26.0	30.3	26.1
Maximum speed (mph)	231	324	321	320
Stall speed (mph)	66.1	75.2	80.7	74.8
Time to 20,000 ft (min)	12.7	7.8	9.2	9.4
Maximum range (miles)	985	985	965	830
Maximum endurance (hours)	8.9	7.5	7.0	5.8
No wind takeoff (ft)	375	362	508	559
25 kt wind takeoff (ft)	132	151	230	228
Armament	2	4	2	2
	.30 cal	.50 cal	.50 cal	.50 cal

Partly because this model brought little change from previous equipment and partly because of increasing tempo of the world situation, only a short time was allowed VF-2 for working up to operational effectiveness in F3A-3. Accidents were few and mostly caused by carelessness. On 2 October two aircraft (01527 and 01541) were damaged by a tractor which was using a Bungee starter on a nearby airplane. A few days later, 01527 was again the innocent victim of carelessness, when 01536 taxied into her. Both 01527 and 01541 were turned over to NAS San Diego for repairs and were left behind when, on 14 October, LEXINGTON and VF-2 were on the way back to Pearl Harbor. VF-2's complement was 17 F2A-3s and five more were assigned to LEXINGTON as spares.

LEXINGTON was west of the Hawaiian Islands on the 23rd fleet exercises. On 27 October, the entire Air Group participated in a simulated attack on Pearl Harbor. It is not known how much VF-2 learned from this exercise, but events were soon to prove that Pearl Harbor had failed to learn one vital lesson: that an enemy carrier-based attack on the Fleet in Pearl Harbor was within the realm of possibility.

During October and November there occurred a series of accidents involving the arresting gear of the LEXINGTON and Buffalos of VF-2:

25 October (1528) Arresting wire broke and airplane skidded into turret.

25 October (1538) Normal landing made but wire ran out to full length and airplane struck barrier and nosed over.

6 November (1540) Pilot: D. C. Barnes. Airplane landed normally and caught the 4th wire. However, the wire broke and the airplane hit number 1 turret.

18 November (1530) While making a night landing, the airplane came in high and fast, touched down between the 6th and 7th wire. The hook bounced over the 7th and engaged the 8th. The wire parted and the plane crashed into the barrier. A flight-deck crew member lost his leg to the whipping wire.

Another aircraft (1539) was damaged on landing at Ford Island on 12 November. The pilot moved the landing gear actuation handle past neutral thereby causing the gear to retract. A wheels up landing was made. At this time the pilot, Brewer, had a total of 1588 hours of flight time.

LEXINGTON was back in Pearl for Thanksgiving. Then, on 5 December, LEXINGTON sailed out of Pearl Harbor on a mission to deliver 18 SB2U-3 Vindicators of VMBS-231 to Midway Island. Included in Task Force 12 along with the LEXINGTON were the heavy cruisers CHICAGO, PORTLAND, and ASTORIA and the destroyers PORTER, FLOSSER, DRAYTON, LAMSON, and MAHAN. As the LEXINGTON steamed out of the harbor, she sailed past the orderly rows of majestic battleships anchored alongside Ford Island. In eight days the LEXINGTON would be back but by then the mighty battle force would be destroyed

TABLE II
BREWSTER F2A's ASSIGNED TO FIGHTING SQUADRON TWO BY MONTH (MAX/MIN)
 1941

1942

	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.
F2A-2	17/0	18/18	20/20	19/19	18/17	19/18	19/17	18/15	17/15	19/14	19/15	16/1	1/0				
F2A-3											0	19/0	18/17	18/17	21/16	17/4	2/0

and the defense of the U. S. would lie with the LEXINGTON and her sister carriers.

The activities of VF-2 during the nightmarish month of December 1941 can be summarized as follows: (a) Three preparations to attack enemy surface forces (south of Pearl, off Johnston Island, and off Wake Island). All cancelled. (b) Two preparations to attack enemy land bases (Jaluit and Makin). Both cancelled. (c) One attack launched on an abandoned barge which they failed to locate. (d) Interception of one friendly PBV. (e) One incident of being fired on by own forces.

On 3 December, VF-2 reported to the Bureau that they had "ceased all operation until enemy contact became imminent. Three more F2A-3 landing struts failed on normal landings. Seventeen fighters available but with progressive failures started in 12. Make expeditious delivery of reinforced struts."

During this same period, VF-2 lost three F2A-3s in operational accidents:

5 December (1544) Pilot: AMM1C (NAP) C. Allard. Airplane floated all the way to the barrier. Damage was so severe that the airplane was beyond repair and had to be thrown overboard.

26 December (1529) Pilot: H. E. Rutherford. While on antisubmarine patrol, a fuel leak developed in the cockpit which soon became a 3/8 in. stream. Loss of fuel pressure caused the engine to quit. At 1122, the pilot made a successful forced landing in the water near MONAGHAN. The airplane sank in 1 1/2 minutes; pilot rescued. Total time - 151 hrs.

29 December (1540) Pilot: LTJG F. Borries Jr. During landing at 1307, airplane struck ramp and crashed into the water. Plane sank; pilot rescued by MONAGHAN.

SUMMARY OF ACCIDENTS

This study of the operation of Brewster fighters by VF-2 has had to rely heavily on information collected from official BuAer Trouble Reports. In the absence of the individual aircraft flight logs, these accident reports are the only source of detailed information concerning the individual aircraft. However, constant reference to these reports may mislead the reader into thinking that VF-2's experience with the F2A was nothing but "one darned accident after another." This situation can be brought into proper perspective by calculating the average number of accidents per aircraft-hour. The average number of aircraft available can be estimated from Table II. The average number of hours flown by the aircraft can be guessed at from the hours reported for those that crashed near the end of the period of service. For the purpose of this calculation, a "serious" accident is defined as one requiring more repair work than could be carried out by the squadron.

In the eleven months VF-2 operated F2A-2s, an average of 18 aircraft were kept operational. The total flight time per aircraft was around 300 hours. One airplane was lost and there were eleven serious accidents. This works out to be one accident for every 450 aircraft-hours.

During the five months VF-2 operated F2A-3s, there were three airplanes lost and eight serious accidents. An average of 18 aircraft were operational and the average flight time per aircraft was 200 hours. This works out to one accident for every 330 aircraft-hours.

FALL - 1969

A much more important fact is that there were no fatalities or serious injuries during the entire time VF-2 operated F2As.

BUFFALO vs WILDCAT

An item by item comparison of the performance of the Brewster F2A-3 and the Grumman F4F-3A fails to bring out any substantial differences between these two aircraft. See Table I. However, events indicated that there was, in fact, a very great difference in their effectiveness as a fighter. The Grumman F4F, in the skies over Guadalcanal became one of the immortal fighters of WW II. The Brewster F2A, flown by Marine Corps pilots of VMF 221 participated in the Battle of Midway.

Nineteen F2A-3s went out to intercept the first Japanese attack: only six returned.³ This was the only time American pilots were to fly the F2A against enemy fighter opposition.⁴

Thus the career of the Brewster F2A with the operational squadrons of the Navy was very limited. The speed at which the F2A was phased out of Navy service and the immediate availability of production quantities of the once "backup" F4F is clear indication that the Bureau made the decision to replace the F2A very early. The reason for this change of heart that early is not at all clear. Apparently, the serviceability of the F2A left something to be desired, especially the landing gear. It may be that the increased weight brought about by the addition of armor protection, self-sealing gas tanks, and more armament seriously affected the performance of the aircraft. However, the story of the Brewsters of Fighting Two does not leave one with the impression that the F2A was a "bad" aircraft; it provided a performance comparable to the F4F and it carried out the duties assigned to it in a business-like manner.

Detailed view of 2-F-17. 8 March 1941.
 (Photo - National Archives, RG 72, File
 VF2A2/L11-1, Vol. 4 via Author)



BUNO'S AND CORRESPONDING SQUADRON DESIGNATIONS

The first 18 F2A-2s delivered to VF-2 carried Bureau numbers 1406-1423 and the corresponding squadron designation 2-F-1 through 2-F-18 respectively. Other F2A-2's later assigned to the squadron were; 1401-1404, 1428, 1431, 1435-1439. The squadron designation of these latter aircraft are not known.

A total of 30 F2A-3s were assigned to VF-2: 1526-1536, 1538-1541, 1543-1545, 1547, 1549, 1551, 1554, 1556-1558, 1560, 1562, 1564-1566. Corresponding squadron designations are available for only a few: 1527 was 2-F-2, 1529 was 2-F-3, and 1540 was 2-F-5.

MARKING AND COLOR INFORMATION

The F2As of VF-2 probably appeared in three different color schemes, although definite photographic evidence is available for only the prewar scheme.

All F2A-2s were delivered to VF-2 in the standard prewar scheme of overall silver and upper surface of the wings chrome yellow. The vertical and horizontal tail surfaces were lemon yellow to identify the aircraft as belonging to the LEXINGTON Air Group. Marking details were standard for the time⁵ and mention need only be made concerning aspects unique to monoplanes. The chevron was carried on the upper surface of the wing, starting at the wing root on the leading edge and extending to near the inboard edge of the ailerons at the trailing edge. The individual aircraft number (1 through 18) appeared in black between the chevron and the National Insignia and was positioned to be read from the tail of the aircraft.

The squadron insignia was carried just below the wind screen.

On 28 February 1941, "An extensive modification of aircraft markings added National Star Insignia to both sides of the fuselage . . . and eliminated those on the upper right and lower left wings; discontinued the use of colored tail markings, fuselage bands and cowl markings; . . . and changed the color of all markings, except the National Insignia, to those least contrast to the background."⁶ At the same time the aircraft were to be painted overall light grey. While it seems reasonable to assume that VF-2's were sooner or later painted as prescribed above, there is no photographic evidence.

In October of 1941, the order was given to paint the upper surfaces of all Naval aircraft non-specular blue-grey.⁷ A single photo exists to prove that this scheme was used by VF-2 in the period after the Pearl Harbor attack.

REFERENCES

- ¹ F2F-1 BuNo: 9628, 9635, 9637-9638, 9640, 9642-9643, 9646, 9651, 9653, 9658-9659, 9660, 9665, 9667, 9670-9671, 9675.
- ² The majority of F2A Trouble Reports did not include the name of the pilot, but those that did invariably included the pilot's rank, except for pilots of VF-2. The ranks given in this report are all from the VF-2 War Diary.
- ³ VMF-221 lost 15 out of 25 pilots in the attempt to stop the Japanese bombers from hitting Midway. Thirteen F2A-3s and 2 F4F-3s were lost out of a total of 19 F2As and 6 F4Fs sent out. VMF-221 "had been wiped out as a fighting unit." (Sherrod, Robert. *History of Marine Corps Aviation in World War II*. Washington: Combat Forces Press, 1952.)
- ⁴ The export Buffalo had been fighting the Japanese since December 1941 and the Finnish Brewster 239 had been in action against the Russians since June of 1941. But this, as they say is another story.
- ⁵ Vella, J. A., U. S. Navy F3F Markings. *IPMS Quarterly*, Vol. 2. No. 3 & 4, (1966), p. 22.
- ⁶ Van Wyen, Adrian O., and Pearson, Lee M., *United States Naval Aviation 1910- 1960*. Washington: Department of the Navy, (1960). This reference makes no mention of color schemes.

- ⁷ Doll, Thomas E., *U. S. Navy Markings WWII Pacific Theater*. Sun Valley, Calif.: John W. Caler, (1967). In this reference, the order to eliminate the prewar markings is dated 30 December 1940.

BUFFALO BIBLIOGRAPHY

- ¹ "The Brewster 'Buffalo' Fighter." *Aero Digest*, (September 1941) pp. 185-186.
- ² Caras, Roger A. *Wings of Gold*. New York: Lippincott, 1965.
- ³ Fuchida, Mitsuo and Okumiya, Masatake. *Midway, The Battle that Doomed Japan*. Annapolis: United States Naval Institute, 1958.
- ⁴ Green, William. "Peanut Special." *Royal Air Force Flying Review*, Vol. 15, No. 8, (April 1960) pp. 16-19, illus.
- ⁵ Hooftman, Hugo "Onze Buffalo's in Indies," *Cockpit*, (December 1962) pp. 554-560 in Dutch.
- ⁶ Hough, Richard. *Death of the Battleship*. New York: MacFadden, 1965.
- ⁷ Larkins, William T. *U. S. Marine Corps Aircraft 1914-1959*. Concord: Aviation History Publications, 1959.
- ⁸ Larkins, William T. *U. S. Navy Aircraft 1921-1941*. Concord: Aviation History Publications, 1961.
- ⁹ Lord, Walter. *Incredible Victory*. New York: Harper & Row, 1967.
- ¹⁰ Luukkanen, Enio. *Fighter over Finland*. London: MacDonald, 1963.
- ¹¹ Matt, Paul R. "Brewster F2A Buffalo." *Historical Aviation Album*, Vol. 5, p. 246-253, illus.
- ¹² Matt, Paul R. *United States Navy and Marine Corps Fighters 1918-1962*. Los Angeles: Aero Publishers, 1962.
- ¹³ Thetford, Owen. *Aircraft of the Royal Air Force since 1918*. London: Putnam, 1957.
- ¹⁴ Thetford, Owen. *British Naval Aircraft since 1912*. London: Putnam, 1962.
- ¹⁵ Tuleja, Thaddeus V. *Climax at Midway*. London: J. M. Dent & Sons, 1960.
- ¹⁶ Wagner, Hay. *American Combat Planes*. New York: Doubleday, 1968.

ACKNOWLEDGEMENTS: Many persons have assisted in gathering information on the BUFFALO, but space limitations allow for mention to be made of only those who have contributed directly to the material used in this article. The information contained in the Trouble Reports and the BuAer correspondence was obtained with the patient assistance of Mr. Harry Swartz and the staff of National Archives. The LEXINGTON log and the LEXINGTON and VF-2 War Diaries were made available by Mr. Dean Allard and his staff at the Navy History Files. Lee Pearson, the Naval Air Systems Command Historian, provided the official performance figures used in Table I. Very special thanks are due to Dave Lucabaugh for use of Aircraft History Cards which he obtained from the National Air Museum and for the many hours spent in the National Archives photocopying the Buffalo photos rediscovered by the author.

ABOUT THE AUTHOR:

James V. Sanders, Associate Professor of Physics at the Naval Postgraduate School, Monterey, California, is the A.A.H.S. Aircraft Specialist for the Brewster Buffalo. "The Brewsters of VF-2" is compiled from material collected during research at the National Archives and brings to fruit one facet of the work begun under Research Project No. 6508. It is hoped that this presentation will encourage persons with first-hand knowledge of the Buffalo to contact the author, for this personal touch is needed to fill out the bare bones of historical fact.

Dr. Sanders is also the IPMS-USA Specialist on Minor Air Forces. His previous works are "A Stinson for the Slovak General," with Juraj Rajninek, *JOURNAL of A.A.H.S.*, Summer 1969, and "Czech Spitfires" for the IPMS-USA Quarterly. He is presently working on a compilation of aircraft used by Danish Air Force since WWII and is assisting in the production of special pamphlets for the IPMS on the Air Forces of Latin America.

 SILVER, WHITE

 LEMON YELLOW

 CHROME YELLOW

 TRUE BLUE

