SKYWAYS

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DIANA CREAM
Shade 60

LIGHT YELLOW
Shade 29

PIPER CREAM
Shade 79

CUB SPORT YELLOW
Shade 74

TAYLORCRAFT CREAM
Shade 26

ORANGE YELLOW
Shade 4

AERONCA YELLOW
Shade 67

STINSON YELLOW
Shade 85

LIGHT GREEN
Shade 38

DEEP ORANGE
Shade 31

MEDIUM GREEN
Shade 39

AERONCA RED
(International Orange)
Shade 5

Titanine INC.

Civil Aircraft Colors

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BERRY BROTHERS, a major manufacturer of aircraft paints and finishes, advertised their products on this Travel Air 9000, registration no. 4739, named *Wings of Progress*. A color reproduction of a BERRY BROTHERS paint chip chart is among those featured in this Special Civil Aircraft Colors Issue of *Skyways*. Photo: Editor's Collection

Over the past fifty years or more, many authoritative aviation magazine articles and even a few books have been written explaining in great detail the many paint schemes, colors, and markings that have been applied to MILITARY aircraft by edict of various government standards throughout the world. The late prolific aviation writer and consummate historian, Peter Bowers, authored many such expositive guides to military aircraft color schemes in the pages of the old *Air Progress* magazines sold on newsstands in the 1950s, and they really became fundamental references used by scale modelers, aircraft restorers, and contest judges at both model airplane meets and antique/warbird airplane fly-ins. It was while deeply engaged in researching the colors used in the mid 1930s on Curtiss Wright T-32 Condor II airliners operated by American and Eastern airlines that the *Skyways* Editor challenged this writer to pick up the trail of a story idea kicked around by other authors on the subject of civil aircraft colors in general.

"In general" indeed, for, unlike the military schemes defined by formal specs which are populated by "Federal Standard Colors" by number, the subject of civil aircraft colors, including those of private "general aviation" aircraft, is virtually unbounded by standards of any kind, save the CAA/FAA regulations defining the display of aircraft registration letters and numbers.

So where does one start? From the beginning of manned flight, perhaps. The protective finishes applied to early airframes fielded by pioneers such as the Wright brothers and Glenn Curtiss were reputedly clear varnishes that had always made good seals on wooden structures such as boat masts, so logically the same should be true on interplane struts. Those varnishes were also applied to the muslin fabric skin on the flying

surfaces of early aircraft right up to the beginning of WW I. Bowers frequently published photos of prewar aircraft such as the Curtiss Jenny in flight, painted overall in clear varnish, with the wings and tail lighted by the overhead sun like lanterns, showing every spar, rib, and drag wire of the internal wooden structure.

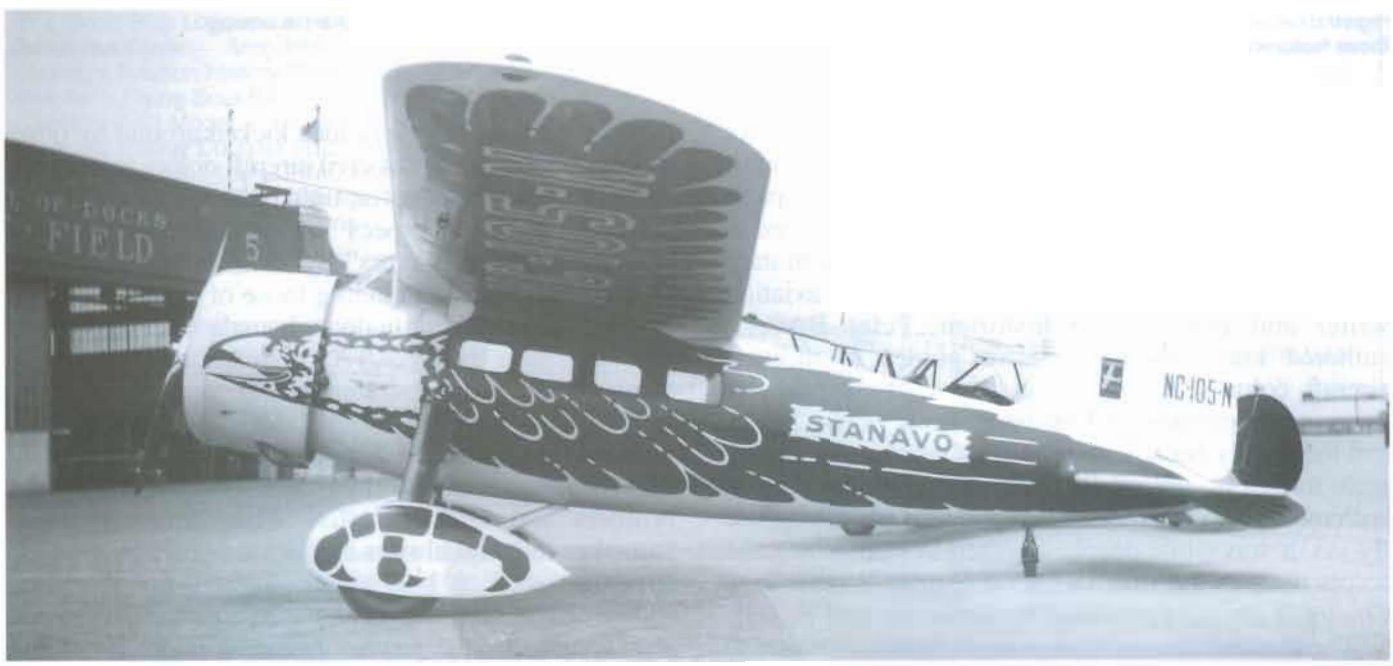
Then along came the Great War and frail stick-and-wire aircraft were turned into fighting machines that were subject to the abuses of wind, weather, and something called *ultraviolet radiation* while deployed at remote farm fields with minimal tents for hangars. These "warbirds" needed to be concealed by camouflage on the ground and in the air, and pigmented lacquers or "dope" became the finish of choice for taut aircraft fabric made of cotton or linen. Overall colors tended to be olive drab or "khaki" on the Allied side of the front, while the Germans developed a special aircraft fabric dyed with a quilt of lozenge-shaped color swatches, giving a mottled effect of "earth colors" and serving well as camouflage over a bare earth background. But special aircraft markings soon came into style to identify not only operating units but also individual pilots in those squadrons. In short order, the camouflage finish from the factory was overpainted with garish bright colors and heraldic figures that turned those camouflaged fighting machines into flying circus wagons, giving delight to aircraft modelers that persists to this day.

After war's end, aircraft designed for military roles such as flight training, scouting, bombing and dogfighting were released to civilian buyers as surplus hacks, stripped of all armament. Recall that priceless scene in the 1957 Warner Brothers film *The Spirit of St. Louis* where Charles Lindbergh, played by Jimmy Stewart, purchases his first personal airplane, a surplus Curtiss Jenny, and proceeds to turn it into a barnstorming platform for selling airplane rides to the masses of rural America, and has painted over the Army olive drab finish with bold advertising of his rides business. That, I assert to you, was the birth of "civil aircraft colors" as an art form. Any color paint, from any hardware store, was brushed on under a shade tree, expressing in bold fashion the desire to attract attention, gain distinction as an aviator, and earn money for sustenance of body and soul.

The glut of new government-surplus Curtiss JN-4Ds, JN-4Hs, Standard J-1s, and deHavilland DH-4s that were dumped on the open market through multiple page ads in aviation trade magazines of the post-WW I period created a nationwide fleet of private civil aircraft that came prefinished in olive drab with U.S. national star insignias on the wings and tricolor bars on the rudder. Gypsy flyers called "barnstormers" were totally unrestricted by the government, which then had not yet formulated ANY regulations regarding aircraft design, construction, maintenance, or use, let alone any standards of external civil aircraft finishing. Airplanes were unlicensed, unregistered and unmarked. Pilots were unlicensed. Some joined forces into bands of barnstormers called flying circuses, the biggest and best-known being the Gates Flying Circus with a home base at Teterboro, NJ. The Gates fleet of Hispano-Suiza-powered Standard J-1s, with their huge wing area and large interplane gap, were soon recognized to be ideal flying billboards, and the Texas Oil Company (TEXACO) became their major sponsor and underwriter. Texaco had the Gates Standards painted completely in fire engine red, with iconic Texaco red star logos replacing the previous Army star insignias on all four wing panels, top and bottom, and the name "Texaco" was painted completely across

Special paint jobs, such as this stylized eagle on this STANAVO (Standard Oil Co. of New Jersey) Lockheed Vega featured in Ted Williams' attractive color cover in this issue, helped promote the company's products. There were two STANAVO Vegas in this scheme: NC-105-N (shown here) and NC-106-N.

Photo. Al Bachmann via John Eney



STANAVO Vega NC-106-N. Photo: Editor's Collection

the lower wings, between the stars, in white letters whose height was equal to the chord of the wings. America was buying rides in red airplanes as an amusement, and little more. There was no market to support the design and manufacture of new civil private aircraft of any kind.

Then, largely in reaction to the accident record of unregulated flying circus stunting, the government took the reins and imposed some adult supervision to the wannabe American aircraft industry. The National Advisory Committee for Aeronautics was formed in 1919, and was soon followed by the passing of the Air Commerce Act in May 1926 which put mandatory licenses and registration in place for both aircraft and pilots. The emerging aircraft manufacturers were hamstrung by patent infringement lawsuits from the Wright brothers and sought relief by forming a Manufacturers Aircraft Association through which aviation design standards and patents could be pooled for the mutual benefit of the developing industry as a whole. This MAA provided member manufacturers with standard aluminum data plates, roughly 3" x 5", which were permanently fastened inside the cockpits of every new civil airplane, engraved with the make, model, and serial number of each airframe and its installed engine. These data plates, combined with government issued registration numbers prefixed with codes such as C, NC, NX, NR, NS or NL to show certification basis, made each airplane and aircraft engine a traceable individual entity, for sales, maintenance, and law enforcement bookkeeping.

The first all new civil aircraft to emerge from the early pioneer aircraft manufacturers in the mid-to-late 1920s were generally fabric covered, for the most part, and initially finished in one color, overall silver dope. It had become recognized that the harmful degradation of aircraft fabric by solar ultraviolet rays could be somewhat alleviated by finishing aircraft fabric covered surfaces with not only clear dope, but additional layers of a silver coat (powdered aluminum paste mixed in clear dope). For metal skinned areas around the engine and the coaming around the open cockpits, the formed aluminum sheeting was painted a darker color chosen from options by the buyer, such as dark blue or red. (Earlier use of "burnishing" or "damascening" of bare aluminum cowlings and fairings on aircraft was done primarily to hide metal smiths' hammer marks, not for protection or decoration. The nose of the *Spirit of St. Louis* flown by Charles Lindbergh in 1927 is the best-recognized example of this practice.) All early OX-5 powered sport biplanes sold by firms like Travel Air, Swallow, Stearman, Waco and others were typically overall silver with blue or red metal skin on the engine cowling and the cockpit area. An alternative to overall silver was overall white and some aircraft so painted can be found in the pages of Juptner (Reference 1). All that the U.S. government stipulated, through its Bureau of Air Commerce regulations, was that the assigned registration numbers be painted in specified style characters of specified dimensions on the upper right wing surface, the lower left wing surface, and on both sides of the rudder surface in a contrasting color. On silver or white, the registrations were typically painted in black. Unfortunately, black was a color that quickly absorbed solar heating and tended to defeat the purposes of the reflective silver or white protective finishes beneath it.

By the late 1920s, civil aircraft manufacturers began offering their customers more stylish paint schemes, primarily on the fuselage and vertical tail surfaces, and not so much on the horizontal surfaces such as the wings, stabilizer and elevators. The rationale here was that the lines and colors of the fuselage were analogous to the lines and colors of personal automobiles, and so the fuselage and appended vertical tail became palettes for the airplane stylists to exercise their competitive talents in sales brochures and magazine advertising. Through the years 1928-1931, the entire product lines of the major personal airplane producers such as Travel Air,

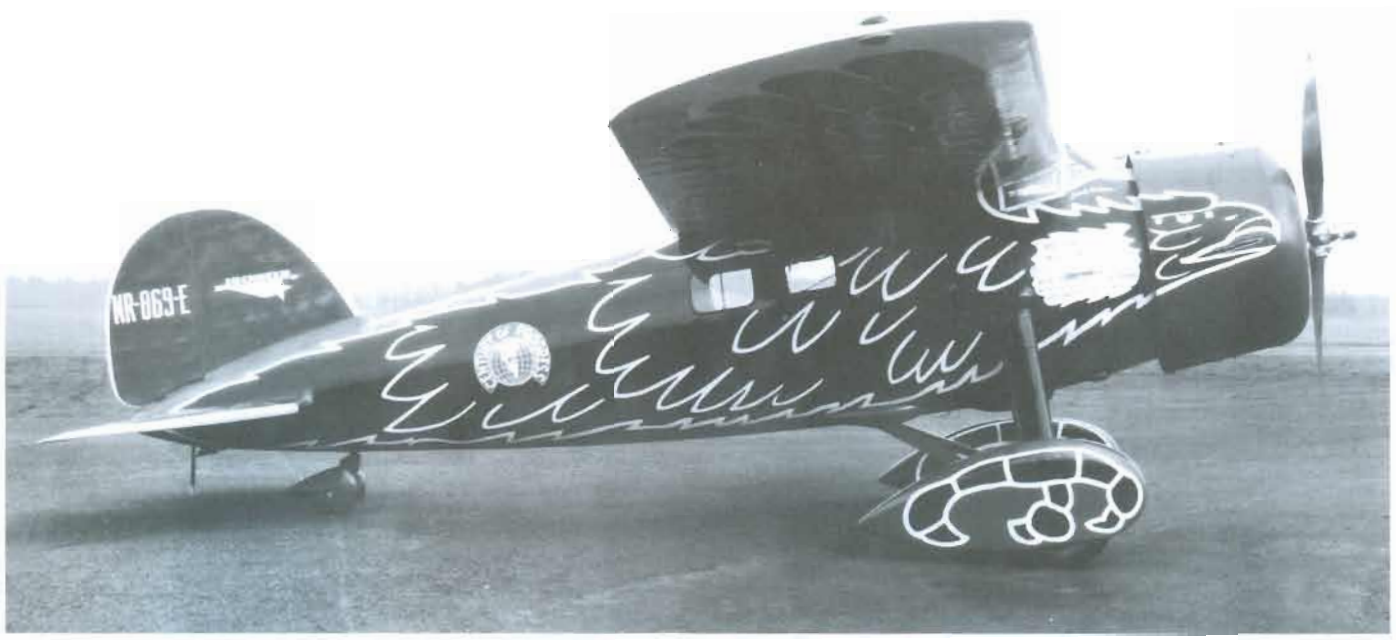
Stearman, Waco, Laird, Swallow, and others were offered with a range of optional color choices for the fuselage and vertical tails only, leaving the wings and horizontal tails in plain solid silver dope, plus the obligatory black registration numbers. It was considered a worthy compromise to allow the minimal horizontal surfaces on fuselage turtledecks to be painted in dark colors and bake in the sun, while the still silver horizontal planar surface areas of the wings, stabilizer, and elevator needed absolute solar radiation protection without adding the weight of multiple color topcoats.

An interesting scientific initiative in aircraft coloring was undertaken by the management of Northwest Airlines in the 1928-31 period on their fleet of mail planes made by Waco and Laird, and their passenger transports made by Stinson. They studied the weight of given coatings of various pigmented dopes and noted that the two LIGHTEST WEIGHT colors were, surprisingly, BLACK and GOLD. To save weight and increase payload, while keeping their airplanes distinctive in appearance, they adopted a fleet livery of all-black fuselages and vertical tails, with all-gold painted wings and horizontal tails. Their Waco JYM Taperwing mail planes are an excellent example of this paint scheme use.

Meanwhile, certain other commercial operators with fleets of mail and passenger carrying aircraft opted to make their aircraft easier to find when in distress or crash-landed. Two operators in the heavily wooded Pacific Northwest, Boeing Air Transport and Varney Air Lines, painted all their aircraft with bright ORANGE on the upper surfaces of the wings, following the style of the Army and Navy putting yellow on their upper wing surfaces. (See the Boeing 80A-1 in the *Skyways* No. 75 color cover.) As this is written in late 2007, two monumental aircraft restorations of long extinct 1928-30 mail carrying biplanes operated by Boeing and Varney are nearing completion on opposite ends of the continental United States. A totally reconstructed BAT (Boeing Air Transport) Boeing 40 biplane is emerging from the shop of Pemberton and Sons in Spokane, WA, while simultaneously a Varney Stearman M-2 is being reborn in the shop of Posey Brothers in Robbinsville, NJ. Their respective websites full of color photos of these priceless machines are www.pembertonandsons.com and www.poseybrothers.com. In both cases, you will see examples of the basic silver overall, embellished by darker trim color around the engine and cockpit, with orange on the top surface of the upper wing panels and centersection.

The multicolored fuselages of private civil aircraft (mostly biplanes) in the early '30s were finished with multiple hand-rubbed coats of sprayed pigmented dopes marketed by paint manufacturers who had established themselves in the automotive paint industry. The biggest names were *Titanine*, with plants in Wichita, KS, and Union City, NJ, and Berry Brothers *Berryloid* in Detroit, MI. Later, they were joined by competing *Randolph Products* of Carlstadt, NJ. Berry Brothers also supplied their products to Model Supply Dealers and Jobbers for repackaging in smaller containers for use by modelers. One-half ounce of *Berryloid* clear dope for models sold for five cents, and one ounce of *Berryloid* color dope was ten cents. The enamels and lacquers used on metal-skinned portions of aircraft were also finished with automotive finishes from the nationally renowned firms of *Glidden*, *Pittsburgh Paint*, *DuPont* and *Sherwin Williams*. Aircraft supply houses across the USA stocked these aircraft finishing products and included color chip

Another colorful Vega with the eagle motif was Jimmy Mattern's *Century of Progress*, NR-869-E, used in his unsuccessful round-the-world flight attempt. Colors were blue with a red eagle with white outlines. Photo. Editor's Collection



STANAVO also painted at least two Monocoupe 90As in their eagle scheme which is featured in Ted Williams' superb color cover in this issue. This is NC-11753.

Photo: Editor's Collection

charts provided by each of these manufacturers in their illustrated catalogs. The color chip charts sometimes were a part of very helpful booklets packed with information on preparation for and application of these aircraft finishes. Unlike the Federal Standard Colors used on military aircraft, it has become painfully clear to this writer through recent research that commercial paint colors come by no publicized standard formulation coding. They give their colors somewhat fanciful NAMES, but not industry-wide CODES denoting precise formulation of pigmentation. Thus we find ourselves confronted by infinite choices of civil aircraft colors having brand names with no standard specification being followed by competing manufacturers. Yet they frequently used common popular names on their colors, like *Diana Cream*, *Vermillion*, *Galatea Orange*, *Cub Yellow*, etc. This same situation appears to be the case in the auto finishing industry as well. And it is in conjunction with this lack of color formulation specificity across competing sources that modern technology has come to our aid in the form of commercial spectro-analysis machines in our neighborhood paint stores. Paint dealers typically now offer computerized color matching to any walk-in customer who can provide a one-inch diameter sample of a painted surface with the desired color already upon it, regardless of popular name or original manufacturer. So, if we can identify an aircraft manufacturer's selected supplier of finishes, and the specific COLOR NAMES used by that aircraft manufacturer on a specific serial number civil aircraft, AND we can access an original paint chip chart from that specific paint vendor patronized by our specific aircraft manufacturer, we can reproduce the original colors of 1920-1940 with modern paints available today from totally different paint companies using totally different color names. Yes, it's all done with computers now.

Let us walk through a sample problem facing every fastidious scale modeler or aircraft restorer today, namely, matching the color scheme of a chosen prototype vintage civil aircraft of the 1920-1940 period. And I will hand pick my example to both make it easy, and to better illustrate what varied source material is available. Let's say we are modeling or restoring a specific serial number 1935 Waco biplane flown by some well-known owner in that era. We have the aircraft make, model, CAA/FAA registration, and serial number (or constructor's number) as listed in Reference 1 (Juptner). All we have at first are published vintage black and white photos of the airplane we are working on. No previous historians have cited in print the colors used by Waco on that particular airplane. We cannot tell colors from black and white photos in old brochures or magazines. All contemporary associates of the original aircraft owner are dead or missing, so we have no witness testimony at hand (although recall and description of colors by witnesses is shaky at best). Here's the path to solution I offer:

1. Take the original CAA-assigned registration number, such a NC-12345, and drop any letter after the N, making it N12345. Then contact the FAA either online or by postal mail to get yourself a complete copy of every piece of paper retained in the old CAA/FAA file under that N-number. Be sure to emphasize that you seek the records of only the FIRST airplane to carry that N-number (Waco, in this example) in case the old Waco was destroyed and the N-number was reassigned to some modern airliner or "spam can" private airplane of no interest. The FAA offers us a fresh compact disc (CD) with digital photocopies of every scrap of paper in their file folder for the N-number you cite, for JUST FIVE DOLLARS! That, dear readers, is the biggest bargain

in aviation today. The website to order this CD record of an individual N-numbered aircraft is http://registry.faa.gov. The mail address is Flight Standards Service, Civil Air Registry, AFS-700, P.O. Box 25504, Oklahoma City, OK, 73125-0504. Give them the N-number, make, model and serial number of the desired aircraft. They may need to defer to their dead storage center in Dallas, TX, if the chosen airplane was destroyed and the N-number reassigned.

2. When your CD arrives in the mail, open the file and look for the very first document (by date) in the file which should be a factory sales record of the particular airplane which includes a "build sheet" that lists all the specific features and equipment the factory put into the airplane, including every cockpit instrument by make and serial number, every engine accessory, the prop make and model, AND THE COLORS painted on the airplane, by manufacturer and color name(s).
3. Now turn to your reliable source of fascinating facts, THIS *SKYWAYS* MAGAZINE, where you find color copies of original color chip charts from *Berry Brothers*, *Titanine*, *Super-Flite*, *Sherwin-Williams*, *Randolph*, and *GLIDAIR* (*Glidden*) paint manufacturers from the 1930s-1940s. See if the named colors on the sales record match any of the color chip samples in the vintage chip charts we have presented herein. With luck, they do and you have the key to at least matching the colors via your modern vendor of aircraft finishes through the miracle of spectroanalytical color matching. *(Editor's Note: The color paint chip charts in this special issue of* Skyways *are accurate reproductions of original paint charts produced with modern, high quality printing processes. They consist of printers ink on paper, and are not, therefore, exact copies nor are they actual paint chips. They, along with this article, are nonetheless, we feel confident in saying, the best and most comprehensive information published to date on civil aircraft colors.)*
4. Now to get the geometry of the multicolored paint scheme, you turn back to Juptner (Ref. 1) and see if the photos there for your make/model airplane show color scheme geometry with any degree of clarity and good contrast. Trim on the top or bottom of wings will be hard to see in a typical ground photo which shows the wings edge-on only.
5. Failing that, turn next to seeking out any existing "Type Club" for your particular airplane on the internet or through the *Antique Airplane Association* in Blakesburg, IA. In this case, it would be the *National Waco Club* in Dayton, OH. The NWC was formed in 1958 and was bequeathed all the Waco factory records by the company founder and president at that time.
6. Through the NWC, you have access to not only the wealth of factory photos of their products, but actual "color plates" the size of auto license plates which the factory made that were painted in combinations of all the color schemes used by Waco. Each plate has one side painted with a diagonal stripe dividing the two main colors used on each airplane. One main color would be the basic overall color on the fuselage, while the other main color would be the trim color, which might also be the color of the wings and horizontal tail. The diagonal stripe is the color of the "pin stripe" edging that Waco used to set off the boundary of the trim from the base color. For example, a 1929-31 Waco might have had silver wings, red fuselage, and a black trim stripe on the side of the fuselage that was edged in a gold pinstripe about 3/8"-1/2" wide. The NWC has had all these factory color plates scanned and codified by a dealer of *PPG Paints*, through the efforts of noted Waco restorers, Aircraft By Shue, in York, PA.
7. For this Waco example only, there is other valuable source material in the Waco history books published in the early 1980s by NWC founder and original president, the late Ray Brandly. Two of his books listed the model, NC-number, serial number, original owner, and the COLORS of every Waco built in the 1930s. These two paperback volumes are References 2 and 3. They occasionally show up for sale on eBay as used, and still in good condition. They are priceless in terms of the info they contain for the Waco enthusiast.

A rare top view of STANAVO Monocoupe 90A NC-11754 showing what appear to be two colors on top (probably red and blue) in addition to the base coat of aluminum paint.
Photo: Editor's Collection

You see now why I picked a Waco as my example here, because of the extraordinary availability of factory records that were kept intact by the company founder and donated to the Waco type club for preservation and sharing with modelers and restorers. These records are only accessible through the National Waco Club (www.nationalwacoclub.com). There is also an American Waco Club and a Western Waco Association who sponsor their own regional fly-ins annually, in addition to the NWC's Annual Reunion.

Seeking colors for other makes of vintage aircraft incurs other challenges not mentioned in the previous Waco example. Stinson Aircraft Company of Wayne, MI, was taken over by the Consolidated Vultee (CONVAIR) Aircraft Company around 1940 or so and the Stinson records for all their classic cabin monoplanes, including the iconic Stinson SR-7 to SR-10 "Reliant" or "Gullwing," were *presumably* transferred to CONVAIR in San Diego, CA. The Stinson Gullwing had an exceptional factory paint scheme whose curvaceous trim geometry complemented the equally curvaceous geometry of the gull wings on the airplane. The CONVAIR Company was later taken over by General Dynamics, which has since been taken over by Lockheed Martin. Locating the old 1930s Stinson records (and drawings?) is perhaps a future topic for treatment by *Skyways*, unless a reader writes us with some good news on that subject.

Fairchild Aircraft Company in Hagerstown, MD, was closed down after cancellation of their last two military airplane contracts in the late 1980s or early 1990s. There is a thriving Fairchild museum at the original Hagerstown airport, perhaps with company sales records on their very popular models KR-21, KR-31, KR-34, F-22, F-24, and M-62 series airplanes that are all sought out by restorers today.

Beech Aircraft Company is still very much alive and well in Wichita, KS, having survived a marriage and divorce from Raytheon. They, and the Staggerwing Foundation Museum in Tullahoma, TN, should be fruitful sources of old sales records with color information.

Howard Aircraft Company of Chicago, IL, was one of just two aircraft companies in the U.S. who managed to go out of business during WW II while holding sizable aircraft production contracts from the government. (The other firm was Brewster.) Their loyal followers and owners support a vibrant type club under the name of Howard Aircraft Foundation (www.howardaircraft.org). While they made relatively few different models (all monoplanes), every one they built, including the mass produced model DGA-15s used by the Navy in WW II, remains a highly prized and highly pampered piece of aerial transportation today. Their webmistress is prolific aviation writer Ms. Sparky Barnes Sargent who has some spectacular photos of restored Howards on the HAF website in a downloadable format.

Stearman Aircraft Company of Wichita, KS, is a somewhat tragic case. While the original factory still thrives today as the Wichita Division of Boeing Airplane Company, the early Stearman factory records prior to WW II were destroyed in a flood in the mid 1930s, leaving the owners of those handsome "square tail" pre-WW II Stearman biplanes, models C-3 and 4, somewhat orphaned, making restoration of very deteriorated and abandoned examples rather difficult due to lack of drawings. The Stearman 4Es operated by the Standard Oil Company during the early '30s are some of the most colorful and exciting restored airplanes flying today in the able hands of very devoted owners. There is a thriving air museum in Wichita which cares for the records of all aviation firms that have passed from the scene in Kansas, whose curator is an avid Stearman restorer himself, named Walter House (whouse2@cox.net). Walt is the man to contact to seek any historical info on any product of the Stearman or Swallow Aircraft Company.

The Curtiss-Wright Corporation is alive and well in New Jersey, but long ago divested themselves of any aircraft production. They make aircraft automatic control system components today and have advised that they do not have historical data or drawings on Curtiss-Wright aircraft. It has been reported to this writer recently that when Curtiss-Wright closed their former plant in St. Louis, MO, they ordered all the drawings of their sporty, formerly Travel Air, biplanes, Models 12, 14, and 16, destroyed on site. Some color information has been verified and recorded on C-W aircraft such as that on the model T-32 Condor II airliner that we featured in *Skyways* Nos. 83 and 84 last year.

Records from other civil aircraft manufacturers of the 1920-1940 period might be found through the Antique Airplane Association in Blakesburg, IA. Founder Bob Taylor and his son Brent carry on the preservation and dissemination of records of some abandoned type clubs as well as preserving the records of companies like Rearwin who made both civil sportplanes and small radial engines throughout the '30s and into the early '40s. Bob Taylor is a walking encyclopedia of vintage civil aircraft, having worked in that industry his whole adult life. The annual AAA antique airplane fly-in for members only is a real Mecca for the vintage civil airplane enthusiast. That fly-in is covered by writers of photo feature stories for aviation history magazines from all over the world, including *Skyways*.

It is anticipated that this broad, unbounded subject of civil aircraft colors will generate letters and follow-up feature stories in *Skyways*, since we have only scratched the surface of this "most colorful" facet of aviation in the Golden Age.

References

1. *U.S. Civil Aircraft*, Volumes 1-9, Joseph Juptner, McGraw-Hill Publications, NY, NY.

2. *Waco Aircraft, The Famous F Series*, Raymond H. Brandly, printed privately, 1982.

3. *Waco Aircraft, The Versatile Cabin Series*, Raymond H. Brandly, printed privately, 1981. ■

The GLIDAIR (GLIDDEN COMPANY, Cleveland, Ohio) 1946 chart (see GLIDAIR color chip chart, this issue) included a wide range of intermixed colors obtained by mixing the standard GLIDAIR colors. Here are the formulas for the GLIDAIR intermixed colors shown on the color chip chart.

Formulas For *GLIDAIR*

INTERMIXED COLORS

Color No.	Use These Glidair Standard Colors for Intermixing
1	2 Parts No. 13 Cub Yellow 1 Part Aeronca Orange
2	8 Parts No. 13 Cub Yellow 1 Part Aeronca Orange
3	16 Parts No. 13 Cub Yellow 1 Part Aeronca Orange
4	32 Parts Loening Yellow 1 Part Stinson Green
5	16 Parts Loening Yellow 1 Part Stinson Green
6	4 Parts Loening Yellow 1 Part Stinson Green
7	1 Part Loening Yellow 1 Part Stinson Green
8	2 Parts Stinson Green 1 Part White
9	1 Part Stinson Green 2 Parts White
10	1 Part Stinson Green 1 Part True Blue
11	1 Part Stinson Green 1 Part Insignia Blue
12	1 Part Stinson Green 2 Parts True Blue
29	8 Parts Diana Cream 1 Part No. 13 Cub Yellow
30	1 Part Diana Cream 1 Part No. 13 Cub Yellow
31	1 Part Stinson Green 1 Part Black 1 Part Loening Yellow
32	1 Part Stinson Green 1 Part Black

Formulas For *GLIDAIR*

INTERMIXED COLORS

Color No.	Use These Glidair Standard Colors for Intermixing
24	1 Part No. 13 Cub Yellow 1 Part Aeronca Orange
23	2 Parts Aeronca Orange 1 Part Stearman Vermillion
22	1 Part Aeronca Orange 2 Parts Stearman Vermillion
21	2 Parts Stearman Vermillion 1 Part Tennessee Cub Red
20	2 Parts Insignia Red 1 Part Dark Vermillion
19	8 Parts Dark Vermillion 1 Part Insignia Blue
18	3 Parts New Cub Blue 1 Part True Blue
17	1 Part New Cub Blue 1 Part True Blue
16	1 Part True Blue 1 Part White
15	4 Parts Insignia Blue 1 Part Stinson Green
14	4 Parts True Blue 1 Part Stinson Green
13	2 Parts Insignia Blue 1 Part Stinson Green
25	1 Part White 1 Part Black
26	4 Parts White 1 Part Black
27	32 Parts White 1 Part Black
28	2 Parts White 1 Part Diana Cream

RANDOLPH
NITRATE DOPES - LACQUER

ORANGE YELLOW
M9501 (AN)


TRUE BLUE
M9506 (AN)


INSIGNIA BLUE
M9502 (AN)

LEMON YELLOW
M9512 (AN)


ENGINE GRAY
M9503 (AN)


OLIVE DRAB
M9513 (AN)


LIGHT GRAY
M9504 (AN)


SILVER
M9514


INSIGNIA RED
M9505 (AN)

DIANA CREAM
M9518

AIRCRAFT
ACETATE BUTYRATE DOPE

IVORY
M9520


BRIGHT GREEN
M9528


CUB YELLOW
M9521


METALLIC BLUE
M9529


TENNESSEE RED
M9522


STINSON BLUE
Q1901


CUB BLUE
M9524


STINSON GRAY
Q1910


CUB GREEN
M9525


STINSON RED
Q1913

FINISHES
SYNTHETIC ENAMELS


AERONCA TAN
Q1900


GALATEA ORANGE
Q1914

CHAMPION YELLOW
Q1904


STEARMAN VERMILLION
Q1917


CHAMPION RED
Q5186

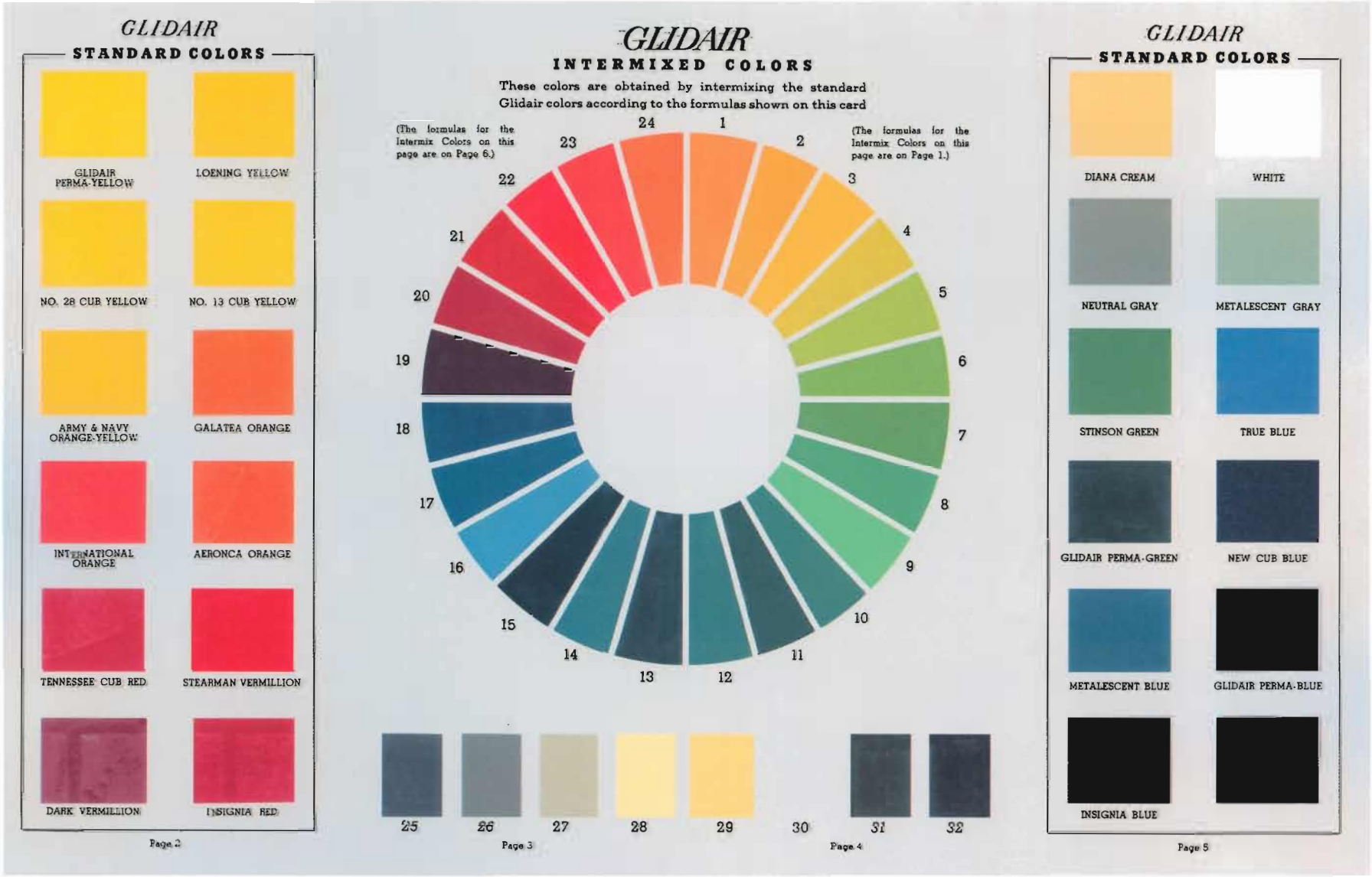
LEONING YELLOW
Q6472


PIPER RUST
Q7370


SCARLET RED
Q7307

PIPER IVORY
Q7380


GREEN METALLIC
Q9100



GLIDAIR
STANDARD COLORS

GLIDAIR PERMA-YELLOW
LOENING YELLOW
NO. 28 CUB YELLOW
NO. 13 CUB YELLOW
ARMY & NAVY ORANGE-YELLOW
GALATEA ORANGE
INTERNATIONAL ORANGE
AERONCA ORANGE
TENNESSEE CUB RED
STEARMAN VERMILLION
DARK VERMILLION
INSIGNIA RED

Page 2

GLIDAIR
INTERMIXED COLORS

These colors are obtained by intermixing the standard Glidair colors according to the formulas shown on this card

(The formulas for the Intermix Colors on this page are on Page 6.)

(The formulas for the Intermix Colors on this page are on Page 1.)

24 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

25 26 27 28 29 30 31 32

Page 3

Page 4

GLIDAIR
STANDARD COLORS

DIANA CREAM
WHITE
NEUTRAL GRAY
METALESCENT GRAY
STINSON GREEN
TRUE BLUE
GLIDAIR PERMA-GREEN
NEW CUB BLUE
METALESCENT BLUE
GLIDAIR PERMA-BLUE
INSIGNIA BLUE

Page 5

THE · BERRYLOID · FLEET · NUMBER · FOUR

Travel Air

Berryloid

AIRCRAFT FINISHES

International Orange, Travel Air Blue and Vesta Yellow—the colors of the brilliant Macaw, suggested the combination on this Travel Air