



First Curtiss T-32 Condor leaving St. Louis for delivery to Eastern Air Transport, March 1933. (Post Dispatch)

Curtiss Condor II

By WILLIAM R. MATTHEWS

The development of aircraft, like that of most other human artifacts, has not proceeded steadily but in a series of abrupt leaps forward, each of which was followed by a period of steady development. The early 'thirties saw giant strides made in many respects toward the aircraft of today. Within three or four years the introduction of stressed-skin construction, variable pitch propellers, flaps and retracting undercarriages transformed the airplane from an affair of struts and wires into a streamlined creation capable of carrying undreamed-of loads at speeds beyond the realms of contemporary science fiction. What is even more remarkable is that nearly all these innovations were pioneered by civil aircraft. This is the only period in the history of flight when military aircraft have not been greatly superior in performance to those used for peaceful purposes. In all these developments, American manufacturers led the way. Indeed, it was during this period that the foundations were laid for the world-wide United States domination of the whole field of transport aircraft manufacture, which has continued with only one serious challenge, by the British in the early 'fifties, to the present day.

In view of all this, it is at first sight distinctly surprising to find a major American manufacturer introducing as late as 1933 the ultimate refinement of the traditional transport biplane. Only at first sight, however. In fact the appearance of the Condor II in January 1933 was as logical (and as successful) as was that of a similar apparent anachronism, the Douglas DC-7C, over two decades later, and for rather similar reasons.

Curtiss-Wright was, of course, by no means ignorant

of the direction in which design trends were leading in 1932 and was about to start on the initial studies for the aircraft which was to materialize some years later as the CW-20, subsequently known the world over as the C-46. There was, however, an urgent short-term problem to be solved. The St. Louis plant had been shut down for nearly two years, owing to the Great Depression, and it was essential that this factory be re-opened and operated profitably as soon as possible. There was no time available to carry out the necessary basic research on an advanced all-metal design to compete with the Boeing 247. Moreover, there appeared little chance of selling such an airplane in sufficient quantities to recoup the cost of its development. On the other hand, a much simpler design along traditional lines could be developed quickly and cheaply. By incorporating a number of reasonably simple innovations, it could offer a performance greatly superior to that of anything in current operation and would be only marginally inferior to that of the more advanced airliners known to be under development. Sales-wise, the biplane layout was not necessarily a disadvantage in 1932. After all, no one in airline management had ever seen anything else, apart from the Ford and Fokker trimotors whose performance was in no way superior to that of many contemporary biplanes.

The brief given to George A. Page, Jr., by Curtiss-Wright President Ralph Damon in the spring of 1932, was therefore quite clear. He and two other engineers were to go to St. Louis and there design and build a twin-engined biplane transport as quickly as possible under conditions of the strictest economy (Damon estimated that the plant could "get by" on a turnover of \$300,000

per year). Page had already, during 1931, proposed a design called the XT-32 (Experimental Transport to carry 3200 pounds payload) and models of this had undergone wind tunnel tests at Buffalo, which had established the basic aerodynamics of the new aircraft. Geared Wright Cyclones, the most powerful radial engines available, were to be used. These, in their original form, produced 575 hp, but by the time the new transport was ready to fly they were offering nearly 700 hp.

This, then, was the basis on which Page and his small team started work as soon as they arrived in St. Louis in April 1932, and they worked to such purpose that the new T-32 airliner made its maiden flight on January 30, 1933. The name "Condor" was adopted by the sales department of Curtiss-Wright in order to cash in on the reputation for safety and comfort acquired by the earlier Model 18 of the same name. The new aircraft, however, had nothing in common with its predecessor save for the basic layout, a fact which has confused the uninitiated from that day to this. Very early in its life, the new type became known as the Condor II and is still sometimes referred to as such.

Interested observers noted that the new Condor was as graceful and streamlined as it was possible for a biplane to be. In addition it possessed a number of the most up-to-date design features. Most noteworthy of these was the electrically-operated retracting undercarriage--the Condor was the first multi-engine airliner in the world so fitted--but many other points, less obviously apparent at first glance, were of almost equal importance. The engines were flexibly mounted on rubber bushes, another "first", and the greatest attention had been paid to ease of maintenance. No less than 125 access panels, closed by zip fasteners, were provided, while the batteries could be changed in less than a minute by a man standing on the ground. All engine accessories were installed in a bay 33 inches long immediately behind the engine itself, to which access was readily available by removing a few metal panels held on by quick release fasteners. Passenger comfort was also a feature. Great care had been taken to sound proof the cabin and individual hot and cold air outlets were provided for each seat, while cabin furnishings were tastefully carried out in a combination of fabric and leather. The lavatory was provided with a basin having hot and cold running water, a mirror and a vanity case.

Once in the air, the Condor flew as well as it looked. Control forces were light, thanks to the use of servo tabs, ball-bearing hinges and aerodynamic balancing on all control surfaces, and for so large an aircraft it was highly maneuverable. In addition, it could

remain airborne fully loaded with one engine out of action, the first twin-engine transport with this capability. Thanks to its qualities, tests took less than two months, and Approved Type Certificate No. 501 was issued to it on March 18, 1933. A week later, the first aircraft of an initial order for five was delivered to Eastern Air Transport, and on April 17th the first machine of American Airways' order for five aircraft was delivered to them, others following at roughly fortnightly intervals. Both airlines soon placed repeat orders, and production proceeded steadily throughout 1933. The price at which the planes were sold was probably the lowest at which any comparable American airliner has ever been offered--considerably less than \$60,000--but due to efficient management, C-W made a satisfactory profit. E.A.T. and American Airways each received nine Condors of the original T-32 type, powered by Cyclone GR-1820-F11 engines driving Hamilton 3-bladed adjustable pitch metal propellers. Two others were supplied to the Army Air Corps.

During 1934 Hamilton produced the first successful variable pitch propeller, and the availability of this led Curtiss-Wright to modify the Condor design. Supercharged Cyclone SGR-1820-F2 or -F3 engines, driving the new type of airscrew, were fitted, and the nacelle design was cleaned up at the same time. Long chord cowlings were fitted and the rear ends of the nacelles extended aft of the trailing edge of the wings to improve the airflow over them. These changes resulted in an increase in the empty weight of some 800 pounds. At the same time fuel capacity was increased from 300 to 375 gallons.

The revised version was designated AT-32, and was available in five versions: -A, convertible sleeper/dayplane for 12 passengers, fitted with SGR-1820-F3 engines delivering 710 hp at 7000 ft; -B, as -A but with -F2 engines delivering 720 hp at 4000 ft; -C, 15-passenger dayplane with -F2 engines having a reduction gear ratio of 16:11 instead of the standard 8:5 (a slightly different type of Hamilton propeller was also fitted); -D, 15-passenger dayplane with standard engines and propellers; -E, 12 passenger dayplane with passengers carried in single chairs and -F3 engines with 16:11 reduction gear ratio. All transport Condors subsequent to C/N 42 were of the AT-32 type; American Airways was the major customer for this model, ordering 10, while the Navy had two -E's and Swissair one -C. The AT-32 was allotted ATC No. 534. In addition, American converted its fleet of T-32s to AT-32 standard under the designation T-32c, this conversion receiving ATC No. 547. Eastern merely fitted variable pitch propellers to its T-32s without other alterations. The result of these changes



*Condor C/N 21 running up its engines prior to final assembly.
(George A. Page, Jr.)*



*View over test pilot's right shoulder of the instrument panel.
(George A. Page, Jr.)*



Difference between early and late Condors can be seen in these two photos. Above is the second T-32, C/N 22, at Newark while below is the first Condor built new to have increased gross weight of 17,500 pounds, AT-32A, C/N 42. American Airlines name change and slight trim differences can be seen. (John C. Barbery & Merle Olmsted)



was to enhance the Condor's performance considerably. The AT-32 showed a speed increase of 20 mph over the T-32, while range went up by no less than 50 percent, from 500 to 750 miles.

Curtiss-Wright themselves, in conjunction with the Navy, were working on variable pitch propellers. Their design used electric actuation in place of Hamilton's hydraulic actuation. Condor C/N 40 was used in the early development of these propellers, and they were fitted to the two AT-32E's built for the Navy under the designation R4C-1, and to all BT-32s.

Before passing on to the development of the latter, mention should be made of the special Condor, C/N 41, built for Admiral Byrd's second Antarctic expedition. Much of this aircraft was donated, and as a result it was fitted with non-standard instruments, radio and many fittings. Structurally, it was standard, apart from the deletion of the retracting undercarriage, which was unnecessary as its operations were to be carried out on floats or skis. (A fixed-wheeled undercarriage was fitted for tests.) Additional tanks were fitted in the fuselage, bringing the fuel capacity up to 1100 gallons, and the engines were ungearred SR-1820-F2 Cyclones driving Smith variable pitch propellers. (These were replaced in New Zealand by adjustable pitch Hamiltons.) The direct-drive engines permitted the use of smaller diameter propellers giving increased tip clearance (9 ft. 8 in. against the standard 11 ft. 6 in.), but the din on takeoff must have been shattering!

By mid-1934, it was obvious to the Curtiss-Wright management that there was no chance of selling any more Condors to the airlines. While the Condor, especially the AT-32, could hold its own against the Boeing 247, the DC-2, which set wholly new standards in airline equipment, was now in service, and both the main Condor users, American and Eastern, had ordered the new type. However, thanks to the curious fact that air forces the world over clung obstinately to biplane bombers whose performance was greatly inferior to that of the new transports, there seemed a fair chance that a bomber-transport Condor could be sold in reasonable numbers, particularly to smaller air forces. It was cheap and could lift a good load of bombs and fuel, while its capacious fuselage provided ample room for the accommodation of troops. Accordingly, during 1933, design work on the necessary modifications was put in hand. These involved fitting racks to carry up to 1100 pounds of bombs below the cabin floor (the fuselage belly was deepened to fair the bombs in, but no bomb doors were fitted) and a further 14 light bombs below the lower

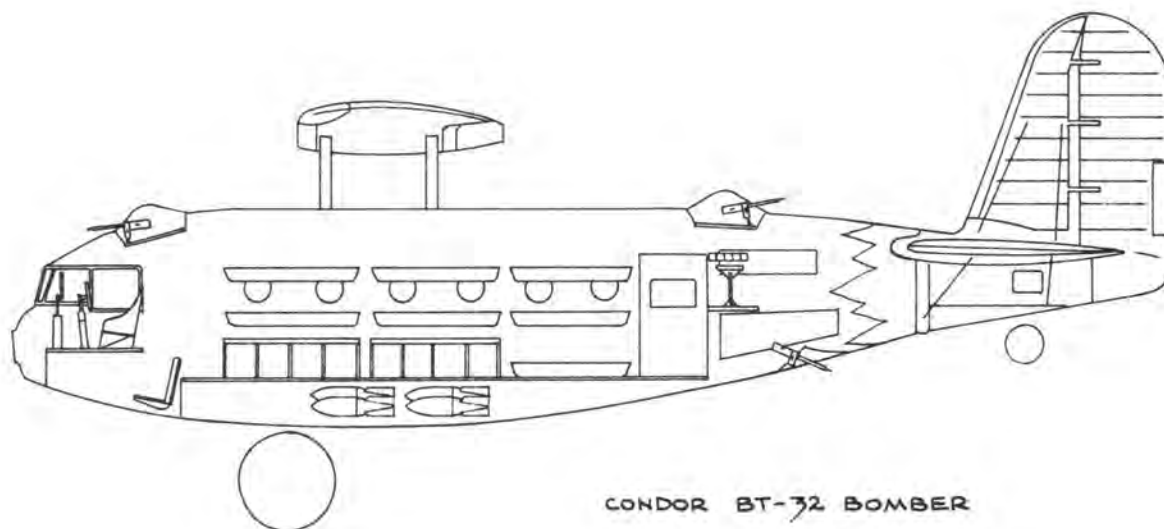
wings. Gun cupolas above the fuselage, housing one of two .30 caliber Brownings, were fitted and four tanks installed in the fuselage, bringing the total fuel capacity up to 750 gallons. A demonstration bomber was built at company expense, and began flying in February 1934, well before the first machine to the second order for American Airlines was delivered. It proved successful, and seven more bombers were delivered during 1934.

The last development of the Condor, the CT-32, was one of the first, if not the first, aircraft specifically designed as a freight transport. Up to this time, freight had been carried in whatever aircraft happened to be available, and any modifications necessary to accommodate bulky items had been carried out in the field. In the CT-32, the fuselage structure was modified to permit an opening 6 ft. 6 in. high, closed by three doors, being made in the starboard side of the fuselage. A detachable monorail hoist could be fitted over the opening, and with the aid of this and a ramp, even cars could be loaded. The floor was strengthened, and the tie-down rings were provided in it. Unfortunately, there was little demand for such an airplane at the time, and only three were sold, to the Argentine Navy, which made little use of their specialized capabilities.

PRODUCTION

In all, 45 Condors were built, carrying consecutive serial numbers from 21 through 65. The reasons for the choice of No. 21 as the first of the series were rather curious. It was decided at an early stage of the aircraft's development to retain the name "Condor" originally applied to the Model 18, but as six of these had already been built, the first number that could be used without confusion was No. 7. This did not appeal. The next desirable starting point seemed to be No. 10 or 11, but if the series started at this point, the necessity of avoiding No. 13 to alleviate the fears of superstitious customers would soon arise. It was therefore decided that No. 20 or 21 would be the best point to start the series, and the latter was chosen. This somewhat tortuous reasoning was backed up by the feeling that customers might not like to take No. 1 of a new type, but this particular little piece of deception seems remarkably transparent. All this is mentioned because several historians have tried in recent years to account for the "missing" airplanes between the last of the Model 18s, No. G-6, and the first of the Model 32s, No. 21. These in fact never existed.

Though the serial numbers were allotted consecutively,



CONDOR BT-32 BOMBER



Interior view of C/N 42 showing upper berth in 12-passenger, sleeper Condor. (American Airlines E 51724)



Fifteen-passenger day seating arrangement in YC-30 Condor, probably C/N 26. (USAF Photo 18572 AC)

they do not indicate the true place in the production sequence of any particular aircraft. For example, No. 52 preceded Nos. 42-51 inclusive, by some months. Nor was the rate of production regular. After the prototype, Nos. 22-41 appeared at approximately weekly intervals between April 17 and October 25, 1933, though not necessarily in the order of their serial numbers. (The actual order was 21-24, 26, 25, 27, 28-31, 34-37, 32, 33, 41, 38-40.) All these were T-32s. There was then a considerable gap, during which the AT-32 and BT-32 were being developed, and the next aircraft actually to fly was the BT-32 demonstrator, No. 52, on February 9, 1934. Next came the first AT-32 sleeper for American Airlines, No. 42, followed by the Swissair machine, No. 53.

Subsequent production proceeded very rapidly. During the summer of 1934 an average of one aircraft a week was maintained, while in some cases Condors left the factory within two or three days of each other. By September all were complete, though in some cases delivery was delayed. The production order of the latter batch was 52, 42, 53, 43, 44, 57, 45, 46, 54, 47, 58, 55, 56, 48-51, 59-65. It will be seen that civil and military aircraft were intermingled on the production line.

CONSTRUCTION

Fuselage: Welded structure in 4130 chrome-molybdenum alloy steel. Five longerons, three main arch trusses, in plane of main wing spar and forward and aft of cabin door. Subsidiary truss behind pilot's cabin. Fuselage sides formed of a series of K-trusses. Cabin floor built up of aluminum alloy beams and stringers, covered with plywood; the whole assembly was clipped to the lower longerons (strengthened floor on BT-32 and CT-32). Entire fuselage fabric covered over fiberglass insulation, except for nose section covered with aluminum alloy. Interior trim in fabric and leather, baggage compartment below cabin floor. Entrance door on either side of fuselage to choice.

Wings: Curtiss C-72 Airfoil. Two main spars of Warren girder type, welded up from 4130 steel. Light alloy tubular ribs. A light alloy false spar, from which the ailerons were hinged, was incorporated in the outer panels of the upper wings. Four fuel tanks, of 75 gallons capacity each, fitted in upper wing centersection. Two-bay wing cellule, with single center-section cabane, all struts steel. Bracing wires of streamline section, flying wires double, landing and incidence wires single. Wings fabric covered, except for metal leading edges.

Tail Surfaces: Welded steel structure, fabric covered except for metal leading edges. Entire tail group hinged at its forward end to the upper longerons for

trim adjustment, which was effected by a screw-jack.

Control Surfaces: All control surfaces fabric covered over light alloy structure. All were aerodynamically balanced and mounted on ball bearings. Rudder and elevators fitted with servo tabs.

Engine Nacelles: Welded 4130 steel structure, braced to top of main fuselage truss by diagonal struts. Engines flexibly mounted on rubber bushes. Compartment behind engines contained all accessories and was covered by metal panels secured by quick release fasteners. Remainder of nacelles fabric covered.

Undercarriage: Retracting type, the main units comprising a shock absorber strut containing a spring and oleo damper, a radius rod (both of which were hinged to the front spar) and a break-strut hinged to the rear spar to whose mid-point was attached an electrically operated screw-jack; manual emergency operation was provided. When retracted, approximately one quarter of the wheel protruded from the nacelle. Bendix brakes. Fixed swivelling tail wheel of similar shock absorbing design. All Condors could be fitted with floats if required.

Instruments: Blind-flying panel contained A.S.I., Artificial Horizon, Sensitive and Normal Altimeters, Compass, Turn and Bank Indicator, and Rate of Climb Indicator. The usual engine instruments were provided with one panel serving both pilots.

DIMENSIONS AND PERFORMANCE - AT-32-A

Length, Overall	48' 7"	Wing Area	1208 sq ft
Height, Overall	16' 4"	Wing Loading	14.5 lbs/ft ²
Span, Overall	82' 0"	Power Loading	12.2 lbs/hp
Engines - 2 Wright Cyclone	SGR-1820-F3	710 hp @ 7000'	
Maximum Speed	172 mph (S.L.)	190 mph (8000')	
Cruising Speed (70%)	152 mph (S.L.)	167 mph (8000')	
Stalling Speed	62 mph		
Service Ceiling	23,000'	Absolute Ceiling	25,000'
Range	650 miles (S.L.)	716 miles (8000')	
Rate of Climb	1200 feet per minute	(S.L. & 8000')	
Weight Empty	12,235 lbs	Useful Load	5,265 lbs
Gross Weight	17,500 lbs	Pay Load	2,600 lbs

CONDOR IN AIRLINE SERVICE

U.S.A.

The Condors of American Airways and Eastern Air Transport, after a brief period of crew training, were placed in service as soon as possible on their owners' prestige routes, the Southern Transcontinental and New York to Miami respectively. They displaced from these routes a heterogeneous collections of Fords, Stinsons, Model 18



Publicity photo of C-124, and contemporary beauties, showing fixed pitch propellers, some of the many access panels, and the recess for the undercarriage radius rod when retracted. (American Airlines)

Condors and other types which were either sold or relegated to secondary duties. By the late summer of 1934 all the major routes of both American and Eastern were being operated by the new type, with gratifying results regarding the number of passengers carried.

No other "Queen of the Skies" has had a shorter reign, however. In American's time-table of December 1, 1935, the ominous word "Douglas" appears against most of the major routes, and in fact, the DC-2 had first appeared in American's colors in the previous January. All through 1935 the company's advertising laid great stress on the number and frequency of its Douglas services. As more and more of the new aircraft came into service, the almost new, but obsolescent, Condors were transferred to less important routes or used for sleeper services where it was hoped that their lower performance would not be too much of a handicap. Even the provision of sleeping berths could not reconcile the traveling public to flying in slow airplanes, and it was obvious by the end of 1935 that the Condor's days as a first-line airliner in the United States were numbered. This conclusion was reinforced by the appearance of the A.A. sponsored DST/DC-3 during 1936. The same process was apparent on Eastern's routes, and in fact, occurred even more speedily. As well as DC-2s, Eastern had ordered a fleet of Lockheed Electras, the fastest airliners of their day whose high speed more than made up for their lack of capacity on many of E.A.T.'s comparatively short stages. These short stages themselves militated against the continued employment of the Condor on the Atlantic seaboard, by rendering the provision of sleeping facilities unnecessary. The result was that although Eastern still owned a number of Condors during 1936, several were unserviceable, as it was not felt worthwhile to carry out mandatory maintenance on them.

At the end of 1936, both American and Eastern sold

all their remaining Condors and without exception all went abroad. Within a few months, not one serviceable Model 32 remained in civilian service within the borders of the United States, though a few of the original Model 18s soldiered on as barn-stormers. Moreover, except for a few brief test hops, no Condor II ever flew over the land of its birth subsequently. It is a curious fact that this wholly American airplane performed far more service outside than inside the United States.

Switzerland

The only Condor to serve a major European airline was that delivered to Swissair in the Spring of 1934. It aroused a great deal of attention when put onto the prestige route from Zurich to Berlin, the more so as it was the first airliner in Europe to carry a stewardess. Its career, however, was tragically cut short by a crash, due to an unsuspected weakness in the wing structure, barely three months after it entered service. All aboard lost their lives.

Great Britain

Four ex-Eastern Condors were purchased by a new British Company, International Air Freight, which was formed to operate cargo only services from London to Brussels, Amsterdam and other European cities. I.A.F. commenced operations in the summer of 1937, but demand did not come up to expectations, and the company went into liquidation in September 1938. The Condors were taken over by the Air Ministry, but never flew again, mouldering away in storage at Croyden.

Alaska and Canada

One Condor, ex-American, was bought by the White Pass and Yukon Railroad, and dispatched to Skagway, Alaska to serve the many isolated communities that depended almost entirely on aircraft for every transport need. Up to this time, single engined types had been used almost exclusively, and it was felt that the Condor's large carrying capacity and semi-S.T.O.L. performance (to use an anachronistic expression) would suit it well for this work. The snag was its retracting undercarriage, which severely limited its usefulness--most aircraft in these regions normally operated on floats or skis. Its owners do not seem to have realized that the airplane was actually designed to be fitted with floats if required, or perhaps the expense of obtaining floats and transporting them to Alaska was too great. It was never fitted with skis either, though these could have been attached to the standard undercarriage, as we done by the U. S. Navy for Antarctic operations. The Cyclone F engines were none too partial to operation in northern climates, and a former mechanic who worked on the airplane records that there was always considerable doubt as to whether it would actually leave the ground when scheduled to do so! Nevertheless, it remained in Alaska for three years, presumably earning its keep, after which it was transferred to another of its owner's subsidiaries in the neighboring Yukon. There it served for a further four years on similar duties.

Mexico

The same machine was eventually sold to Redas Aerea Mexicana S.A. in July 1944. It apparently found the milder climate of Mexico more congenial, as for six more years it flew all over the country on charter operations, before finally being scrapped in 1950.

Two other Condors bought from TACA operated briefly in Mexico after WW II, but little is known of their activities, which seem to have been largely of an "executive" nature.

Chile

In September 1935, L.A.N. de Chile purchased three Condors from American Airlines, at a price of \$27,000.



C/N's 59, 60, 61 and 62 at Limatambo Airport, Lima, Peru, March 1935. (Jose T. Flores, Jr.)

each, including delivery to Chile. No doubt A.A. was glad enough to sell them, even at this price, as they were, in spite of being comparatively new, surplus to requirements after the introduction of the DC-2.

They were put into service on the long and difficult route from Arica, in the extreme north of Chile, via Santiago to Puerto Montt, a distance of some 1500 miles. The Condors inaugurated L.A.N.'s "express flights" between Santiago and Arica, taking only 8½ hours to cover the thousand-odd miles between these two cities. At the time this was a notable advance in air travel. The regularity of the service left a good deal to be desired, especially after the loss of first one and then another of the Condors. The weather in this part of the world can be unbelievably bad, while the coastal strip of Chile is so narrow that even a small error in navigation would result in an almost certain crash into the Andes--or, alternatively, disappearance out to sea. Under these conditions, with a total lack of radio aids, it is remarkable that L.A.N. managed to operate such a route at all, and both crews and aircraft deserve great credit for accomplishing as much as they did. One of the three Condors survived five years of this arduous service to fly for many more years in Central America.

Colombia

Two ex-Eastern Condors were imported into Colombia by Servicio Aero Colombiana (SACO) in 1937 and put to work on local routes from Bogota in company with several Ford Trimotors. They performed their duties satisfactorily, but when their owner merged with the Pan American subsidiary SCADTA early in 1940, they became surplus, owing to the introduction of more modern equipment, and were sold to TACA.

Central America

Following their policy of acquiring second-hand aircraft, TACA purchased two Condors from SCADTA and one from L.A.N. de Chile in the summer of 1940. These aircraft were to be used on the company's trunk route from San Jose, Costa Rica to San Salvador, via Managua and Tegucigalpa. It would appear that they were in need of extensive modification and overhaul, as they did not receive their Nicaraguan Certificates of Air-worthiness for over a year after purchase. (All of these aircraft were registered in Nicaragua, though based at various points along the route.) They served for three years on this important service until sold in 1945, on replacement by DC-3s, for further service in Mexico.

Peru

The Condor became associated with many unusual situations during the course of its career, but the circum-



Hugh Wells

Hugh Wells' Condor Peruana de Aviacion Christmas Card showing C/N 59. (Jose T. Flores, Jr.)

stances which led to the service of four of the type as airliners in Peru was probably the most remarkable of all.

It seems certain, though it cannot be proved, that the Bolivian Government placed an order with Curtiss-Wright for the supply of four BT-32s for service against Paraguay in the Chaco War. The aircraft were completed, but their delivery was frustrated by the State Department's embargo on the export of war material to either contestant. After a confused series of sales, the four aircraft eventually were acquired by an airline newly formed by one Hugh Wells, Tampa-New Orleans-Tampico Airlines Inc. Though this corporation had been formed in a perfectly legal fashion to operate between New York and Buenos Aires, it seems likely that Bolivian money was involved, as the Condors were acquired by T-N-T Airlines for the sum of four dollars, an obvious absurdity. Meanwhile, Wells had visited Lima and there made arrangements to form an airline known as Condor Peruana de Aviacion to operate within Peru, T-N-T agreeing to charter the four airplanes to Condor Peruana. (As these were the only aircraft T-N-T owned, it seems very unlikely that they were ever intended to operate to Buenos Aires.) The four Condors arrived together in Lima on March 28, 1935 and were met when they landed by the Paraguayan Ambassador to Peru who, alerted by rumors of Wells' machinations, had prevailed upon the Peruvian Government to impound the aircraft.

Whatever Wells' plans had been, there was now only one thing he could do--operate the airline he had founded. Unable to return to the United States because of the State Department's displeasure, he was stranded in Peru with the four Condors forming his sole means of livelihood. He therefore had the planes registered in Peru (as AT-32-C's, which they were not), the military equipment removed (eyewitnesses report that when they arrived in Lima they were fully equipped with bomb racks), and put them into service, initially on charter work for mining companies. These operations were hazardous in the extreme. In order to load bulky pieces of equipment, parts of the fuselage structure were cut away and welded into place again when the load was in position, the reverse process being employed for their removal at the destination. A great deal of work was done in this manner--100 tons of machinery for a waterworks at Chachapoyas was flown in on behalf of the Peruvian Government, while the whole of the machinery for three mines was transported from Trujillo on the coast to Pias in the Andes. One of the four aircraft was lost at Pias, but with the other three, regular services between Lima and Iquitos via Huanaco and Tarapoto, and between Lima and Maldonado via Cuzco were instituted together with subsidiary services. The fares were reasonable (Lima - Iquitos, 900 miles, \$56.00), and the journey time of eight hours compared with far more than that number of days by surface transport. Though they operated over



At top are remains of CNAC Condor shot up by the Japanese at Hong Kong. Lower photos show only surviving Condor in Japanese markings. (Richard M. Bueschel)

some of the most inhospitable country in the world without radio, the Condors suffered no serious accidents, a tribute to the competence of the no American pilots and of the planes they flew. (The fact that pilots, planes and company were American was made much of in Condor Peruana's advertising.)

Despite the undoubted advantages it offered, the line did not prosper--traffic was simply insufficient. The Condors were kept going by cannibalization, and by the time Linea de Aviacion Condor, as it became in 1939, was expropriated by the Peruvian Government on May 23, 1941 all were in poor condition. They were taken over by the Peruvian Air Force, and parts from all three were used to make one serviceable aircraft. This flew on photographic survey work, mainly in Amazonia, until 1956, the last survivor of all the Condors.

China

In 1939 the China National Aviation Corporation, a Pan American subsidiary, was looking for cheap, large

capacity aircraft for use as freighters on their routes from Hong Kong into the interior of China. They acquired, through Charles Babb, six ex-A.A. Condors which had been lying dismantled at Vera Cruz, Mexico for over a year. These aircraft were originally intended to be used as bombers by the Republicans in the Spanish Civil War, but their export to Spain had been prevented by the Mexican Government. Babb rebuilt them as freighters, with large doors in the starboard side of the fuselage, and delivered them to CNAC. They operated from Hong Kong, much to the disgust of the Japanese who complained that they were being used to loot the Greater East Asia Co-Prosperity Sphere of its portable wealth for the benefit of the Americans, until the attack on Hong Kong on December 8, 1941, when five of them were burned out on the ground. The sixth, which was in a hangar, was captured intact, and a great deal of propaganda was made of the "fact" that the tail could be opened to load loot. In fact, of course, the Japanese perpetrator of this curious piece of nonsense had entirely failed to divine the actual purpose of the hinged tail surface--to vary the incidence of the tailplane! This aircraft was repainted and flown by the Japanese, but its eventual fate is unknown.

One other Condor served in Burma, but its duties are unknown. They were probably more executive than airline in nature.

CONDOR IN MILITARY SERVICE

U.S.A.

The activities of the two YC-30s were unremarkable. Originally stationed at Bolling Field as V.I.P. transports, they soon descended from these rarefied heights to use on normal USAAC transport work. Thus engaged, they flew all over the United States for some four years, visiting places as far away from their normal base as Seattle and Los Angeles. As with the airlines, aeronautical development rendered them obsolete before their time in their designed role, and the last eighteen months or so of their existence was eked out as supplementary aircraft with several units. Their lives were not arduous, and both were scrapped in 1938 after flying a moderate number of hours.

Much the same might be said of the two R4C's belonging to the Navy Department. They carried out their as-



Curtiss R4C-1, BuNo 9584, undergoing tests while stationed at N.A.S. Anacostia. (National Archives)



The "China Bomber", C/N 52, photographed after its arrival in China. (William Green)

signments with the Navy and Marine Corps unspectacularly, providing general support to the operational squadrons, ferrying personnel and so on. It was probably no hardship for the U. S. Marine Corps to release them for service in the Antarctic in 1939. By then, though not old, they were totally obsolete by comparison with the Douglas transports in Navy and Marine Corps service.

China

Only one military Condor, the BT-32 demonstrator, C/N 52, served in China. It did not succeed in obtaining a production order for Condor bombers for Curtiss, but it was purchased by Generalissimo Chiang Kai-shek as a personal transport. After a few years it was replaced by a Junkers Ju 52/3m, and its eventual fate is unknown. Probably it was destroyed by the Japanese.

Colombia

Three Condors were the first bombers acquired by Colombia's fledgling Air Force, but though a number of bomber crews were trained on them, they saw little use in their designed capacity. In a large country with poor surface communications like Colombia, air transport meets many needs, and since at this time the more isolated parts of the country could not provide sufficient traffic to support an airline, the job was done by the Air Force. The Condors proved themselves well suited to these duties, as their capacity was large and their flying characteristics good. They were often fitted with floats, so they could operate from the many large rivers which thread the country. They also made calls at places on Colombia's long coastline, carrying passengers, both military and civilian, mail and freight.

After six years on these duties, the outbreak of the Second World War necessitated their return to more war-like activities in the form of anti-submarine patrols along Colombia's Atlantic coast. So far as is known, no U-boats were sighted. These patrols, however, formed no more than a variation in their vitally important transport duties. Many isolated towns and villages depended absolutely on the Air Force for contact with the outside world, and it was while so employed that two of the Condors were destroyed in non-fatal accidents. The third was scrapped as obsolete after the war.

Argentina

Like military Condors elsewhere, the three operated by the Argentine Navy led a humdrum existence, which was, however, a long one--two of them survived on active service for 14 years. One of the three, throughout almost the whole of its life, served as a trainer, while the other two were operated by transport squadrons, and played



Two upper photos are of C/N 54, a Colombian BT-32, taken at New York on December 4, 1934. (John C. Barbery) Lower photo shows two Colombian Condors at the German Olano Air Base. (Colombian Air Force)



The four aircraft of Admiral Richard E. Byrd's second Antarctic Expedition at their base in 1934. The Condor, C/N 41, is prominent in this view. (National Archives No. 306-NT-548-16)

their parts in opening up the distant southern areas of Argentina. They were also used to a considerable extent in giving flying time to Naval personnel whose duties did not normally call for "air time." On one such flight, considerable consternation was caused to the passengers when the freight door (these aircraft, the last three Condors built, were CT-32s) blew off and hit the tailplane, but the aircraft made a safe landing and returned to service shortly afterwards. One aircraft was based in the vicinity of Buenos Aires, at Punta del Indio, the other two at Comandante Espora air base, Puerto Belgrano.

CONDOR IN ANTARCTIC EXPLORATION

Many types of aircraft have been used to survey the otherwise inaccessible areas of Antarctica, but none has a more honorable record in this respect than the Condor. Its qualities, especially its load-carrying capability, rendered it ideal for this work. As an illustration of its powers in this respect, the Navy report on the 1940 expedition remarks in a distinctly critical tone that the fuselage showed signs of strain when carrying an overload of $2\frac{1}{2}$ tons! As a result, the load was somewhat reduced, but flights were habitually made at a takeoff weight of nearly 22,000 pounds.

Byrd Expedition 1933-35

The first use of a Condor in exploration was with

Admiral Byrd's second expedition in 1933-35. The aircraft, C/N 41, was provided by donation, though not by any one person and many supporters were persuaded to donate parts or the cost of them. The machine was named "William Horlick" after a principal benefactor. Rumor has it that there was some disappointment among the expedition's leaders that C-W did not donate more than it actually did.

After tests, the Condor was loaded aboard the expedition ship "Jacob Ruppert" fully assembled. Rather surprisingly it suffered little damage on the long voyage south, and before reaching Antarctica was lowered over the ship's side and dispatched on a flight to explore the approaches to the continent, proving most valuable as a reconnaissance machine. On arrival, it was fitted with skis, and flown from the pack-ice beside the ship to Little America on the edge of the Ross Ice Barrier. In the process it was very nearly lost, as the rubber cords retaining the forward ends of the skis in their correct positions proved to be too weak, and the skis dropped down to a 45° angle. However, skilled piloting enabled a safe landing to be made, after which the trouble was soon rectified. Oddly enough, the same accident occurred six years later on the U. S. Antarctic Service Expedition.

No flying of any importance was done before the long Antarctic winter closed in; the season was getting late, and there was an enormous amount of work to do before conditions became impossible. Not the least of the

problems was storage of the Condor itself. This was accomplished by digging away the snow under the skis of the aircraft, and allowing them to sink into the pits thus formed, after which the plane was covered by a frame of tarpaulins stretched over stout timbers--a colossal job.

During the months of permanent darkness, the Condor was readied for the work to come. Holes in the fabric were patched, the engines overhauled, cables checked and so on, against extreme difficulties. For example, dope would not dry, owing to the cold, and to enable a patch to be applied to the under-surface of a wing, a man turned himself into a sort of inverted tent by holding the upper edge of a large piece of cloth, whose lower edge was tied around his waist, against the wing, while warmth was provided by a 500 watt electric bulb held inside the "tent." The fumes from the dope were, of course, utterly nauseating in this confined space, but nonetheless many patches were applied by this means.

With the arrival of the southern Spring in October 1934, the Condor was ready, and on the 15th of November, after a delay caused by the weather, it took off on the first of five long flights. These were to lay bare the structure and geography of that part of the Antarctic Continent on which American explorers concentrated most of their efforts, the area lying east of the Ross Sea. At this time so little was known about Marie Byrd Land, as it was called after the wife of its discoverer, that it was even considered possible that a strait ran right across the continent under the ice.

This thesis was disproved on the first and second flights, and in addition, ranges of great mountains, whose existence had not even been suspected, were discovered. Some of these were over 10,000 feet high. The third flight was devoted to exploring the great mountains, while the fourth and longest (1100 miles) struck directly southeast into the center of the continent. A fifth flight was made to fill in the gaps, but a sixth, along the coastline, was defeated by low clouds.

An immense amount of knowledge was gained in the course of these flights, and probably no other type of airplane in service in 1934 could have done so well. The fate of the Condor itself was a sad anti-climax after so much adventure. In the course of the hurried loading of the "Jacob Ruppert" at the conclusion of the expedition, a heavy baulk of timber was dropped into the ship's hold onto the aircraft's wings, crushing them beyond repair. In view of its obsolescence in the United States and of the many non-standard features arising both from the donated parts and the requirements of the expedition, it was not worthwhile to repair the damage, and the aircraft was scrapped on its return to the United States.

U.S.A.S. Expedition 1940-41

Five years later, President Roosevelt ordered Admiral Byrd to take charge of another expedition to the Antarctic. The President directed that the United States Antarctic Service should be formed for the purpose, and that the service was to organize an expedition larger and better equipped than any that had visited Antarctica hitherto. With the resources of the United States Government behind him, Admiral Byrd no longer had to scrounge for parts to build a plane, and aircraft--two Condors and a Beechcraft D.17--were allotted to him from Navy stocks. The two Condors were prepared for Antarctic service by N.A.S. San Diego, and left the United States on board ship in November 1939.

On arrival in the Antarctic, the expedition set up two bases, one, West Base, at Little America, the other, East Base, 1500 miles to the east, in Marguerite Bay, Palmer Land. One Condor (BuNo 9584) and the Beechcraft were landed at West Base on January 12, 1940, the other Condor (9585) at East Base on March 15th. Once landed, the two bases formed virtually separate expeditions and

will be dealt with as such here.

At East Base, due to the lateness of the season and the difficulty of assembling the Condor (unlike the expedition of 1934, both aircraft had been shipped dismantled) it was only possible to make two short flights, on the 20th and 21st of May. On landing after the second of these, the tail ski was damaged, which precluded any further flying before the coming of the Antarctic night.

It was particularly desired to survey the high plateau in the center of the Palmer Peninsula, and this was done in a series of flights in September. Several flights were interrupted by sudden worsenings of the weather, which in this area is unusually violent and changeable even for Antarctica. Next, on November 4, a flight right around Alexander I Island, a distance of some 800 miles, was made, during which a number of hitherto unknown geographical features were discovered. Two further long flights in the southwesterly direction were made during December. On these the Condor flew directly over Alexander I Island and the open sea beyond until the continental coast was reached, whereupon the plane turned west, and flew on along the coast to the limit of its endurance. During the return flight, a landing had to be made, and gasoline transferred from cans carried in the cabin to the wing tanks.

The last and longest exploratory flight from East Base was made on December 30, 1940. On this, the course was set to cross Palmer Land in the southeasterly direction (the heavily loaded Condor could not climb high enough to cross the plateau directly, and had to fly through a pass), then south along the Weddell coast. A point in latitude 74° 42' S was reached--much further south than anyone had been on this coast before--and a great deal of new geographical knowledge was gained.

The year 1941 was a bad time for heavy pack-ice in the Antarctic, and when the time came to relieve East Base, it was not possible for the ships to approach nearer than Mikkelsen Island (now Watkins Island), 120 miles away. The 24 men from East Base were therefore flown there in two parties, and landed at the top of a 300 foot precipice, whence they were lowered to the "Bear", waiting below. The gallant Condor was abandoned on the island, to be blown out to sea soon afterwards.

Meanwhile, at West Base, the other Condor had made six flights over Marie Byrd Land, these greatly amplifying the knowledge of this region acquired during the 1934 expedition. The first flight was made on February 9, the others in November and December 1940. The President had directed that the expedition was to concentrate on this region, and at the conclusion of the flying program, in the words of the official report, "It is probable that no uninhabited region of its size has been so thoroughly surveyed as that of the Edsel Ford Mountains"--a magnificent achievement for which Condor 9584 was in no small measure responsible.

Though his primary duty was to explore Marie Byrd Land, Major Siple, the West Base Commander, had been given leave to explore in other directions if time permitted, and three flights, including a very long one along the southern coast of the Ross Sea, were therefore made over the Ice Barrier during December. These proved that the barrier's features were not permanent, and that the previously reported positions of a number of them, including the coastline itself, had changed markedly. (This process continues--Little America no longer exists.)

These duties completed, the Condor was held in reserve, and on January 4, 1941 it was dispatched to assist a tractor party which had gotten into difficulties 90 miles from base. Soon after taking off on the return flight, a cylinder on the starboard engine broke and went through the cowl. A forced landing was made, in position 78° 30' S, 157° 30' W, and the crew and equipment were picked up by the Beechcraft and the Condor abandoned. In view of the fact that a plane's skis will freeze solid to the snow in half an hour, and

that any large exposed object will drift over with snow very quickly, it is no doubt still there, waiting for some archaeologist of the future. Perhaps this last survivor of a very worthy breed may yet fly again--who knows?

For an airplane that was obsolete almost before it was designed, the Condor gave amazingly good service. Though it was little used on the routes for which it was intended, many a community first received the benefits of air transportation through its agency. It flew in the tropics and in the Antarctic, over mountains and deserts, to great cities and small villages. It carried passengers, machinery and a multitude of other things profitably, and even in military service its presence was an undoubted economic benefit to the countries whose Air Forces flew it. Truly, George Page and his small band of helpers wrought well when they were sent to St. Louis to build a cheap transport 35 years ago.

INDIVIDUAL AIRCRAFT HISTORIES

C/N 21	T-32, T-32c Special	12353 NC 12353 C-35 (COLOMBIA) C-100 (COLOMBIA) AN-ABG XA-FAJ XB-GIT
--------	---------------------	--

Prototype, first flown 1/30/33. NC license issued 3/8/33 under ATC 509. Delivered to E.A.T. 3/23/33, Fleet No. 21. Minor accident at Trenton, N. J. on 5/24/33. Sold to North American Aviation 12/31/34 but continued to be operated by E.A.T. Sold in an unserviceable condition to Servicio Aereo Colombiana (SACO) through their agent Dr. Antonio Restrepo Alvarez and overhauled by C-W; at the same time fitted with the SGR-1820-F2 engines of the T-32c. The other modifications allowing the gross weight to be raised to 17,500 lbs were not incorporated, and the aircraft was certificated as T-32c Special under ATC 547 but with a gross weight limitation specified. Test flown as such 3/25/37. Certificate of Airworthiness for export No. E-2536 issued 3/29/37, and delivered to Colombia shortly afterward as C-35. Re-registered C-100 10/18/39 and sold to SCADTA 5/29/40. Sold to TACA 7/18/40 and based at San Salvador. Nicaraguan registration issued 6/29/42, aircraft certificated to carry 18 passengers at 17,500 lbs gross weight. The long inactive period may be due to extensive modification/overhaul. Sold to Comunicaciones Aereas de Vera Cruz S.A. on 8/20/45, Nicaraguan registration cancelled 1/17/46. Re-registered XA-FAJ. Sold to Distribuidora Mercantil del Sureste 2/10/47, and registered XB-GIT. Ultimate fate unknown, probably scrapped.

C/N 22	T-32	NC 12354
--------	------	----------

Delivered to A.A. 4/27/33, Fleet No. 165. Minor accident on 7/2/33 (at Chicago) and on 2/23/34. Fatal crash Mongaup Mountain, near Liberty, New York, 6/9/34.

C/N 23	T-32, T-32c	NC 12363
--------	-------------	----------

Delivered to A.A. 4/20/33, Fleet No. 166. Minor accident at Tottenville, Staten Island 5/2/34. Converted to T-32c, redelivered 8/6/34 under ATC 547. Forced down in snowstorm near Morehouseville, N.Y. 12/28/34, no fatalities but crew and passenger suffered severe injuries from frost bite. Recorded by A.A. as "salvaged", but in fact only some parts were removed, most of the aircraft remaining at the site. It is reported that A.A. salvaged all remaining parts during 1966.

C/N 24	T-32, T32c	NC 12364
--------	------------	----------

Delivered to A.A. 5/9/33, Fleet No. 167. Converted to T-32c, re-delivered 10/19/34 (ATC 547). Sold to Charles H. Babb 1/19/37, delivered to Floyd Bennett Field, and destroyed in hangar fire there 9/27/37.

C/N 25	T-32, T-32c	NC 12365 XA-BDS NX 12365 CNAC ?
--------	-------------	--

Delivered to A.A. 5/15/33, Fleet No. 168. Converted to T-32c, re-delivered 9/6/34. Delivered to Mexico City 12/21/36, Mexican registration certificate No. 293 issued 1/2/37. Sold to C. H. Smith, then to Francisco Sarabia, then to Spanish Embassy in Mexico City. Flown to Veracruz, dismantled and crated there for export to Spain aboard the ship "Manuel Arnus." Export prevented by Mexican Government, and aircraft remained in crate until sold to C. H. Babb, through Silvio Duguay, and sent to Glendale, California by rail 1/13/39. Rebuilt by Babb, converted to freighter with large door in starboard side of fuselage. Test flown under NX registration, sold to CNAC and exported to Hong Kong. CNAC registration not certain, but probably between 41 and 47.

See also C/N's 40, 43, 48, 50 and 51. Five of these aircraft were destroyed by Japanese attack at Kai Tak airport, Hong Kong, on 12/8/42. The sixth, which was in a hangar, attempted to escape to Manila, but had to return owing to an engine failure. It was captured by the Japanese, and probably eventually scrapped by them. It is not known which of the six CNAC machines this was.

C/N 26	YC-30	33-320
--------	-------	--------

As a result of tests with C/N 21, the Army Air Corps ordered two Condors as YC-30s. C/N 26, the first of these, was accepted on 5/12/33, and delivered to Bolling Field, Washington, D.C. Fitted as a V.I.P. transport on 5/17/33. It remained there until 5/28/35, apart from the



The first Condor, C/N 21, is seen above before receiving NC prefix to its license. (USAF 9482AC) At right is a rare flight shot of C/N 21 after entering service with Eastern Air Transport. (St. Louis Post Dispatch)





C/N 21 in 1947, registered XB-GIT, with AT-32 type cowlings and constant speed propellers. Fuselage stripes probably red-white-green. (Jose T. Villela, Jr.)



American Airways' passengers embarking on C/N 22. The C/N was used as Fleet Number on this aircraft only for a short period. (American Airlines AOO-151)



Freight being loaded into C/N 23 and C/N 25 (nearest camera). Changes in A.A. color scheme from C/N 22 can be seen on these planes. (American Airlines 5543)



Fuselages of C/N's 25, 40 (right), 43, 48, 50 and 51 at Grand Central Air Terminal, Glendale, California before rebuilding by Charles H. Babb. (Wm T. Larkins)



Curtiss YC-30, C/N 26 or 27, with Bolling Field insignia on rear fuselage and "56" on rudder. (Gordon S. Williams)

period 11/30/33 - 1/11/34 when it was overhauled by C-W. On 2/26/34 it was assigned to the Eastern Zone of the Air Mail for the period that this was operated by the Air Corps. On 5/28/35 it was sent to Maxwell Air Depot, Montgomery, Alabama, probably for overhaul, and returned to Bolling on 9/21/35. It finally left Bolling on 6/21/37 and was stationed at Scott Field, Belleville, Illinois until 1/7/38, when it was transferred to Rockwell Air Depot, San Diego, California, being surveyed there on 6/3/38 with 1225 hours.

C/N 27 YC-30 33-321

This was probably the aircraft fitted out for the personal use of President Franklin D. Roosevelt (see letter from Mr. George A. Page in JOURNAL, Vol 9, No 2). It was accepted on 5/12/33 and was delivered to Bolling Field on 5/26/33. Sent to C-W for overhaul at the end of December 1933, it returned to Bolling on 1/23/34, and remained there until assigned to the Engineering Section at Wright Field on 9/18/34. At Wright it was used on a fuel system project, after the completion of which it returned to Bolling on 5/15/35. Sent to Maxwell Air Depot for overhaul on 3/16/36, subsequently being transferred to the 91st School Squadron, Maxwell Field, 5/16/37. (Note long period out of use--it only accumulated four flying hours in 14 months.) On 7/2/33, 33-321 collided with another aircraft at Maxwell, and was surveyed there on 9/20/38.

C/N 28 T-32 NC 12366
G-AEZE
P 5724

Delivered to E.A.T. 6/3/33, Fleet No. 22. Sold to North American Aviation 12/31/34, but continued to be operated by Eastern. Sold to International Air Freight, London, England, 5/26/37 and registered G-AEZE. Overhauled by C-W and converted to freighter and delivered in British markings to Floyd Bennett Field. It was disassembled there and shipped from New York. British C of A issued 8/12/37. Operated from Croydon until I.A.F. closed down on 9/29/38, then stored. Purchased by Air Ministry for conversion to Navigation Trainer October 1938, RAF serial P 5724 allotted, but remained in storage. Delivered by road to 30 Maintenance Unit RAF, Sealand, Cheshire on 10/26/39, and scrapped there 11/11/39.

C/N 29 T-32 NC 12367
G-AEWD
P 5723

Delivered to E.A.T. 6/12/33, Fleet No. 23. Subsequent history as C/N 28; sold to I.A.F. 1/13/37, British C of A issued 5/20/37.

C/N 30 T-32 NC 12368
G-AEWE
P 5725

Delivered to E.A.T. 6/24/33, Fleet No. 24. Subsequent history as C/N 29, British C of A issued 5/13/37.

C/N 31 T-32, T-32c Special NC 12369
C-36 (COLOMBIA)
C-101 (COLOMBIA)
AN-AAV

Delivered to E.A.T. 6/30/33, Fleet No. 25. Sold to North American Aviation 12/31/34, but continued to be operated by Eastern. Sold to Servicio Aereo Colombiano through Dr. Antonio Restrepo Alvarez 2/6/37 and converted to T-32c Special (see C/N 21) by C-W. Delivered to Colombia during June 1937. Re-registered C-101 10/18/39, sold to SCADTA 5/29/40, based at Tegucigalpa, Honduras. Nicaraguan registration issued 1/28/42, aircraft certificated to carry 23 passengers at a gross weight of 17,500 lbs. Sold to unknown owner; Nicaraguan registration cancelled 1/17/46.

C/N 32 T-32, T-32c NC 12371
CF-BQN

(continued)

XA-DOA

Delivered to A.A. 8/24/33, Fleet No. 169. Converted to T-32c by C-W, re-delivered 10/6/34. Serious accident at Fort Worth, Texas 3/4/35, repaired by C-W using complete wing and tail assemblies from C/N 42 (q.v.). Repairs completed 6/30/36. Sold to C. H. Babb 1/19/37, delivered to Floyd Bennett Field. Sold to White Pass and Yukon R.R. 8/20/37, based at Skagway, Alaska using registration NC 12371. Sold to British Yukon Navigation Co., Whitehorse, Yukon, Canada (a subsidiary of W.P. & Y.R.R.), on 6/26/40, and registered CF-BQN. According to Canadian Government, sold to Yukon Southern Air Transport, Edmonton, 8/6/42, but this is denied by other sources. Sold through C. H. Babb to Redas Aerea Mexicana S.A. (RAMSA) 7/17/44, and delivered Edmonton to Ciudad Juarez on 7/27/44. Mexican Registration issued 11/3/44. Scrapped at Tapachula, Chiapas, Mexico 4/28/50.

C/N 33 T-32, T-32c NC 12372
CC ?

Delivered to A.A. 9/1/33, Fleet No. 170. Minor accident at Lake St. Clair, Michigan 11/29/33, repaired by C-W. Converted to T-32c, re-delivered 6/20/34. Accident at Little Rock, Arkansas 12/17/34, repaired by C-W. Sold to L.A.N. de Chile, 9/24/35 registration unknown. Crashed (no fatalities) and written off at Domeyko, Northern Chile, date unknown.

C/N 34 T-32 NC 12373

Delivered to E.A.T. 7/27/33, Fleet No. 26. This, the shortest-lived of all the Condors, was destroyed in a non-fatal crash at Newark, N.J., on 9/21/33, owing to taking off with locked ailerons.

C/N 35 T-32 NC 12374
- ?

Delivered to E.A.T. 8/7/33, Fleet No. 27. Sold to North American Aviation, 12/31/34, but continued to be operated by Eastern. Sold to Colonel William C. Brooks, Director of Military Aviation, Government of Honduras, and delivered to Honduras July or August 1936. Disappeared on a flight within Honduras, date unknown. Wreckage never found.

C/N 36 T-32 NC 12375
G-AEWF
P 5726

Delivered to E.A.T. 8/16/33. Subsequent history as C/N 29 (q.v.), British C of A issued 5/13/37.

C/N 37 T-32 NC 12376
Delivered to E.A.T. 8/24/33. Sold to North American Aviation 12/31/34 but continued to be operated by Eastern. Crashed at Atlanta, Georgia on 1/23/35 and written off.

C/N 38 T-32, T-32c NC 12377
CC ?

Delivered to A.A., Fleet No. 171. Converted to T-32c by C-W, re-delivered 9/21/34. Sold to L.A.N. de Chile 9/24/35 with C/N's 33 and 39. Burnt out on ground after carburetor fire when starting, Copiapo Airport, Northern Chile, 1936. (Precise date unknown.)

C/N 39 T-32, T-32c NC 12378
CC ?
AN-ABB
XA-FEC

Delivered to A.A. 10/2/33, Fleet No. 172. Converted to T-32c, re-delivered 11/26/34. Sold to L.A.N. de Chile 9/24/35, with C/N's 33 and 38. Sold to TACA about 6/40 and based at Managua. Registered AN-ABB 4/28/42 and certificated to carry 20 passengers. Sold to unknown Mexican owner 4/12/46, registered XA-FEC. No further information, probably scrapped.

C/N 40 T-32, T-32c NC 12383

A.A.H.S. JOURNAL



Condor C/N 28 in service with E.A.T. (John C. Barbery)



C/N 28 in later guise at Croydon, 1937. (A. J. Jackson)



International Air Freight's C/N 30. (A. J. Jackson)



C/N 31 as Condor No. 25 of E.A.T. (Gordon S. Williams)



C/N 32 when owned by British Yukon. (C. R. Cameron)



Another view of C/N 32. (Canadian Pacific Airlines)



End of C/N 32, Tapachula, Mexico. (Jose T. Villela, Jr.)



C/N 36 embarrassed, probably at Croydon. (A. J. Jackson)

(continued)

XA-BDV
NX 12383
CNAC ?

Delivered to A.A. 10/24/33, Fleet No. 183. Converted to T-32c, re-delivered 8/24/34. Subsequent history as C/N 25 (q.v.). This aircraft was used during 1933 for tests of Curtiss electric constant speed propellers.

C/N 41 T-32 NR 12384

Offset from A.A. production for Admiral Richard E. Byrd's second Antarctic expedition, paid for by subscription. Aircraft non-standard in many respects. It was fitted with ungeared SR-1820-F2 Cyclones driving 9'8" propellers, the only Condor so equipped. The retracting undercarriage was deleted, though on test a fixed wheel undercarriage was used. Extra tankage brought fuel capacity up to 1100 gallons. Delivered to Admiral Byrd on 9/8/33, and after tests fitted with floats at Edo Corp's factory, Long Island. Shipped to the Antarctic aboard S.S. "Jacob Ruppert" 10/11/33. Damaged on loading aboard "Jacob Ruppert" 2/3/35 and scrapped after return to the U. S.

C/N 42 AT-32-A NC 12390
NX 12390
XY-AA1

The first Condor built new to have increased gross weight of 17,500 pounds. Fitted with sleeping berths. Delivered to A.A. 3/17/34, Fleet No. 151. Suffered from incurable vibration trouble, and voluntarily dismantled by A.A. at St. Louis. Wings and tail assembly used to repair C/N 32 (q.v.). Sold in dismantled condition on 6/28/37 to General Aircraft Salvage Co., Buffalo, N.Y., and by them on 5/15/39 to Robertson Aircraft Corp., Lambert Field, Robertson, Missouri. Robertson rebuilt the aircraft, and a three-day NX license was issued on 9/2/39 for one test flight only. Sold to Intercontinent Corp. of New York and shipped to Burma. Believed destroyed in bombing of Central Aircraft Manufacturing Co. plant at Loiwing, China 10/26/40.

C/N 43 AT-32-A NC 12391
XA-BDR
NX 12391
CNAC ?

Delivered to A.A. 4/13/34, Fleet No. 152. Subsequent history as C/N 25 (q.v.). A good photograph of this aircraft with NX license appears on page 37 of "Transport Planes That Made History", by David C.

Cooke, published by G. P. Putnam's Sons, New York, 1959.

C/N 44 AT-32-A NC 12392
Delivered to A.A. 4/21/34, Fleet No. 153. Burned out on ground, Glendale, California, 8/13/36.

C/N 45 AT-32B NC 12393
Delivered to A.A. 5/19/34, Fleet No. 154. Crashed at Murfreesboro, Tennessee, 7/27/35.

C/N 46 AT-32-B NC 12394
Delivered to A.A. 5/22/34, Fleet No. 155. Sold to C. H. Babb 1/19/37, delivered to Floyd Bennett Field and destroyed in hangar fire there 9/27/37.

C/N 47 AT-32-B NC 12395
Delivered to A.A. 6/7/34, Fleet No. 156. Destroyed by fire on ground, Buffalo, N.Y., 12/19/34.

C/N 48 AT-32-D NC 12396
XA-BDP
NX 12396
CNAC ?

In contrast to the six preceding aircraft, this and subsequent A.A. Condors were normal 15 passenger day planes, not fitted with sleeping berths. Delivered to A.A. 6/29/34, Fleet No. 157. Subsequent history as C/N 25 (q.v.).

C/N 49 AT-32-D NC 12397
Delivered to A.A. 7/3/34, Fleet No. 158. Built as 15 passenger transport but converted to sleeper configuration after accident at Camden, N.J., 12/23/34. Sold to C. H. Babb 1/19/37 and destroyed in hangar fire at Floyd Bennett Field 9/27/37.

C/N 50 AT-32-D NC 12398
XA-BDU
NX 12398
CNAC ?

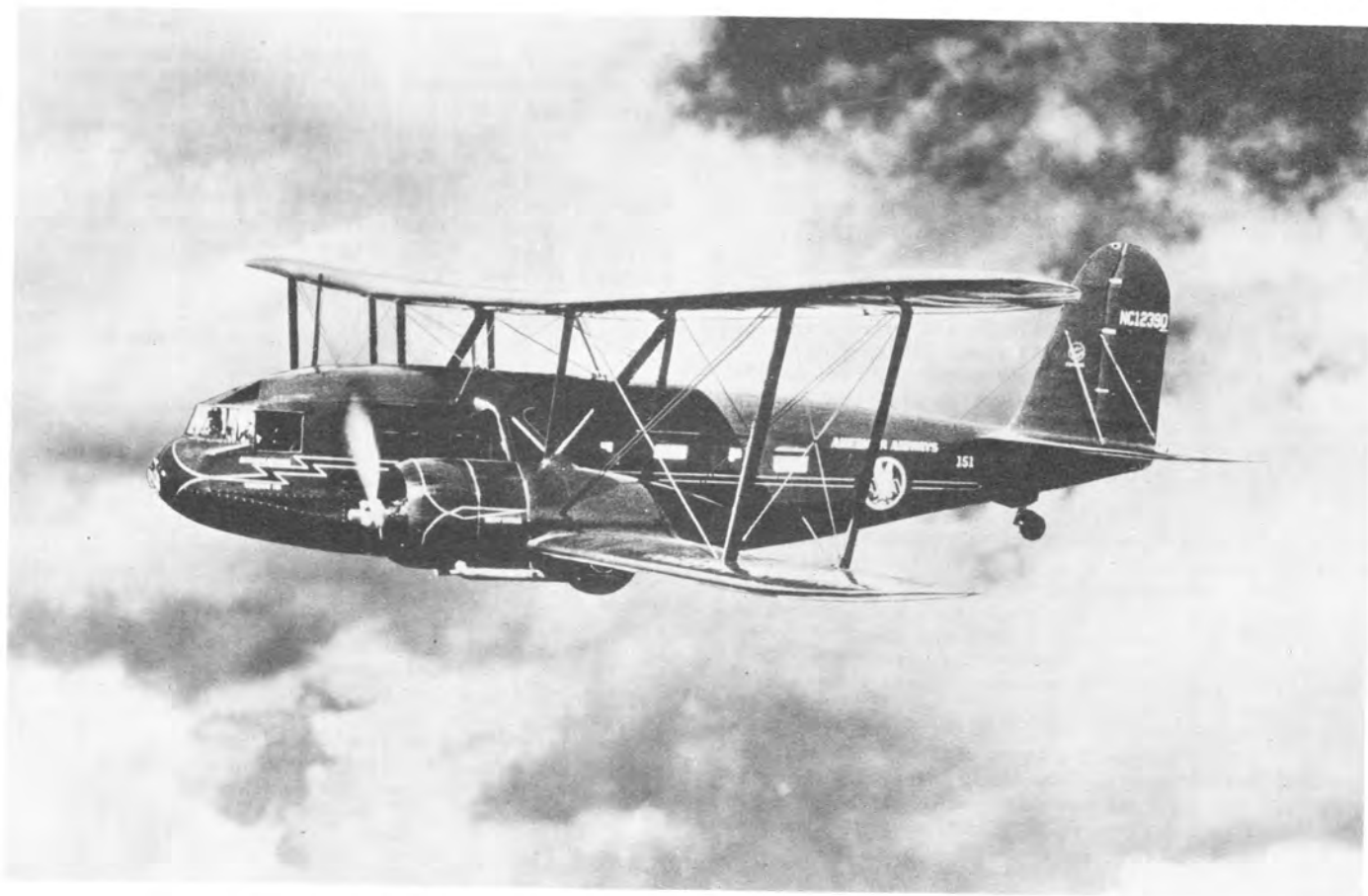
Delivered to A.A. 7/6/34, Fleet No. 159. Subsequent history as C/N 25 (q.v.).

C/N 51 AT-32-D NC 12399
XA-BDT
NX 12399
CNAC ?

Delivered to A.A. 7/24/34, Fleet No. 160. Subsequent history as C/N 25 (q.v.).

The non-standard Condor T-32, delivered to Admiral Richard E. Byrd for his second Antarctic expedition, being loaded aboard the "Jacob Ruppert". (National Archives 306-NT-548 -16)





American Airways' first AT-32 sleeper transport with gross weight of 17,500 pounds. (American Airlines E51724)



C/N 43 as American's Fleet No. 152 (Gordon Seager)



C/N 44 after burning out at Glendale. (Frank P. Heck)



A.A.'s C/N 45 readying for takeoff. (John C. Barbery)



Next to last AT-32 sleeper, C/N 46. (John C. Barbery)

C/N 52 BT-32 No civil or military registration carried.

The first military Condor, built as a demonstrator, completed 2/9/34. Taken to China by Frank Hawks, and shown off to Chinese officials, it landed "wheels up" before a large crowd of notables. Repaired and subsequently used by Chiang Kai-shek as his personal transport until replaced by a Ju 52/3m. Probably destroyed by Japanese.

C/N 53 AT-32-C CH-170
HB-LAP

Delivered to Swissair on 3/28/34 and entered service on 4/11/34. Crashed near Tuttlingen, Germany, on 7/27/34 due to failure of the attachment fitting at the lower end of the front flying wires on the right wing. The registration allotted under the new Swiss registration system, HB-LAP, was never carried. This was the last civil Condor built.

C/N 54 BT-32 Colombian Air Force 651

Delivered 6/1/34, after tests on floats by Edo Corp. Based at Palanquero and used initially for training bomber crews. Subsequent duties included use as a military transport and mail carrier, during which operations the aircraft was fitted with floats and operated from rivers in remote parts of the country. In the early part of WW II, anti-submarine patrols were flown off the Atlantic coast of Colombia.

On an unknown date in 1944, C/N 54 caught fire in the air and force-landed on the banks of the Magdalena River at Pinto, Bolivar Dept., Colombia. There were no fatalities, but the aircraft was destroyed after being submerged by a sudden rise of the river, having flown approximately 10,000 hours.

C/N 55 BT-32 Colombian Air Force 652

Delivered to Colombia 6/18/34 and employed on the same duties as C/N 54. Withdrawn from service in 1945 and scrapped in 1946 at Palanquero Air Base.

C/N 56 BT-32 Colombian Air Force 653

Delivered to Colombia 6/24/34 and employed on the same duties as C/N 54. Caught fire on ground and burned out near San Jose del Guaviare, Colombia, during 1942.

C/N 57 AT-32-E (R4C-1) Bu Aer 9584

Delivered to N.A.S. Anacostia 5/6/34. Remained there until 8/30/35, when assigned to VJ-7M of Aircraft Two, Fleet Marine Force, San Diego, California. VJ-7M was re-designated VMJ-2 in 1937. Assigned to U. S. Antarctic Service and delivered to N.A.F. San Diego for overhaul and modification for Antarctic use 8/14/39. Shipped to Antarctica aboard S.S. "North Star", and unloaded at West Base, Marie Byrd Land, January 1940. Abandoned after engine failure 1/3/41, in position 78° 30'S, 157° 30'W. Probably still there, buried under snow.

C/N 58 AT-32-E (R4C-1) Bu Aer 9585

Delivered to M.C.A.S. Quantico, Virginia, 6/16/34, and assigned to VJ-6M of Aircraft One, Fleet Marine Force. Transferred to VJ-7M, San Diego, September 1935. Assigned to U. S. Antarctic Service and after overhaul and modification at N.A.F. San Diego, shipped to Antarctica aboard S.S. "North Star." Unloaded at East Base, Palmer Peninsula, 3/11/40. Abandoned on Mikkelson Island (now known as Watkins Island) after emergency evacuation of East Base 3/22/41, and probably blown out to sea soon afterwards.

C/N 59 BT-32 11729
(also described NR 11729 (not applied)
as AT-32-C) OB-11A
Peruvian Air Force
(no identification)

Built to the order of Bolivian Government, export forbidden by State Department. Sold to C. W. Webster (an employee of the Curtiss-Wright Corp.), before completion on 4/20/34. Date of completion July 1934. Sold to Curtiss-Wright, Robertson, Missouri 1/29/35. Sold to William B. Robertson 2/18/35, and to Tampa-New Orleans-Tampico Airlines Inc. (Hugh Wells) 2/19/35. NR license issued to T-N-T Airlines 3/16/35. Aircraft flown to Lima, Peru, probably on 3/28/35. From 10/7/35 operated by Condor Peruana de Aviacion S.A., Fleet No. 310, named "Iquitos." Company re-formed as Linea de Aviacion Condor 1939, expropriated by Peruvian Government 5/23/41. OB-11A was transferred to the Peruvian Air Force, and, with the aid of spares from C/N 61, kept flying on photo-mapping duties until finally scrapped at Lima about September 1956. This was the last Condor to remain in service anywhere.

C/N 60 BT-32 11730
(AT-32-C) NR 11730
OB-11B

Early history as C/N 59, completed July 1934, Condor Peruana Fleet No. 311, named "Cuzco." Scrapped after forced landing at Pias, Peru, on an unknown date, probably in 1939, owing to lack of spares.

C/N 61 BT-32 11731
(AT-32-C) NR 11731
OB-11C

Early history as C/N 59, completed August 1934. Condor Peruana Fleet No. 312, named "Madre de Dios." Force landed in Sechura desert 1940, not found for three days. Repaired and flown out, but not flown again owing to poor condition. Scrapped for parts to service C/N 59 by Peruvian Air Force, 1941.

C/N 62 BT-32 11732
(AT-32-C) NR 11732
OB-11D

Early history as C/N 59, completed in August 1934.



The "China Bomber", the first BT-32, C/N 52, was taken to China by Frank Hawks. (Gordon S. Williams)



The last civil Condor, C/N 53, serving between Zurich and Berlin for Swissair (Swissair 10660)



Colombian BT-32, probably C/N 54, seen at the Edo plant in New York, summer of 1934. (Gordon S. Williams)



The end of the line for C/N 54 near the banks of the Magdalena River, Colombia. (Colombian Air Force)



C/N 57 based at N.A.S. Anacostia. (Gordon S. Williams)



C/N 57 of VMJ-2 at Oakland, 1938. (William T. Larkins)



C/N 58 while serving VJ-6M. (W. Phillips via Pearson)



C/N 58 in the Antarctic. (National Archives 126-AS-824)



C/N 59 in the colors and markings of Condor Peruana de Aviacion S.A. during late 1930s. (Jose T. Flores, Jr.)



C/N 59 as it appeared during the 1950s while serving with the Peruvian Air Force. (Jose T. Flores, Jr.)

Curtiss CT-32 C/N 64 serving with the Argentine Navy's 2do Grupo de Transporte seen at Punta del Indio about 1938. In background is C/N 65 of the 3er Grupo de Transporte. (N. H. Danby, Jr.)



Condor Peruana Fleet No. 313, no name. Crashed and was written off at Pias, Peru, probably during 1936.

C/N 63 CT-32 11756
1-E-301 (Argentine Navy)

Completed September 1934, delivery date to Argentina uncertain, early 1935. Assigned to 1er Grupo Escuela at Comandante Espora Air Base, Puerto Belgrano until about 1945. Subsequently used for transport work in the southern parts of Argentina, and scrapped after an accident in 1947.

C/N 64 CT-32 2-Gt-11 (Argentine Navy)

Completed September 1934, delivered to Argentina early 1935. Assigned to 2do Grupo de Transporte, at Comandante Espora air base, Puerto Belgrano, until about 1945, and used for transport work in the southern parts of Argentina until scrapped in 1949 as obsolete.

C/N 65 CT-32 3-Gt-1 (Argentine Navy)

Completed October 1934, delivered to Argentina early 1935. Assigned to 3er Grupo de Transporte, and based at Punta del Indio. Subsequent history as C/N 64.

FOR THE MODELLER: The only plastic kit of the Condor that has ever been issued is that made by the Ideal Toy Company (I.T.C.). This first appeared at least ten years ago, has been out of production for some time now, and is extremely hard to find. It is, however, worth looking for, as it is a good and quite accurate model. Like the other kits in this series, it has a wingspan of exactly 12". This policy of making kits to a standard span results in very odd scales--in the case of the Condor, the model is 1/82 scale.

The kit represents Admiral Byrd's C/N 41 and includes floats. It is not, however, very difficult to convert it to standard wheel undercarriage, and even the further step of making this retract is by no means beyond the capabilities of an experienced modeler. The transfer sheet leaves a good deal to be desired, but coverage of the aircraft here offers accurate information on the markings it carried.

In this writer's opinion the Condor is well worth inclusion in any collection of models, as by varying its markings it can be made to fit with many specialized interests, serving enthusiasts for biplanes, airliners, WW II, trail-blazers and even those who just like simply assembled and brightly colored models.

ACKNOWLEDGMENTS: When I first started the research for this article two years ago, I knew little more about Condors than that they were large twin-engined biplanes.

I should know no more now than I did then but for the help of the following individuals, companies and government departments:

R. S. Allen, John C. Barbery, J. Roger Bentley, C. H. Buck, Richard M. Bueschel, G. R. Cameron, N. H. Danby, Jr., L. F. Engelhardt, J. T. Flores, Jr., Sir Vivian Fuchs, William Green, W. Henderson, W. A. Kelly, W. B. Klepacki, W. T. Larkins, John McFarlane, M. V. Miranda, George A. Page, Jr., Julio Sotomayor, Joseph Turner, Stafford Unwin, Jose Villela, Jr. and Gordon S. Williams.

Air-Britain, American Airlines, Argentine Navy, Atlas Corp., Canadian Department of Transport, Canadian Pacific Airlines, Colombian Air Force, Eastern Airlines, Government of Honduras, L.A.N. de Chile, Pan American World Airways, St. Louis Post Dispatch, Swissair, U. S. Air Force, U. S. National Archives and the U. S. Navy.

And of all those whose names appear as photo credits. Last, but by no means least, the Editor's patience has been inexhaustible--not to mention supplying me with valuable material from his own files.

BRIEF BIBLIOGRAPHY: JANE'S ALL THE WORLD'S AIRCRAFT 1933-34-35.

ANTARCTIC DISCOVERY, by Adm. Richard E. Byrd, Putnam & Co., 1935.

A HISTORY OF THE WORLD'S AIRLINES by R. E. G. Davies, Oxford, 1964.

Proceedings of the American Philosophical Society, Vol. 89, No. 1 April 1945.

HISTORICAL AVIATION ALBUM VOL. 1 by Paul R. Matt, Matt, 1965.

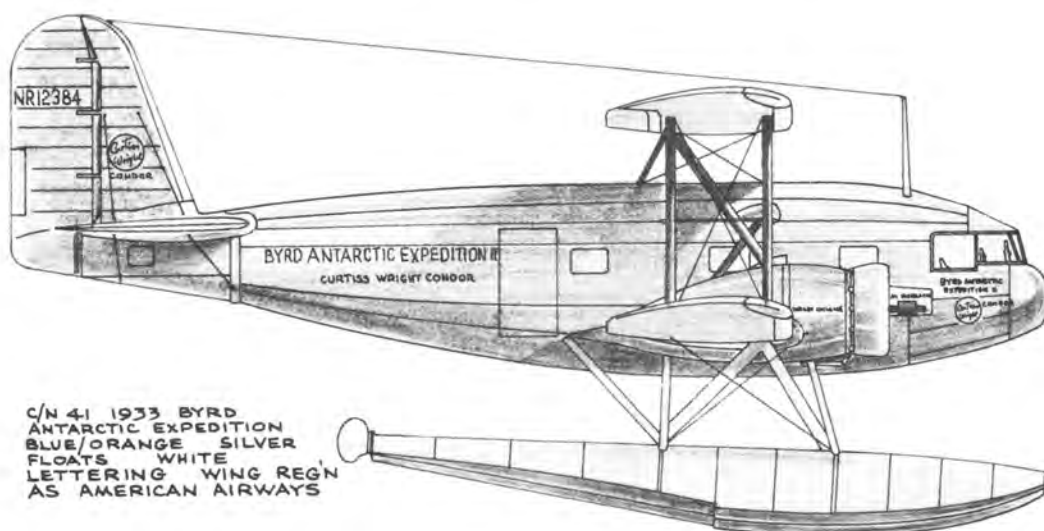
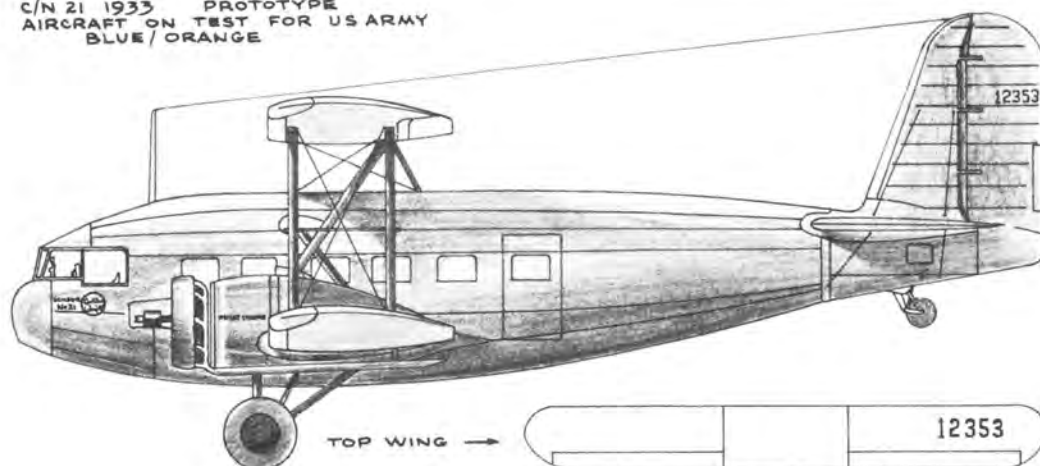
Aviation Magazine, February, April, October, December 1933, May 1934.

Aero Digest, February, August and November 1933, August 1934, February 1935.

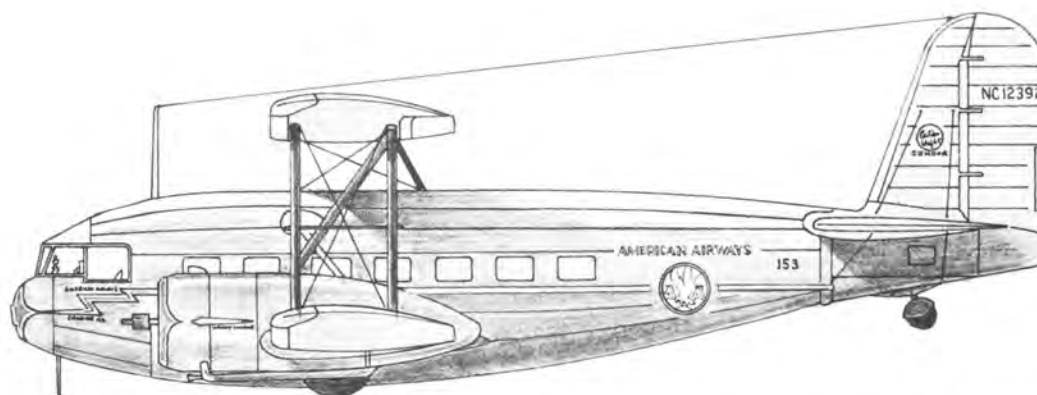
EDITOR'S NOTE: In conjunction with this outstanding article on the Curtiss T-32 Condor, Flying Review International magazine, in its May 1967 issue, is presenting a brief account of the Condor and a number of full color drawings of various, in-service Condors.

ABOUT THE AUTHOR: W. R. "Bill" Matthews (2 Quebec Mews, London W.1., England) is President of the International Plastic Modeler's Society and writes a monthly modeling column for FRI. His vocation is that of a Director of the world's largest furniture store, Maples of London. His interest in aviation began at an early age and naturally centered on airliners as he was born but 3 miles from Croydon Airport. Although he never saw a Condor, it has remained one of his favorite planes since school days, begging for the research leading to this article.

C/N 21 1933 PROTOTYPE
AIRCRAFT ON TEST FOR US ARMY
BLUE/ ORANGE



C/N 41 1933 BYRD
ANTARCTIC EXPEDITION
BLUE/ORANGE SILVER
FLOATS WHITE
LETTERING WING REG'D
AS AMERICAN AIRWAYS

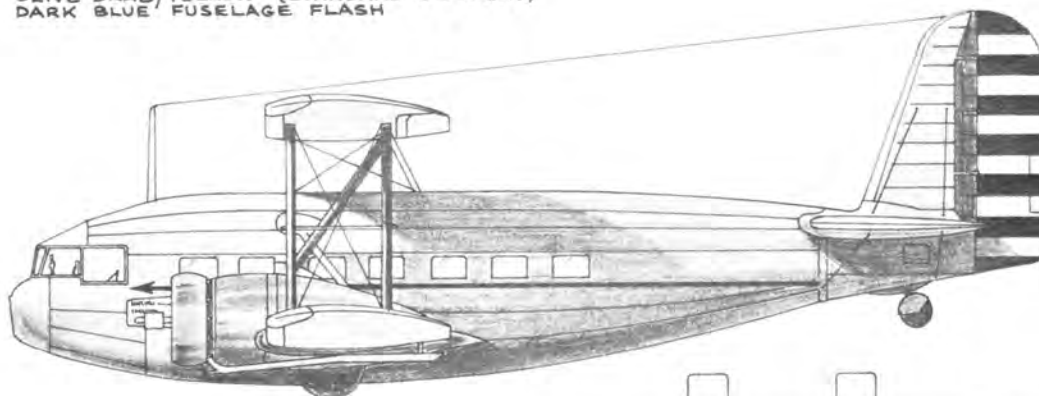


C/N 44 1934 AMERICAN AIRLINES
BLUE/ ORANGE WITH WHITE TRIM

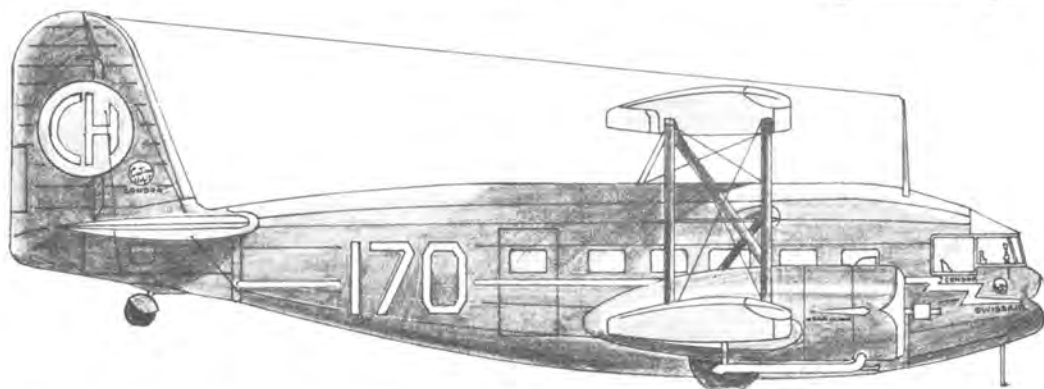
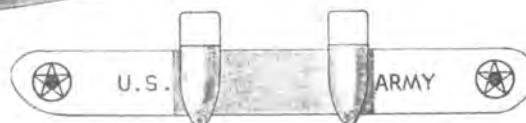
TOP WING PLAN →
FUSELAGE AND ENGINE FLASHES
ORANGE. OUTLINED IN BLUE AND WHITE.

A.W.SUMMERILL JAN '66

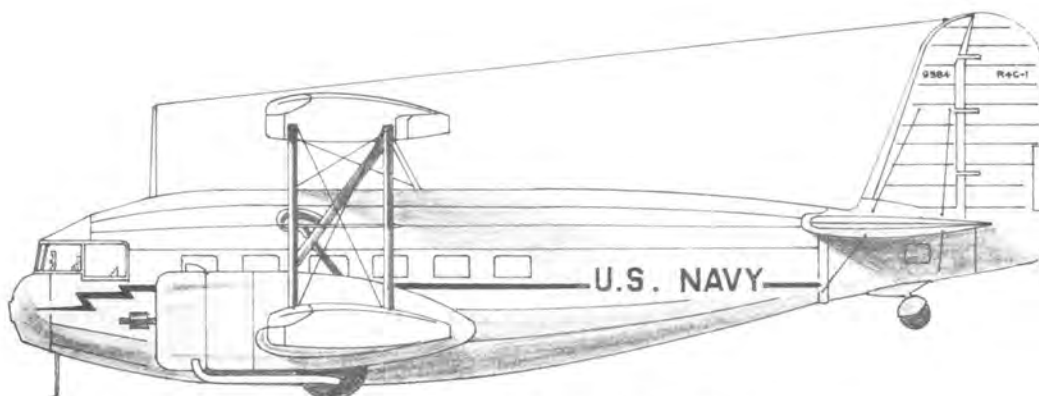
C/N 27 1934 US ARMY
OLIVE DRAB/YELLOW (STANDARD US ARMY)
DARK BLUE FUSELAGE FLASH



UNDERSIDE OF
LOWER WING →



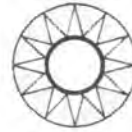
C/N 53 1934 SWISSAIR
RED/SILVER 'CH' IN WHITE ON LIGHT BLUE
FUSELAGE TRIM WHITE
← TOP WING PLAN



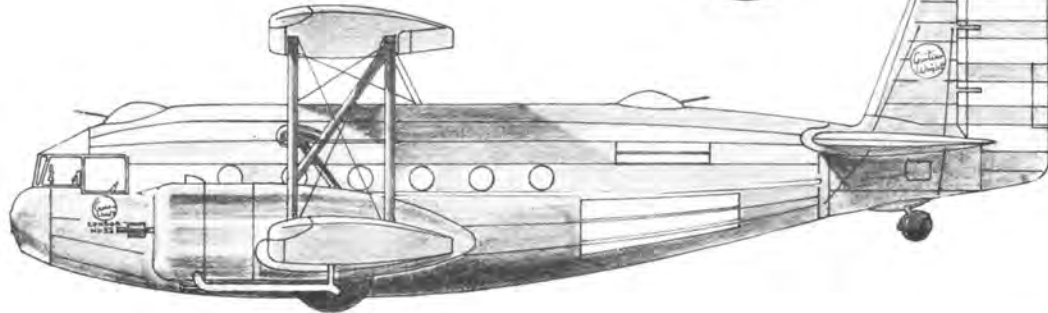
C/N 57 1934 US NAVY
SILVER OVERALL DARK BLUE FLASH
BLACK LETTERING STANDARD
MARKINGS
UPPER SURFACE OF TOP WING YELLOW

A.W. SUMMERILL JAN '66

C/N 52 1934 CHINESE MARKINGS
OLIVE DRAB OVERALL
LIGHT BLUE AND WHITE RUDDER STRIPES

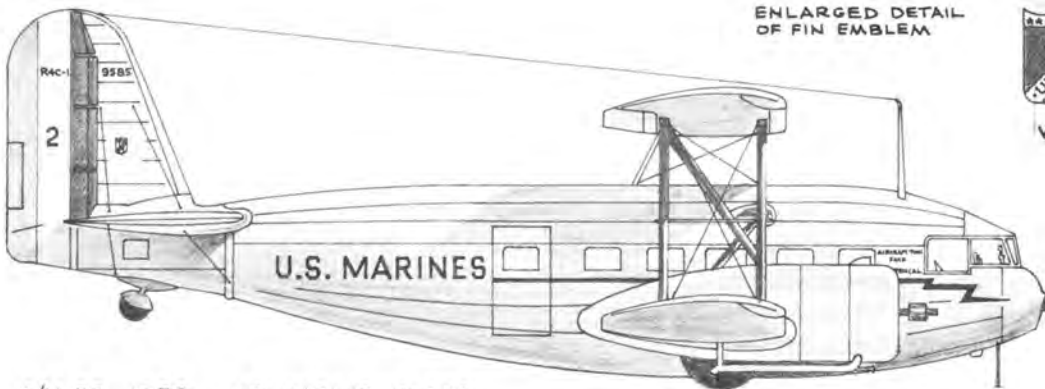


CHINESE MARKINGS
WHITE STAR ON LIGHT-
BLUE GROUND

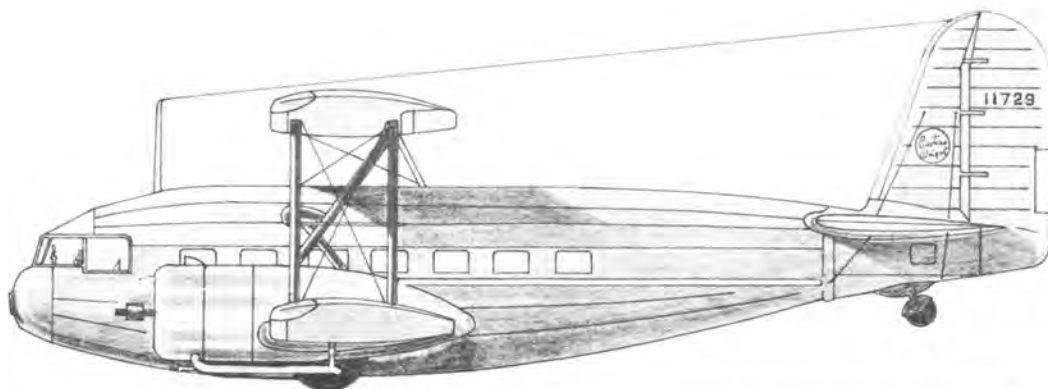


ENLARGED DETAIL
OF FIN EMBLEM

RED STARS
YELLOW



C/N 58 1935 U.S. MARINE CORPS
SILVER DARK BLUE FLASH
STANDARD WING MARKINGS
RED WHITE AND BLUE RUDDER (BLUE FWD)
BLACK LETTERING
UPPER SURFACE OF TOP WING YELLOW.



C/N 59 1935 HUGH WELLS
DARK BLUE FUSELAGE
SILVER WINGS
SILVER FLASH



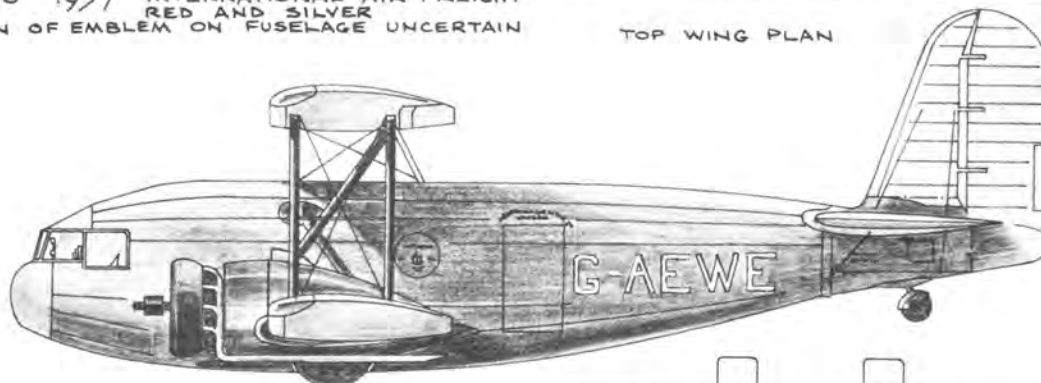
TOP WING PLAN

A.W. SUMMERILL JAN '66

C/N 30 1937 INTERNATIONAL AIR FREIGHT
RED AND SILVER
DESIGN OF EMBLEM ON FUSELAGE UNCERTAIN

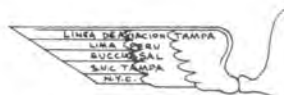
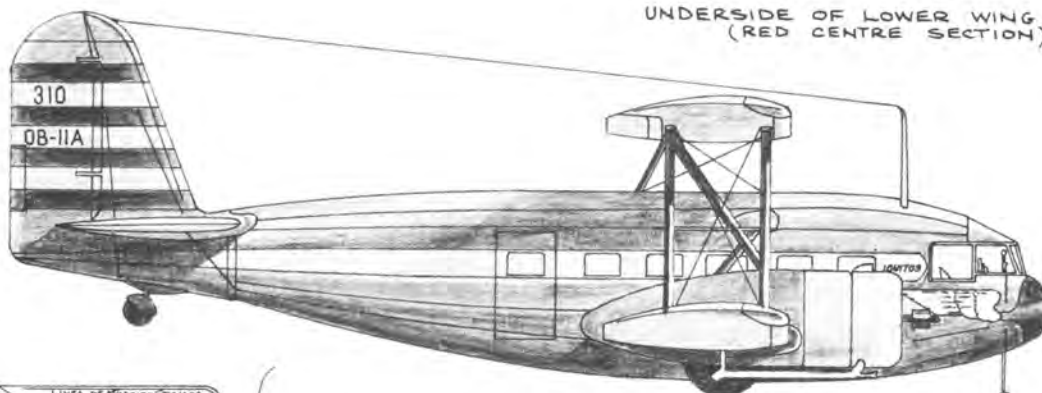
G-AEWE

TOP WING PLAN



G-AEWE

UNDERSIDE OF LOWER WING
(RED CENTRE SECTION)

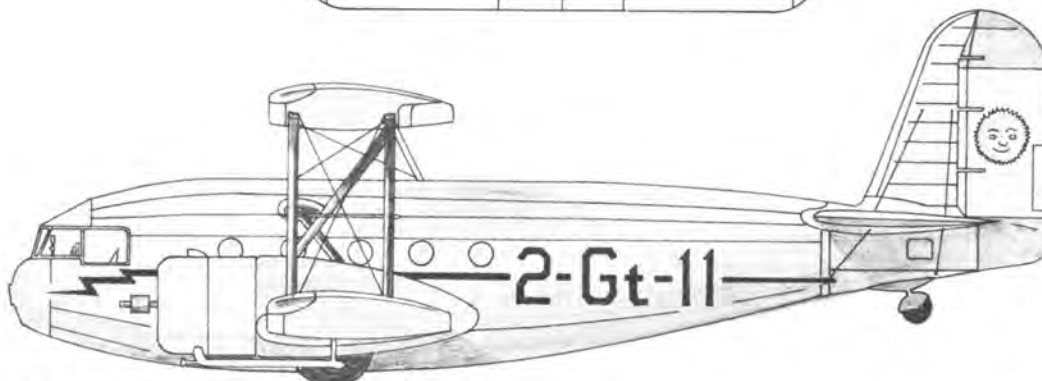


ENLARGEMENT OF
NOSE MARKINGS

C/N 59 1936 CONDOR PERUANA DE AVIACION
BLUE FUSELAGE SILVER WINGS
AND TRIM RED NOSE AND TOP FIN
STRIPE (EXTREME TIP OF FIN BLUE)

OB-IIA

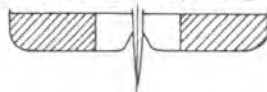
TOP WING PLAN



C/N 64 1938 ARGENTINE NAVY
LIGHT GREY OVERALL TOP SURFACE
OF UPPER WING YELLOW ANCHOR
INSIGNIA BLACK YELLOW DARK BLUE FLASH
CODING BLACK TAIL MARKING
LIGHT BLUE - WHITE - LIGHT BLUE
GOLD SUN ON WHITE AREA



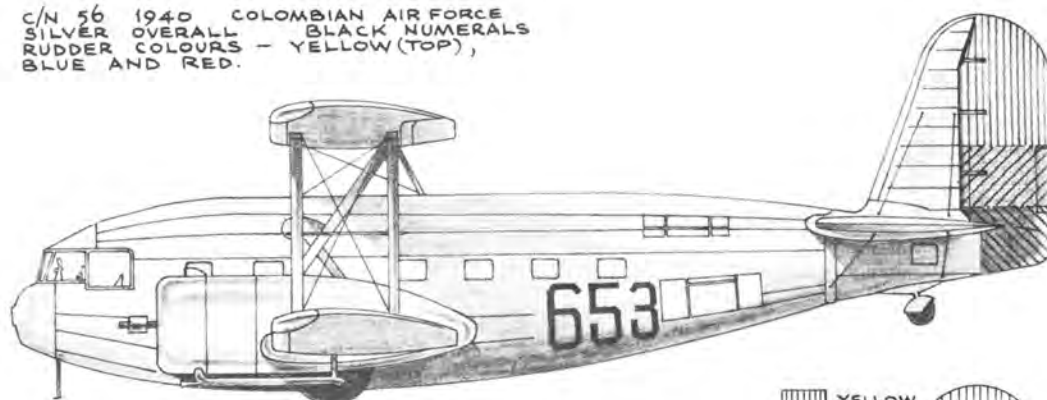
WING MARKINGS



ELEVATOR MARKINGS
(LIGHT BLUE AND WHITE)

A.W.SUMMERILL JAN '66

C/N 56 1940 COLOMBIAN AIR FORCE
SILVER OVERALL BLACK NUMERALS
RUDDER COLOURS - YELLOW (TOP),
BLUE AND RED.

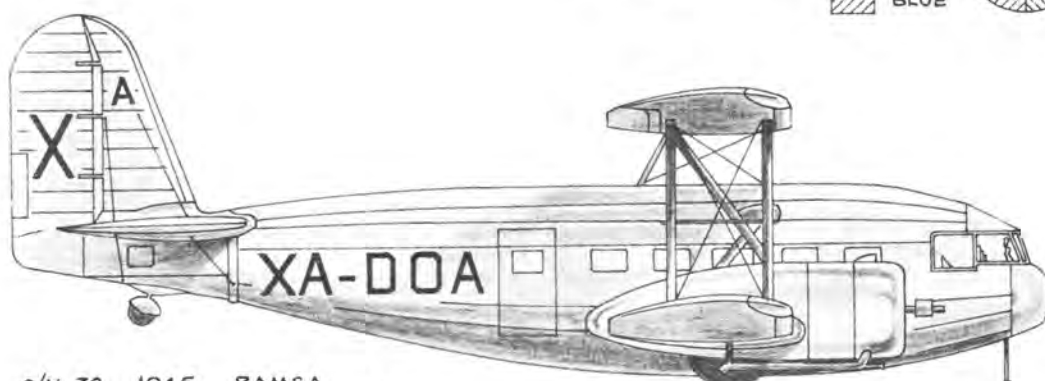
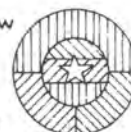


COLUMBIAN MARKINGS
WHITE STAR

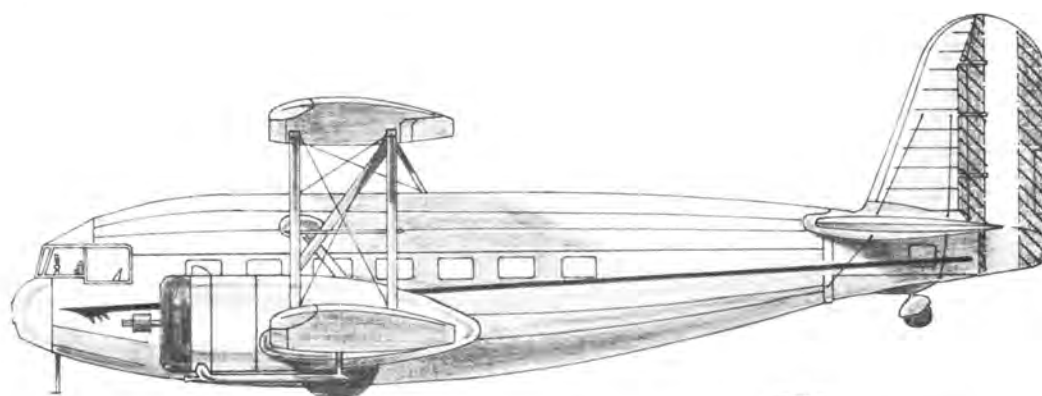
YELLOW

RED

BLUE

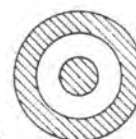


C/N 32 1945 RAMSA
SILVER OVERALL POLISHED
METAL COWLINGS
BLACK LETTERING.



C/N 59 APPROX 1950 PERUVIAN AIR FORCE
SILVER WITH RED TRIM
RUDDER MARKINGS - RED, WHITE, RED.

PERUVIAN MARKINGS



RED

A.W. SUMMERILL JAN '66