



Missions for America

Semper vigilans!
Semper volans!

The Coastwatcher

Publication of the Thames River Composite Squadron
Connecticut Wing
Civil Air Patrol

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The Coastwatcher will not be published for two weeks. The next edition, 10.1 will appear on 06 January. The Coastwatcher's elfin typesetters have been subcontracted to Kringle Toys for the last minute holiday rush.

Fruit Delivery 11 December, 2015

Four and a half tons of fruit, approximately 300 cases, were delivered to Grasso Technical School at 1630 on Friday. Grasso Tech Rifle Team members directed by Coach Shawn Carpenter unloaded the bulk of the shipment. Around 1700, Thames River members showed up and assisted in the completion of the task. The job was easier this

year because Grasso allowed us the use of a front end loader.

The fruit was inventoried and Thames River members reloaded the product into trucks and vans and delivered them to the Squadron where they were stowed in the radio room and senior meeting room.

Members participating were Lt Susan Poe and Cadets "Edgar" and "Allan" Poe, Lt Meers and Cadet Meers, Cadet Michael and Mr. Hollingsworth, Lt Crandall, and Lt Cols deAndrade and Rocketto. Special thanks to Jon Planeta from the Quaker Hill Rod and Gun Club who is building up his muscular strength for his upcoming USMC basic training.

Most special thanks to the Wischman's, Cadet Wischman and Mr. and Mrs. Wischman. Mrs. Wischman had to take a break in the loading to pick up Mr. Wischman whose submarine had just docked at the submarine base! She returned with her sailor spouse and the family assisted in the completion of the transfer and stowage.

FRUIT DISTRIBUTION



The fruit was delivered to our customers on Saturday and Sunday last. Assisting were Cadets Benjamin, Hannah, and Daniel Ramsey, and Joseph Pineau who also underwent radio operator training during the concurrent search and rescue exercise.



A third distribution was held on Tuesday.

December 2015						
SUN	MON	TUE	WED	THU	FRI	SAT
		1	2	3	4	5 UCC/TLC
6 UCC/TLC	7	8 CC CALL WW2 Speaker	9	10	11 Fruit PU	12 SQ SAREX
13	14	15 Party	16	17	18	19
20	21	22 No Meeting	23	24	25 Cmas	26
27	28 OFlight	29 OFlight No Meeting	30 OFlight	31	Enjoy your Holiday	

January 2016						
SUN	MON	TUE	WED	THU	FRI	SAT
					1 New Years	2
3	4	5	6	7	8	9
10	11	12 CC CALL	13	14	15	16
17	18	19	20	21	22	23 OFlight
24	25	26	27	28	29 CyperPatriot	30 OFlight CyperPatriot

February 2016						
SUN	MON	TUE	WED	THU	FRI	SAT
31 CyperPatriot	1	2	3	4	5	6
7	8	9 CC CALL	10	11	12	13
14	15	16	17	18 OFlight	19 CyperPatriot	20 SQ SAREX CyperPatriot
21 CyperPatriot	22	23	24	25 OFlight	26	27
28	29					

March 2016						
SUN	MON	TUE	WED	THU	FRI	SAT
		1	2	3	4	5
6	7	8 CC CALL	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Volunteer Service

Date	Senior	Cadets
1	Staff Planning, Special Speaker	Drill, Leadership, admin, DDR/Safety(BDUs)
5,6	UCC and TLC (Camp Niantic)	
8	Commander's Call / Promotions	Drill, CD, AE, Promotions (Blues)
12	Sarex	Sarex
13	Wx Backup	
15	Holiday Party (Civies/Pot Luck/1800)	
28-30	Oflights, see LT Ray and Maj Noniewicz	

Respect

Date	Senior	Cadets
5	Planning / Staff	Leadership, Testing, Admin (civies)
12	Commanders Call	Drill, Insp, Sfty, CD, Lead, Promo (Blues)
19	Emergency Service	Drill, Insp, AE, Guest Speaker, P (BDU)
26	Open	Drill, Insp, Fitness, Special Activity (PT)
29-31	CyperPatriot	

Excellence

Date	Senior	Cadets
2	Planning / Staff	Leadership
9	Commanders Call	
16	Emergency Service	
20	SQ SAREX	SQ SAREX
23		

Integrity

Date	Senior	Cadets
1	Planning	Testing, admin, Leadership, PT if needed
8	Commanders Call	Drill, AE Pres, Char Dev, Guest, Promo
15	ES	
22	no meeting	Field Trip - CGA?
24	OFlight	OFlight
29	TBD	TBD

This schedule is not a replacement for good communications.

Other Ground Tranex O-Flight Meeting Wing National

ASCORBIC ACID FRUITERERS AND MARCHING SOCIETY PARTY PICTURES



Praise Be the Front End Loader and Blessings Upon the Head of Peter Dyer, the Operator.



Loading the Meers Trailer at Grasso



Unloading the Pick-Up Trucks at the Squadron



The Unloading and Storing Crew

HOLIDAY PARTY REPORT

*report submitted by
Capt. Clarence Oveur, Trans American Airlines*

The annual holiday party was a night of food and frolic. Members brought a wide variety of comestibles and seasonal gains were enjoyed by all.



*Blind Approach Practice
(credit: Maj Roy Bourque)*

*The Potlatch Ceremony
(credit: Maj Roy Bourque)*



*The Seasonal Cornucopia
(credit: Maj Roy Bourque)*

MONETARY RECRUITING INCENTIVE

Col Kenneth Chapman, CTWG commander, has announced the following monetary incentive for squadrons which recruit new cadet members. For each new cadet of cadet sponsor recruited between now and 15 April, the squadron will be allocated \$50 for use in their own cadet program.

Ground Rules: Maximum allocation per squadron is \$500. The money can only be used to support the cadet program, The money cannot be used to pay member dues. Membership must be posted in eServices between 15 December of this year and 15 April, 201

TRAINING EXERCISE

12 December, 2015

Seventeen members attended Saturday's training exercise. The eight hour day launched four aircraft sorties and trained Seniors and Cadets as scanners, mission observers, aerial photographers, mission radio operators, and Introductory Communication User Training. A fifth sortie, at the end of the day, consisted of a Form 91 (mission pilot) check ride.



Cadet Benjamin Ramsey, MRO Trainee

SM Steven Schmidt planning mission



"You do not understand. It is not easy being Sultan."

Members attending were Lt Cols deAndrade, Doucette, Kinch, and Rocketto, Majs Farley, Noniewicz, Neilson, and Lintelmann, and SMs Pineau, Schmidt, and Thompson. The Cadets who not only trained but assisted in disbursing fruit were B. Ramsey, H. Ramsey, D. Ramsey, and Pineau.

AEROSPACE CURRENT EVENTS

747 Sale

Three Boeing 747-200F aircraft have been abandoned at Kuala Lumpur Airport in Malaysia. A notice posted by the Malaysian government in *The Star and Sin Chew Daily* newspaper stated that unless the aircraft were collected within 14 days, they reserve the right to "sell or otherwise dispose of the aircraft."



Two of the three abandoned 747s (Credit Thomson/Reuters)

The aircraft bear Iceland registry and once belonged to Air Atlanta Icelandic, a charter outfit which specializes in supplying aircraft, crews, maintenance, and insurance on wet lease basis is headquartered in Kópavogur, Iceland. Air Atlanta official stated the the aircraft did once belong to the airline but were "returned to the owner in 2010."

Antonov Looks Westward

The seven decade old company, Antonov, once a Soviet source of turboprop cargo aircraft and now a Ukrainian-operated aircraft producer is disentangling itself from its relationships with the Russian state. Russian support for the insurrectionists in Eastern Ukraine have provoked the Both countries have been incommoded by this nascent separation.

The Russian Air Force has been inconvenienced due to its dependence on a wide variety of Antonov components in its transport fleet. In turn, Antonov has always been reliant on its neighbor for materials.

To relieve its problem, Antonov is turning to new markets, both for its produce and for material supplies. This will require development of western certifiable aircraft, something outside of Antonov's experience. Antonov will also need a new source for electronics and aircraft parts such as tires and brakes.

Antonov is most familiar in western aviation circles as the designer, builder and operator of the An-124 Condor, the largest airlifter ever manufactured in quantity. Larger than the Lockheed C-5B Galaxy, the Condor's all-up weight is 891,000 pounds compared to the Galaxy's 769,000 pounds.



The Condor, Nose Up and Aft Ramp Coming Down (Credit: Mike Young)

The Condor is employed by NATO, United States, and non-government companies whenever cargo exceeds the weight or volume available by lesser aircraft.

In general aviation circles, the American public has some knowledge of the An-2 Colt, a very large single engine biplane. Over 18,000 have been produced and a number of them have migrated to the United States where they are employed as bush planes or have fallen into the hands of aviation enthusiasts who enjoy unusual aircraft.



The AN-2 Dwarfs the Cessnas and Pipers in the Foreground.

Whether Antonov stakes a claim in Western markets depends upon not only Antonov technology but also on political and economic considerations.

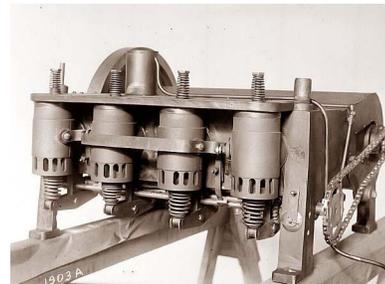
AEROSPACE HISTORY

Piston Engine Types

From the dawn of mechanically powered flight, the internal combustion engine has appeared in a variety of forms.

In the interests of time and space, this article will not discuss performance enhancing superchargers thrust augmenters or propellers which equipped many of the engines discussed.

First off the line of interesting aircraft engines powered the Wright Flyer. Built by Charlie Taylor, a Wright intimate, who constructed the four cylinder engine used at Kitty Hawk. The handmade 180 pound engine developed 12 horsepower or 0.06 HP/lb. power to weight ratio.



1928 Reconstruction of the Taylor Engine (Credit: old-pictures.com)

As aircraft developed and engines grew larger and ran longer, cooling them became a major problem. Cylinder fins added area which improved the cooling rate but more was demanded. A French company named Gnome came up with an unusual solution. The engine, called a rotary engine, had the entire engine spin around a fixed crankshaft. A Gnome 7 Omega produced 50 HP or a 0.3 HP/lb. or five times that of the Charlie Taylor engine.



The Gnome 7 Omega (Credit: RAF Museum)

The only operational aircraft engine produced by the United States in World War I was the liquid cooled Liberty. The engine had 12 cylinders arranged in a vee pattern and used water cooling. One common variant, the L-12, weighed 844 lb and produced 400 HP. This yielded a 0.5 HP/lb ratio.



Packard Built Liberty Engine at Olde Rhinebeck

The advantage of in-line engines were that they offered a lower drag due to their small cross-sectional profile. However, the need to cool the aft cylinders required a liquid cooling system which was heavier than a comparable air cooled system, more complex, and less robust.

The height of liquid engines were World War II designs such as the Rolls-Royce Merlin 61 which powered the Spitfire IX. Like the Liberty, it is a twelve cylinder in-line engine but developed 1280 horsepower and weighed 1640 pounds, a 0.8 HP/pound power to weight ratio.



The Rolls-Royce Merlin 23 produced 1,400 HP and was used to power six different marks of the DeHavilland Mosquito.

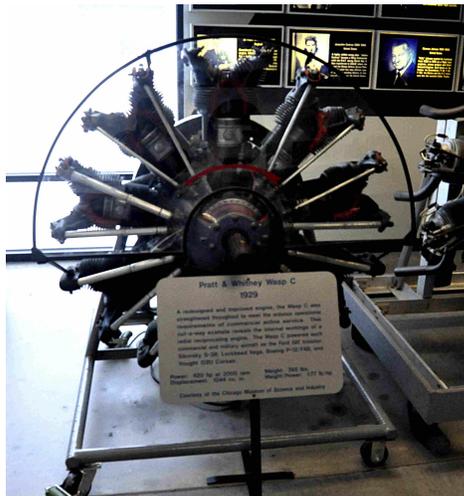
The Merlin was the standout liquid cooled power plant in WWII. A V-12, The design was a private venture, unsupported by government largess. Early versions produced 950 HP but the engine was remarkably suitable to modifications resulted in an engine developing over 2,000 HP. The Merlin was used in some of the best of the WWII aircraft: the Spitfire, Mosquito, and Lancaster. Four different factories produced almost 150,000 Merlins.

In the United States, the Merlin was produced under license by Packard as the V-1650 Merlin. When a British air officer suggested that the Allison V-1710 installed in early P-51 Mustangs be replaced by a supercharged Merlin, the increased performance resulted in making the Mustang the premier long distance escort fighter. Over 55,000 were produced.

The U.S. Navy preferred air cooled engines for sea duty. They were less susceptible to damage from hard carrier landings. A large percentage, perhaps 25% of engine failures were due to failures in the plumbing systems of liquid cooled engines. The air cooled system was also less susceptible to combat damage. A Republic P-47 Thunderbolt is reputed to have returned to base with a cylinder shot off! In case of frontal attack, the engine also provided a modicum of protection for the pilot.

In the 1920s, Pratt and Whitney and Curtiss competed for dominance in the U.S. market.

Guided by celebrated engineers such as George Mead and George Wilgoos, Pratt & Whitney developed a line of radial engines, the Wasps and Hornets. The first of the line, the 1300 Wasps powered successful aircraft such as the Ford Trimotor, the Boeing P-26 Peashooter, Beech 18, T-6 Texan, and the DHC-3 Otter.



A 1929 Wasp C at the New England Air Museum

The Hornets were popular in flying boats such as the Consolidated Commodore and Sikorsky's S-40 and S-41. About 3,000 were produced between 1929 and 1942.

In 1928, a SM-1B Stinson Detrioter made the first flight of a diesel powered aircraft. The engine was produced by a Packard team led by a German, Hermann Dornier.



The Diesel powered Stinson Detrioter Hangered in the Golden Wings Flying Museum in Blaine, Minnesota

The 1930s Junkers 200 line was the first of the successful aviation diesels. Diesels get better fuel

economy, do not need an electrical system, and the less volatile fuel is safer. But there is no free lunch and one of the trade-off is the extra structural weight needed to handle the high compressions.

World War Two pushed piston engine designers to develop, if possible, bigger, more reliable, easily manufactured and maintainable engines. Probably the the radial used in more different types of aircraft was Pratt & Whitney' R-2800 Double Wasp. The engine consisted of two bangs made of nine cylinders each. The double bank made cooling the rear cylinders difficult and Pratt developed a design and special tooling to machine increase the heat dissipation area by cutting thinner cooling fins. Most marks of the Double Wasp developed around 2,000 HP and weighed 2,300 pounds resulting in 0.87 HP/lb, almost 15 time better than Charlie Taylor's Wright Flyer engine.



A Double Wasp Manufactured by Ford-Pratt claims the the Double Was[was the first to "find" the "holy grail" of power plant engineers-one horsepower per pound of weight and one horsepower per cubic inch of engine displacement.

The R-2800 Double Wasp was used in the Hellcat, Tigercat, Black Widow, Thunderbolt and Corsair fighters. The bombers which sported the R-2800 included the Marauder, Invader, Ventura, Mariner, and Sea Wolf. The Commando, Packet, and Vickers Warwick were cargo haulers powered by Double Wasps.

Brewster XA-32, Breguet Deux-Ponts, Canadair Scooper and North Star, Convair 240, 340, and 440, Curtiss P-60 and XF-15, DC-6 Liftmaster, Provider, Guardian, Bearcat, Howard 500, Harpoon, Constellation, Martin 2-0-2 and 4-0-4, Savage, Dragon, Black Bullet, Reporter, Mojave, Skycrane, and Vultee YA-19.

A total of 125, 334 Double Wasps came out of the East Hartford and Michigan's Ford factories and powered 38 different types manufactured by around 19 different airframe builders!

War's end brought about the last gasp of the big piston engines. The B-29 flew with four Wright Duplex Cyclone R-3350, each producing 2,200 HP from its 18 cylinders. But nothing is free in the physical world. The rear bank of cylinders suffered from a lack of cooling air. An engine fire led to the crash of the #2 prototype, killing iconic test pilot Eddie Allen and his crew. Engine fires continued to be a recurring problem in the Superfortress fleet.

Pratt entered the market with the massive R-4360 Wasp Major which boasted four banks of cylinders with seven cylinders per bank. with power output exceeding the 3,500 HP mark. In order to cool the rear banks of cylinders, Pratt used both engine geometry and novel machining techniques.



Pratt's Mighty R-4360 "CornCob" Engine

Each row of seven cylinders was offset from the row ahead of it. This allowed a better flow of air to the rear banks and resulted in the nickname "corncob engine." Pratt engineers had also developed special tools which allows thin cooling fins, all cut simultaneously.

The big power plants tended to be maintenance intensive. A spark plug change on the B-36

required the removal of installation of 336 plugs! They also needed very special handling in flight and had short service lives.

The adoption of turbine power soon ended production of these massive power plants. But that is another story.

Post war general aviation led to a strong market in small engines for the fleet of Cessnas, Pipers most often equipped with Continental or Lycoming engines which were relatively flat and had opposed cylinders. The design allowed for a reduced frontal area but more importantly, an increase in cylinder size and a reduction in vibration since the pistons moved in opposition to each other. This allowed engine designers to use larger but fewer cylinders than the previously popular radials.

The first opposed engines were produced during the First World War but Aeronca, an airframe builder, developed one of the first successful in-lines but they were soon trumped by the introduction of Continental's A series. culmination in the 65 HP A-65 which powered the Piper J-3 Cub.



Continental A-65 (Credit: Greg Goebel)

Perhaps Continental's greatest success was the O-200, a 100 HP engine which found employment in the Cessna 150. The large fleet of O-200 equipped 150s which left the Wichita factory

suggests that it was one of the most produced of the in-line engines.

Lycoming entered the market with a line of four and six cylinder engines which filled almost every market niche for light planes. The higher powers generated by Lycomings led to its dominance in the field.



Lycoming O-320 Found in the Cessna 182

Further increases in size and horsepower and the addition of features such as fuel injection and improvements in materials and manufacturing has resulted in engines which may reach 2,000 hours before the need for a major overhaul.

However, economic forces and demands for better performance has led to the use of turboprops in the very expensive single engine aircraft such as the French Daher-Sacota 700, 800, and 900 series and the Swiss Pilatus PC-6 and PC-12.

But the story of turbine power will be reserved for another chapter.

NOTE: The best book which The Coastwatcher has found as a general reference is The History of Aircraft Piston Engines by Herschel Smith who resided and taught in Connecticut.

TRCS CADET IN MACEDONIA

TRCS C/Col Brendan Schultz is spending his senior year in Skopje, Macedonia sponsored by the US State Department's Kennedy-Lugar Youth Exchange and Study Program.

Schultz is coping with a new language and exploring his new environs. He lives with a "host family" and attends the a Macedonian high school. Schultz will return to Connecticut in June and receive his diploma from East Lyme High School.



Cadets Ben, Daniel, and Hannah Ramsey admire C/Col Schultz's Spatz certificate, held by Cadet Airman Pineau. The certificate is the 2002nd issued since the award was instituted.



Schultz was Officer in Charge of Training at the 2014 CTWG Encampment and earned the Cadre of Distinction Award.

Schultz maintains a Facebook Page at <https://www.facebook.com/brendan.schultz.50>