

It is unusual to be able to test two original engines of the 1909 era on a replica pioneer aircraft. My Bleriot, previously flown with a 1910 Anzani fan type engine (see May, 2012 WW1 Aero) has now been fitted and flown with a 1908 Gnome Omega 50 hp rotary. After many flights the 1910 Anzani was returned to owner Gary Karner to be installed in his Bleriot replica and the Gnome, as always intended, will be the permanent engine for my airplane.

That actual installation of the Gnome was simple since the fuselage was built with a Gnome motor mount from the very beginning and the Anzani installed with an adapter plate, easily unbolted. Consequently no modifications were required. Other connections were not so straightforward. The oil tank supply line needed to be much larger for the Gnome pump. Even the vents in the oil tank had to be increased to accommodate greater flow and this took some time to discover initially. The fuel lines and controls for the Tampier metering valve required modification and installation of a cockpit control to adjust the fuel flow of the rotary engine carburetor. A booster magneto was mounted on the only available floor space in the cockpit to facilitate easier starting. As it turned out the Gnome installation was 25 lbs. heavier than the Anzani and the landing gear bungee cord, formerly at it's limit of strength had to be added to in order to prevent the gear from sagging. An additional cord was installed on each side.

The Gnome 50 hp. is a very pleasant engine to operate. It requires the techniques common to most rotaries, inasmuch as the pilot must manually adjust air and fuel flow separately and be accustomed to using the coupe or "blip" button to prevent full rpm until ready. The air control on the Bloc Tube carburettor, also used on the 80 hp and 110 hp LeRhône, normally does a fine job of throttling those engines. However the small Gnome, with it's intake valve in the top of the piston and operated by springs, counterweights and centrifugal forces, will only open and close properly down to a certain rpm. In my particular case and with the prop load I'm running, about 600 rpm is the slowest speed from which I can accelerate the engine back to full speed on the ground while using the air and fuel levers. Much below this rpm the engine merely dies for lack of incoming fuel mixture. Fortunately the starting procedure of the Gnome 50 is easy and reliable. So much so, that it can even be done from the cockpit without anyone propping the airplane. Merely prime and set a cylinder in the correct position for the booster mag to fire it, walk around to the cockpit, spin the booster and you are running. All very civilized for a rotary engine. In fact the Gnome Omega is a rather quiet engine, more a muted hum than a roar, and as it runs smoothly with not too great a power output and with a low compression ratio, doesn't throb like the larger rotaries.

As might be expected the larger diameter propeller, up from 89" on the Anzani to 98" now provides far more thrust. This results in the aircraft getting off the ground more quickly and with a will to climb it did not have with the Anzani. But as is the case with all progress, valuable sensations are lost. The delicacy of the Anzani Bleriot and the patience with which it gained the air was a true indication of the pioneer period. Its slow takeoff and climb was remarkably charming. The raucous bark was unmistakably primitive, internal combustion wholly unlike today, designed and built by men different from us and clearly from another time. The buoyancy of ballooning (and Louis Bleriot was a fine balloon pilot) is now replaced with a busier thrust. The Gnome replaces our former impressions by feelings sadly more modern, something we can relate to in terms of performance expectation and feel, but for which that delicate balance on the very edge of powered flight is lost. How odd it is to speak from the perspective of a rotary engine being new, quiet, modern. But it is smooth power and plenty of it, and there is no denying a greater connection to everything that came later, rather than

everything that came before.

Gone is the individual pop-pop-pop of a 3 cylinder engine, replaced by the whirring of 7 cylinders whose sound is spun outward to the wind, blending in a continuous drone. The 5 gallons of fuel which was generous on the Anzani is now little enough for the thirsty Gnome and the gallon oil tank must be topped up frequently. Extra power on a Bleriot doesn't translate to much in the way of speed. But adding a few miles per hour does increase the ability to fly in wind. The "air pockets" we scoff at in modern terms are very real when flying a 1910 aeroplane, because it is micro-meteorology we experience. The effect of the slightest puff is infinitely more pronounced when the airspeed is only 40 mph. This is true because the proportion of moving air is now a greater percentage of our speed, and because our controlability is less certain, less quick on a Bleriot. My second test flight with the Gnome was in what could be called a strong wind, about 12 mph. Blowing an angle to the runway and tumbling over a tall line of trees, the flight was stimulating and busy. Climbing through 15 ft. the ship was instantly thrust upward 6 ft. and fell as much seconds later. Pulling aft quickly on the stick to stop the fall was made safer by the thrust of the Gnome keeping us from bottoming out. An FAA inspector who was filming the flight said, "That's the gutsiest thing I've seen out here." The thrills of a Bleriot pilot may be comparatively mild, but thrills nonetheless. Recall the demonstration pilots of 1910 who had contracts and money at stake, flying in horrible conditions and being laughed at for crashing, spectators picking over the wreckage for souvenirs. I'm glad to be flying primitive airplanes only for the love of it.

Many long circuits of the large airport perimeter have proven how mildly the Gnome operates, and never skips a beat. To be 200 ft. high is a remarkably new sensation again, much as when we first learned to fly. A readjustment of thinking about space is required since the speed is so slow, the turning radius is quite small. I can fly for a very long time toward my turn point before ever getting there. Many seconds after I would have turned in any other airplane I am still boring straight ahead, waiting. The airport and the surrounding fields are suddenly larger and I'm amused that the flight paths and approaches I've known so well for decades at Brodhead are different, revised, and it's become a new place to fly.

Operation of the Gnome is mostly on the blip switch of course, but like all rotaries it has a throttle and can be varied from a fast idle to full power and in between. This is a much misunderstood capability of rotary engines. "If there is a throttle, why use the blip button?" The answer can be simplified in this way; Unlike a modern throttle, rotary engine air and fuel mixture controls do not always work instantly on demand, such as when requiring a blast of power for rudder steering on landing. But once air and fuel are well set for any rpm the blip does provide instant power when needed at crucial moments.

The smoothness of the Gnome is certainly due to its spinning mass, but also to the fact that very little power is being extracted from each cylinder. A modern 4 cylinder Lycoming produces 50 hp each time a cylinder fires; the Gnome only 7 hp. There is no throbbing, and a video camera mounted on the rear longeron takes footage as unshaken as if on a ground tripod. Some of this is posted online if you search "1909 Bleriot flight at Brodhead Airport."

And so we orbit the grass runways in rural Wisconsin, turning left and right with ease, climbing at 36 and diving at 48, like the proverbial sailboat going nowhere slowly. Ten minutes flings enough castor to warrant a lengthy cleanup because we have no cowling like the later WW1 ships to contain the spray. Spectators seem transfixed, heading lemming-like to the runway for takeoff and patiently waiting in place for the landing. The sight and sound is worth

it.

It has been said that the Seguin Brothers changed the very nature and success of European flight when they invented and produced the Gnome. Many aeroplanes of the period were able to fly more strongly and for longer when fitted with that beautiful little rotary. The popularity of the Omega, and all the thousands of examples that came during the next 10 years fundamentally changed performance and expectations of flight. But there also must have been a few who yearned for those happy days when the simple but excited popping of an Anzani and an evening flight low over golden wheatfields made them feel closer to that seminal moment of man breaking free of the ground. We gain and we lose with progress, and if lucky enough to step back to reproduce another time, we learn.

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