

## **A Radiometer Delivered by Air. by Professor A.D. Conrow**

It was a fine day in late June, 1923 when my two shop dogs began to bark sharply in the direction of the main road. Directly, a teenaged boy arrived riding a bicycle, and was quite out of breath by the time he reached the shade of the big Hickory tree near the front door.

"How about a cold drink of water?" I asked the young, red-faced lad, who looked as though he was about to pass out from the heat and exertion of his trip from town. Tom was his name, and he sometimes brought telegrams out to me when it was an urgent matter. Not out of any particular sense of duty to Western Union, but because of the handsome tip that I would provide him with. Tom was sweet on a local girl in town, and the extra money I provided in these circumstances was greatly appreciated!



I pulled an aluminum pitcher from my Crosley "IcyBall" cooler, having just charged the cooling spheres earlier that morning. You see, Dear Reader, that I had converted the standard Kerosene burner to operate from my woodgas, which I produced myself from scrap wood, just as Edison himself had done back at his Menlo Park Lab. The water was ice-cold, and Tom quickly downed the whole glass. "Thanks Professor Conrow," Tom said as he wiped his brow, and plopped down on one of

the leather, wing-backed chairs in the office. I unfolded the telegram he handed me and read:

PROFESSOR CONROW (STOP) URGENTLY NEED YOU TO BRING REPLACEMENT CROOKS LAMP TO KANSAS CITY (STOP) DEMONSTRATION TO INDUSTRIAL SOCIETY CONVENTION ON FRIDAY at 4PM (STOP) PLEASE REPLY ASAP (STOP) COST IS NO OBJECT BUT HASTE IS (STOP) THAEDUS PROXMIRE

"Well, sounds like old Proxy is in trouble again," I said out loud, not really expecting Tom to know what I was talking about. "Oh, yes, Professor Conrow, but Friday is tomorrow, and I don't think that you can make it by the Frisco run tomorrow morning," said Tom, quite convinced that the task was impossible. "Well, Tom, you may be just the lad who could help me out of this pickle!" If you can get old man Brinker to let you off tomorrow afternoon, then you and I can fly up to Kansas City in the morning. "F-F-Fly?" stuttered poor Tom. "In that rickety contraption you call a plane?"

I explained to Tom that my old Jenny would love to make the trip up to KC, and that she was "just itching" to get up in the air. This didn't seem to convince Tom that he needed to tag along, but when I said there was a shiny \$20 gold piece in it for him, he shot to his feet, and asked exactly what time he was to be back in the morning.

I couldn't help but chuckle to myself, as Tom went storming back up the dirt road on his bike, the frame of which swayed from side to side as he pumped the pedals with all of his strength. I walked down the path to the creek, and then up the back side about 100 feet to the top of a bench, where my small airstrip sits across from the shop. Flying was one of my passions after WWI, and when I had a chance to get one of the Curtiss JN-4 "Jenny" planes in 1921 for \$100, still in the crate, I didn't

hesitate. It had taken a lot of work to get the beast shipped out here by rail and then hauled up into the Boston Mountains with a freight wagon and team of mules. Finch, a local blacksmith and mechanical genius, had help me put Jenny together over the winter before last, and he was well compensated when I had to fly his ailing son into town for emergency surgery last summer. It has been a close call, but turned out well, and gave me kind of a local reputation as a super-hero of the flying type. I might say that this hero-status was not felt by all in the community, and more than one had grumbled that I "was up to no good out there in the mountains".



I pulled the prop through a couple of times and felt the compression, checked the control surfaces, and kicked the tires for good measure. Jenny looked good for her flight tomorrow, and the pink sky at sunset told me there should be fair weather for tomorrow's flight.

Thirty minutes later, back in the shop's Glass Room, I quickly chucked a 1" piece of lime-glass in the glass lathe, and turned her on. First order of business was to seal off the end, and then use the blow-pipe to form a sphere for the mechanism of the Radiometer that I was about to build.

With the bulb formed, I moved my efforts into my "model room". This is where I do my small machining in metal and Bakelite, and am set up to do precise work in aluminum, brass, copper and steel. I formed the vanes from some .010" thick aluminum, and crimped the vanes around the central pivot-glass. Next, I hardened a short piece of piano-wire, and

ground a very sharp point on my jeweler's lathe.

Back in the Glass Room, I quickly mounted the various pieces, and attached the stem to my two-stage vacuum pump, and then started the process of pulling a hard-vacuum on the envelope. After about an hour of pumping, I sealed off the stem, and mounted the envelope in a standard Edison No. 26 base, as was my practice.

As night approached, I turned off the gas to the boiler and "blew down" the tank to flush whatever sludge had accumulated in the bottom of the tank during the day. The steam engine that drives my big Westinghouse alternator began to wind down. Just like every evening, I noted the voltage of the battery bank in the Battery Room ledger, and switched off the main power to the shop in preparation for bed. For dinner, I had some hardtack, salted beef and coffee, and looked over my aviation maps for the morning's trip.

When I awoke at 6AM, my old White Rock rooster was already greeting me from the blacksmith's shop, and the dogs and shop cat were all patiently waiting for whatever scraps I offered from my breakfast. Right on time, Tom arrived at 8AM, and seemed a little scared at the prospect of flying so far. As I knew, Tom had already flown in a plane the past fall at the local county fair, a ride I might add, that cost him a week's salary.

Tom helped me get my things on board, and I took my place in the back seat of Old Jenny. I had explained to Tom how to pull the propeller through properly to keep from getting hurt, and called to him from the cockpit, "Clear prop, Magnetos on"! Tom took a step back, and then moved forward and grabbed the propeller, as I had shown him. He gave it a quick downward pull, and swung back out of its way. "Bang!" With the first pull, the old Curtiss OX-5 engine sputtered to life. Tom quickly came

around to the back side of the wing, and scrambled aboard, as I held the brakes, and looked over at the wind sock. Tom gave me a "thumbs up" after he had belted himself in, and I throttled up, so we could taxi out from under the simple lean-to hanger and onto the turf field. On both sides of my plane were each of my shop dogs, ready for the "great chase" down the runway.

Full power, get up to speed, tail up, and watch the airspeed. About 2/3 of the way down the runway, I carefully pulled the old beast up and into the air in a smooth motion, not unlike the local buzzards would catch a thermal and gain 100 feet in a few seconds. High up over the mountains at about 4000 feet, I leveled off and began looking for the Frisco train tracks that would lead me north to the Missouri border. After about 45 minutes, we were flying nicely over Joplin, Missouri and making good time with a slight summer's tail wind from the south.



After another hour and a half, Tom and I could see the faint outline of the Kansas City outskirts, and I began a slow descent into the south side of the large town. My destination was the Santa Fe Railroad's switching yard at Argentine, Kansas. There was a nice long stretch of little-used road nearby, that pilots often used to land their craft.

I pulled the plane around into base and base-leg, for final approach, and eased completely off of the throttle. Just like a giant bird, Jenny slowly settled out into a nice two-point landing. It always tickled me to hear the "pow" that the hollow airplane made when the tail wheel hit the

ground, letting me know that I was safely back on the ground yet again!

A small crowd had gathered near where we were taxiing to, and among those that we saw were railroad workers with the coveralls and caps, and in the middle was a 1919 Model T Ford Touring car with old Thaddeus himself climbing out to greet us. "Professor Conrow, see, you still know how to gather a crowd," exclaimed the older scientist and inventor with glee. "You have saved my bacon once again, and I really owe you this time." Mr. Proxmire went on to explain to Tom and me that the original apparatus was smashed during an unloading mishap at the downtown hotel, where the convention was being held. Without the Crooks' Radiometer to demonstrate the effect of photons striking a surface and imparting mechanical energy, Thaddeus would never be able to garner the support he needed for his latest business scheme.

If there was anything in the world that I wasn't interested in, it was Mr. Proxmire's latest "scheme" to hype the local media and investors, so I complained about how tired Tom and I were after our air trip. Thaddeus immediately invited us to join him at the hotel, but I declined and made some excuse about needing to attend to another matter. Soon, Thaddeus and his Model T were chugging off into the distance, with the old man shouting, "Conrow, we're now square, and even as a keel on a big boat in calm waters." I took this to mean that our little debt had been settled, and that I no longer owed him any favors. Dear Reader, please don't ask why, exactly, I came to be indebted to such a man, but suffice it to say, that the matter had now resolved itself perfectly.



