

OF THINGS THAT SPARK IN THE DARK

By George Irvin

As all pilots know, mechanical failures always happen on some faraway airfield at the week-end when the duty engineer has switched off his mobile. Worst of all, if you fly at night, that's when the gremlins gather. They nearly got me in Bristol one rainy September evening. Here's what happened.

I had filed Rotterdam-Bristol and back one Friday evening with the intention of collecting my passengers at Lulsgate and bringing them straight back; a trip taking about two hours each way. As it happened the weather was foul with heavy headwinds and a lot of rain all the way. The lights of my engine-analyser flickered a lot, suggesting the electrics might be damp. To make matters worse, Bristol ATIS announced that the ILS for Rwy-09 was out of service which meant being vectored to the back of beyond for an NDB approach (referred to somewhat whimsically as a "locator" approach by the duty controller). It also meant testing the Mooney's poor rudder authority to the limit in dealing with the strong crosswind gusts of an approaching storm. I got in late hoping to turn around as quickly as possible.

Having collected my wards, I asked for start-up on the handheld radio and was told to call again in half an hour. Nerves tautened, night fell, and the wind veered 'round to the West as the base deteriorated to 300 feet. After an eternity we were given start-up clearance. The run-ups were performed by the book and everything was in the green; the clearance called for a right turn to join CAS at Wotan at FL 90. I turned onto the runway shortly after a landing A-310 had reported the weather as "150 ft broken" thinking that if I waited any longer I'd have to stay the night. The takeoff was uneventful, the gear retracted and as we went bumping into the murk I cleaned up, scanned and started the right turn.

The annunciator in my Mooney sits on the right panel and with various tasks in hand, it tends to get scanned together with the cluster of power instruments, so I didn't catch the light flickering "voltage high/low" until adjusting for cruise climb above 1000 feet AGL. The ammeter---a Cessna-style charge-discharge needle rather than a proper voltmeter---is on the opposite side of the panel. I cross checked it and found the needle pegged to negative.

There's an old joke about the need for electric power when doing a dead-stick landing at night: it enables you to switch on the landing light just before landing. If you don't like what you see, switch the light off. Alternator dead? Voltage regulator kaput? It could be a loose connection or even just plain dampness? There was no time to troubleshoot. The only thing between me and full electric failure was the battery.

I immediately did two things: first, I turned off the pitot heat which typically can account for nearly half the load (the OAT was still comfortably positive) and the strobes; second, I told ATC I was in trouble and needed vectors back to the ILS. "When in trouble, tell someone!" I always recall those words of advice from a long forgotten instructor. I asked

ATC if there were any delays (there were not); they asked me if I was declaring an emergency (I was not). No further negotiations were required.

From then on, it was a matter of taking vectors, setting up the approach, doing the checks and---above all---flying the aircraft. I switched on the autopilot just long enough to get the paperwork sorted. From there on, it was 100 percent concentration on intercepting the localiser, slowing the aircraft down and anticipating wheels down to catch the glideslope. Luckily, getting the wheels down and applying flap doesn't require too much electrical power. The landing light could be left off.

I asked for a wind and cloud base check; the wind was down the runway and the estimated base was better than that announced by the A-310 driver. The lead-in lights came into view at the outer marker, but then faded away. About 150 ft above my DA bug, they reappeared with the sort of radiant clarity which contributes greatly to achieving inner tranquility. I got the Mooney onto the runway and taxied in, cleaning up some of power consuming items as I went. It was only 20 minutes from take-off to touch down but I was more than 20 minutes older and wiser.

I shall spare the reader the details of wandering around in the drizzle the next day trying to find an engineer. When eventually I succeeded, to my amazement that the aircraft started smoothly and the alternator came back on line even with the radios and other electrics switched on. After much tweaking and testing, the aircraft was pronounced fit enough to fly. With the freezing level above my anticipated cruise level, I elected to go back IFR and stay above the weather rather than run the risks of another shutdown at low level in IMC. On take off, the gear motor consumed critical amps to pull the wheels up but the alternator stayed on line. In cruise, the voltage light flickered once or twice, but settled down after I shed the second NAV and COM.

Once home, I took it to my Mooney specialist where we pulled the out the alternator and found the brushes badly worn and misaligned and more than a suspicion of damage to the rotor. I am not a great believer in field overhauls and besides, this alternator had already been overhauled once. So into the bin it went, and I laid out serious money on a fully guaranteed factory-rebuilt unit.

There's a simple moral to this story: had the electrics failed totally that night, I wouldn't be writing it. A factory rebuilt unit is not cheap, but flying IFR means observing standards of maintenance well above those required for private category aircraft. If you fly at night and with pax, make sure *you know* your aircraft is serviceable down to the very last rivet. Don't ignore anything which might be telling you otherwise.