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# THE \$59 SOLAR BATTERY CHARGER

**B**atteries are among the most climate-sensitive of all aircraft accessories. In winter, they draw down quickly during cold starts, then won't accept a charge. In summer, they fizz and fume, spontaneously discharge while standing, and accumulate grid sulfates. A graph of specific gravity (or state of charge) versus time shows that battery self-discharge is much more of a problem in hot weather than in cold—or merely warm—weather. The spontaneous discharge rate at 100 degrees F, amazingly, is twice what it is at 80 degrees.

The remedy? Frequent recharging. How? There are three possibilities:

1. Fly often. This tactic isn't always successful, however, because frequent short flights (30 minutes or less) may not allow a weak battery that's been deeply discharged to come back up to full charge. (Frequent short flights aren't good for oil, either, so try to work some longer flights into your schedule now and then.)

2. Bench-charge often. This isn't always

practical, of course, since it means taking the battery out of the plane.

3. Trickle-charge between flights, using (for example) a solar-electric charger such as the one shown here.

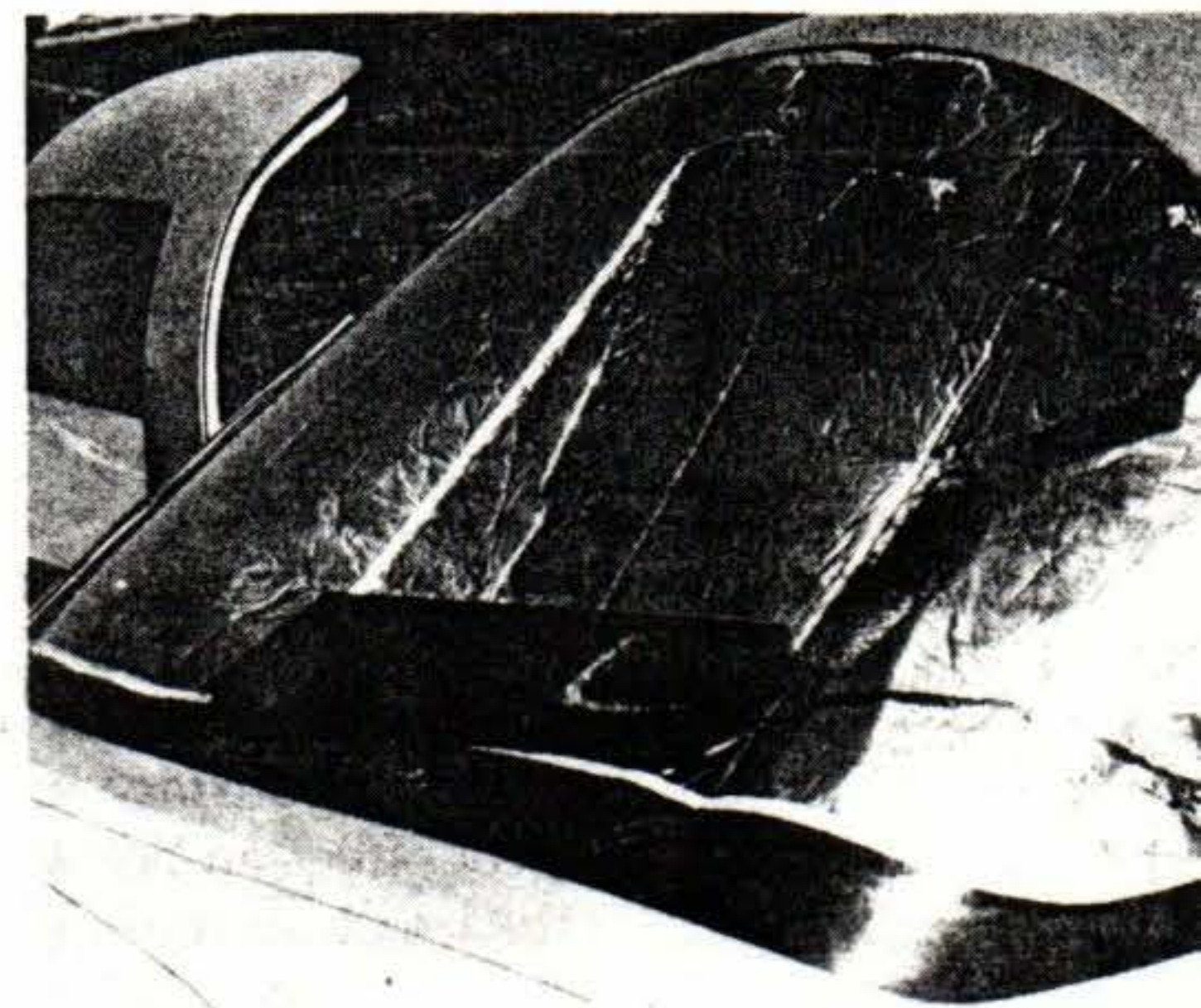
But isn't trickle-charging bad for aircraft batteries? **you ask. It's true that a nonstop 24-hour-a-day charge at typical automotive trickle-charge rates (one-half to two amperes) is frowned on by aircraft battery manufacturers, except when a deliberate attempt is being made to revive a badly sulfated battery.** (In which case, charging should stop after 48 hours, max, since if it isn't charged by then, it isn't ever going to be.) But the solar charger shown here—called the Maintainer, by Solar Electric—isn't capable of putting out the kinds of current flow that can warp a small battery's plates. In peak (high noon) sunlight conditions, the Maintainer yields only 70 milliamps (0.07 amp)—which isn't enough to recharge a battery, but is enough to overcome a battery's own self-discharge.

If you're thinking the Maintainer looks vaguely familiar, that may be because it was reviewed in the April 1 and June 1, 1986 issues of *The Aviation Consumer*. (It got a thumbs-up there, too.) Since then, there've been some important developments (not least of which is that the manufacturer has changed addresses: Solar Electric, 175 Cascade Ct., Rohnert Park, CA 94928; phone 707/586-1987).

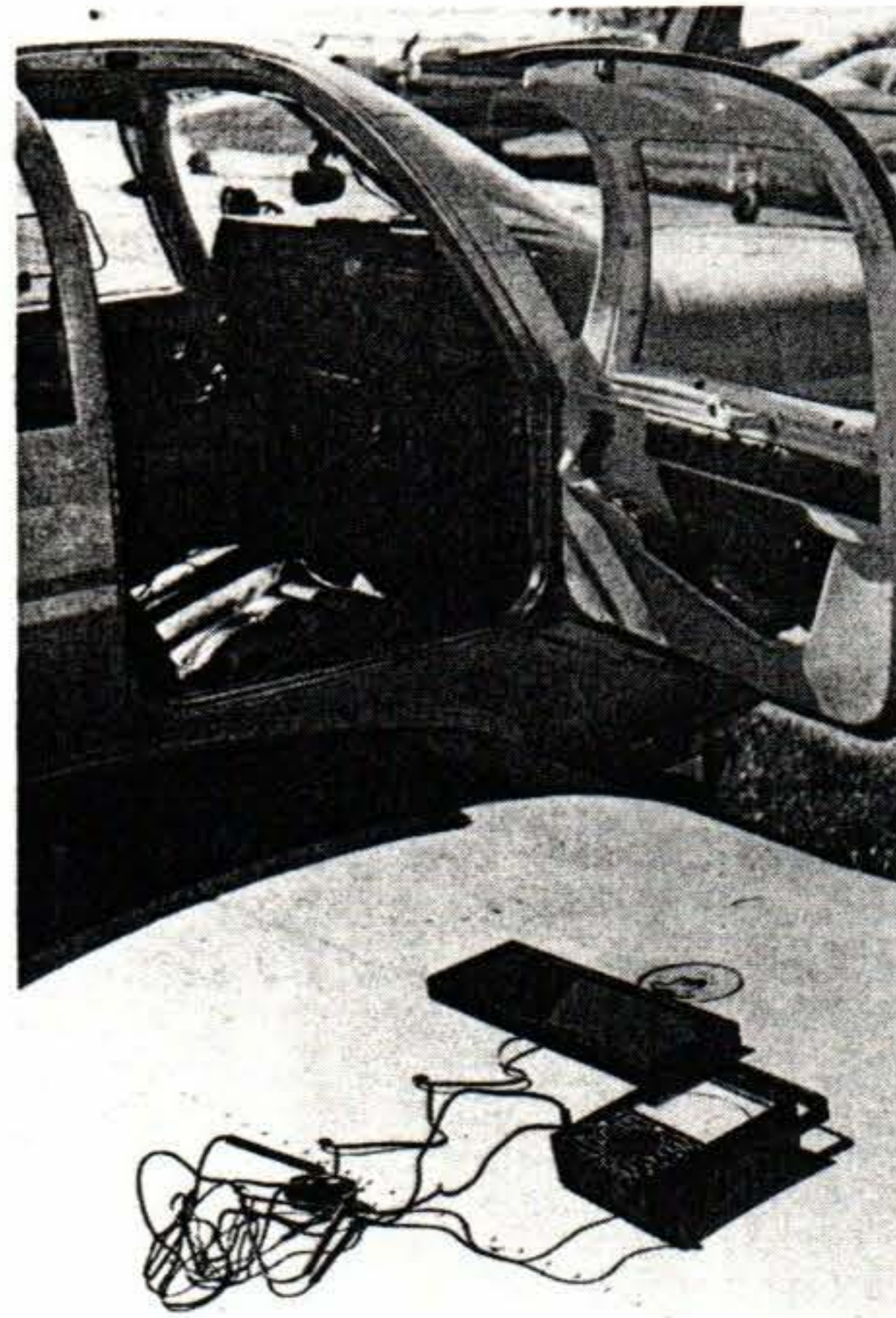
New for '88 is that the Maintainer now comes in a 24-volt version as well as the earlier 12-volt version. (It's no longer necessary to jury-rig two 12-volters together.) And both versions are now made of unbreakable material. The fourteen 1.25-inch solar-electric squares that make up the basic unit are bound to a flexible plastic substrate and overlaid with a translucent plastic film; no glass is used. Thus you can let the unit slide off your cowling and onto the asphalt without fear of it shattering into a jillion pieces.

If you prefer a zappier charger, Solar Electric also sells a heavy-duty "Maintainer II" that puts out 140ma at 15.4 volts. (It's basically a 24-volter wired in parallel.)

The standard-configuration unit comes with a cigar-lighter receptacle and (fer



*The solar charger can be left inside the plane, on the dash; enough rays will get through to do the job.*



*The Maintainer develops 70 milliamperes in bright sunlight, which is enough to stave off battery self-discharge.*

cryin' out loud) only 40 inches of wire. A variety of extension cords and adaptors (some with alligator clips for direct attachment to the battery) are offered, however, for only \$4.95 each. This is something you'll want to take up with Solar Electric directly.

Since the charger isn't permanently attached to the airplane, it falls outside FAA's jurisdiction. The only catch is that most cigar lighters aren't "hot" unless the master switch is activated—and then you'll be activating a host of other garbage. (Even if you pull the CBs for such things as the turn-and-bank, engine instruments, etc., the battery contactor still draws several hundred milliamperes—much more than the Maintainer can handle—so don't even think about leaving the master on.) To get the Maintainer into the system, you may need to hot-wire the cigar lighter—something FAA will probably frown on, if and when they ever discover it.

We think the Maintainer is a nifty idea—and well-priced, at \$59 basic (\$108 for the 24-volt model; \$99.95 for the heavy-duty Maintainer II). Just be sure your battery cables aren't fuzzy when you finally make your hookup or else your Maintainer's output will mainly turn to heat at the battery posts.