Making them go

Photos by Marc Horovitz

Alternative forms of motive power, like this nearly century old, steam powered Carette engine in gauge 1, have been with us a very long time.

When we think about model trains, a lot of us think of old, clunky, Lionel power supplies, even those of us who grew up well after Lionel's heyday. The correlation is there, though. All model trains need power supplies, with wires hooked to the rails, and those rails need to be kept clean, etc., etc.

Of course, modern technology has "changed" all of that, with onboard batteries and radio control. Add to that the recent growth of live steam in our scales, and all of a sudden we realize we've got several choices. What's ironic is that some of the choices available today (e.g., battery, steam) have actually been around since the very dawn of the model-train hobby. That old Lionel transformer was, at one point, a modern innovation to power model trains.

Enough history for now. The point is that, when it comes to means by which our miniature locomotives can move, we've got a broad palette to choose from. What may be right for one person may not be right for another. Each method has its strengths and weaknesses. We'll start with a comparison of the two "biggies," the old standby—track power—and onboard batteries.

In some circles, the track-power-vs.-battery-power argument has become akin to "tastes great—less filling." Advocates on either side of the issue are vocal about the respective strengths and weaknesses. It comes down to how you enjoy running your trains. Track power is still the most common method of running trains in the garden. Every electric locomotive comes designed to be powered through the rails. It's simplicity in itself. You buy it, set it on the rails, hook up the power supply, and off you go.

If you like to sit back with a tall, cool one and watch trains run around the backyard, then track power is probably your best option. Aside from routine maintenance, it's hands-off and you're free to relax, entertain, or mow the lawn while the train winds merrily through the garden. Likewise, if you're the kind of person who likes to run many trains at once, then track power may also be your most logical choice. Complete automation is well within the realm of possibilities with track power. I won't say it's easy, but it is possible.

The Achilles' heel of this system is keeping the electrons flowing as they should. At the most basic level, the track needs to be kept clean so that the locomotive can pick up power from the rails. This means the tops of the rails have to be kept clean, the locomotive's wheels need to be kept clean, and the joints between each section of rail have to be kept solid so that the electrons can flow uninhibited. There are myriad tools and gadgets available to assist you in this endeavor. If you want to run multiple trains on one track, then you begin to get into the more complex world of block wiring and other electronic projects. These aren't necessarily difficult and there are plenty of books available on the subject. Generally speaking (but not always), track-powered railroads tend to be controlled from a fixed spot, wherever the controller is. Physical interaction with the train is then limited, unless you have either a tethered or wireless, handheld throttle control.

Battery-powered radio control sits at the other end of the spectrum. The greatest advantage to on-board power is that you don't have to worry about clean track, complex electronic blocks, or any other electronic bugaboos that plague track-powered lines. Once installed, all you need do to run trains is set the locomotive on the rails, then you're free to roam the railroad. That can be a huge advantage if you like to interact with your train as it moves

Nearly all electrically powered engines sold today, like this Bachmann 4-6-0, are designed for track power.

Radio control frees you from the vagaries of track power, but the R/C system must be purchased separately and installed, as it was in this engine.

through the railroad. Prototype operations are greatly facilitated by on-board power. What you give up, though, is endurance. Your trains run only as long as the batteries hold up. If you can easily swap out the batteries and continue, then all the better, but they are your limiting factor. Fortunately, with today's battery technology, we're able to get longer and longer runs out of the same size batteries, allowing not only longer runs, but simpler installations, as smaller batteries can be placed in smaller locomotives.

Installation, though, is the other drawback to this system. If you're at all faint of heart with a screwdriver and disassembling a locomotive, perhaps you will want to steer away. Many manufacturers and sales reps will do an installation for you, but that's an additional expense over what you're going to lay out for the control throttle in the first place. On-board control is not cheap, costing between an extra $100 to $300 per locomotive. That means for every locomotive you buy for your line, you will have to spend the extra just so it can run on your railroad. If you're a collector of locomotives, this can become cost-prohibitive. If you have a small stable of locomotives that you use regularly, this becomes more economical.

The red-headed stepchild of both of these systems is what's called DCC, or digital command control. There are a few different systems available for our scales and not all of them are compatible with each other. DCC offers freedom of mobility and the ability to run multiple trains on the same track that on-board power does, without the need for batteries. The rails are supplied with a constant voltage, and a decoder on each locomotive uses this for power. Control signals to the trains are also carried through the rails, with each locomotive having its own "address." With this, though, you have some of the expense and installation issues of on-board power, while still having to maintain clean rails and good conductivity.

For the vast majority of locomotives on the market, you'll have to choose between any of those above options to make the trains move. There are, however, alternative forms of motive power for the garden. Their histories date back to the very beginnings of model trains and the earliest locomotives.

Like their full sized counterparts, some of the earliest toy train locomotives ran on steam. This aspect of the hobby is seeing renewed interest, and several garden railroads exist today that run purely steam—no electrons allowed. One could say that live steam is "the ultimate driving experience." You have to keep water in the boiler and the fire lit in order for the train to continue moving. This offers a hands-on experience like no other in the garden. It does require almost constant attention. Live-steam locomotives are like children—if you turn your back for five seconds, they've gone and done something unexpected. Yet it's this constant attention that attracts modelers to this aspect of the hobby. Nothing else gives you the feeling that you are actually controlling a machine.

The experience doesn't come without costs, though. Live-steam locomotives can be more expensive than their electric counterparts. The current array of choices for motive power is expanding, but so is the bottom line. Basic locomotives start at around $400 and go up considerably from there. The other disadvantage to live steam is the mess. Because they're real steam locomotives, they tend to be equally as messy, leaving oil and other grunge on the rails as they go around. This has to be cleaned off before electrons can flow freely again, if you're running track power. Live

Modern day, live-steam locomotives can be simple or sophisticated, but all require more hands-on attention than other forms of power. The controls on this engine, built by Jack Wheldon, can be seen inside the cab.

While exceedingly uncommon, clockwork engines can be a lot of fun. This one was built by Marc Horovitz in ⅞" scale, using a Meccano clockwork motor.

steam tends to coexist more peacefully with on-board-battery powered locomotives.

A modern counterpart to live steam comes in the occasional example of "live diesel" locomotives. Here, the locomotive has a small glow-plug engine that powers a generator, which makes electricity to power the motors that turn the axles, just like the real thing.

The last "common" form of motive power also has roots equally as deep as live steam, yet has been largely forgotten. Yet we've all played with toys that run on the same principle—a simple spring. The same kind of mechanism that powers your kid's Happy Meal toy has powered model trains for many years. While the number of commercially available wind-up, or clockwork, trains is infinitesimal today, Louis Marx (for instance) made wind-up trains for decades and old Marx wind-ups are often available at train shows at reasonable prices, and they still work. Their mechanisms can be adapted for our purposes. There are a handful of railroads in England that run purely clockwork locomotives. The challenge is to wind the locomotive just enough to get from one station platform to the next.

There are other means of powering our trains. Wind and airplane propellers have been used with some degree of success. Small battery-powered cars have been converted over the years to power a wide array of railroad critters. I imagine some adventurous soul has probably tried rubber bands at one point or another too.

The thing to remember is that we have never been tethered to a power supply. "Alternative" forms of motive power have always been with us, whether we've given them a thought or not. II