USES ELECTRICITY TO PULL FERTILIZER "OUT OF THIN AIR"

Do-It-Yourself Nitrogen Maker

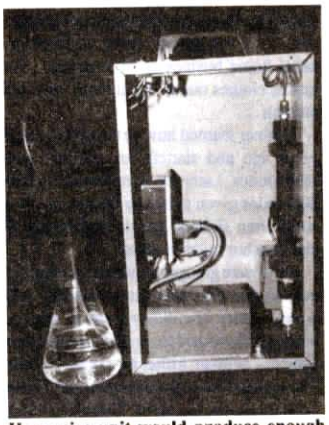
You can make your own nitrogen fertilizer using only air as a raw material with a new do-it-yourself nitrogen maker that two engineers are trying to bring to market.

Richard Treharne of Melbourne Beach, Fla., and James Riley, Yellow Springs, Ohio, hope to put a small home-size unit on the market for about $200 that would produce enough nitrogen to take care of an average sized lawn and garden. It uses less than 200 watts of power.

They've also built several large 3,000 watt farm-sized units that have been installed at third world country locations around the world which have cheap hydroelectric power but no access to nitrogen.

Unit consists of an electrode running through center of an iron pipe. As voltage runs through center electrode, an electric arc forms between it and the pipe, splitting off nitrogen from air entering the bottom of the pipe. It's then funneled into an absorption column containing limestone and water, turning it into nitric acid. The absorption column can also be filled with phosphate rock or wood ashes to make a final product that contains phosphate, potassium, and other trace minerals as well as nitrogen.

As designed, Treharne says the nitrogen produced would not be cost-competitive with nitrogen fertilizer produced conventionally from natural gas. But if components of the system could be made more efficient - or if you use "free" electricity from solar or wind energy, for example - it could become a viable alternative to petroleum-based nitrogen.



Home-size unit would produce enough nitrogen to take care of an average sized lawn and garden.

Treharne and Riley are looking for a manufacturer.

Contact: FARM SHOW Followup, Richard Treharne, 300-D Versailles Drive, Melbourne Beach, Fla. 32951 (ph 407 768-1139).

Drive-By Traffic Generates Power

If you've got a busy highway running by your farm, the day may not be far off where you'll be able to get "free" power with a system that uses the weight of passing vehicles to generate electricity.

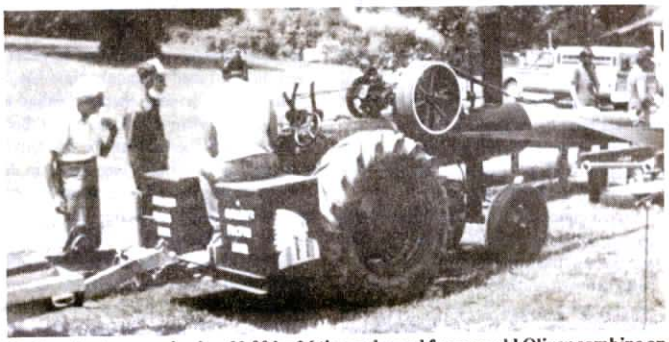
A group of Oxford-based engineers in England came up with the idea after one of them drove into a gas station and heard the bell that went off after running over a tube filled with compressed air. He wondered why the idea wouldn't work with bigger tubes laid under fast moving traffic.

The engineers came up with a pair of steel panels the width of the road that work like a bellows. They're mounted one above the other - the top one raised slightly above the road - and held a couple inches apart by six leaf springs. Panel edges are sealed by rubber gaskets to form an oil-tight chamber that holds about 150 gal. of hydraulic fluid.

Every time a vehicle passes over the panels, oil is forced out through a pipe to drive a hydraulic motor connected to a generator. An innovative return valve causes the oil being drawn back into the under-road panel to also drive the motor. To ensure a constant supply of power from the system, electricity is stored in a bank of batteries. Even though it's installed on a relatively quiet country road, the prototype system provides enough power to supply the electrical needs of an average size house.

Every time a vehicle passes over panels, oil is forced out through pipe to drive hydraulic motor connected to generator.

Passing drivers barely notice the slight raise in the road, according to the researchers. **(Farm Contractor Magazine)**



Half-scale steam engine has 12.00 by 26 tires salvaged from an old Oliver combine on back and 18-in. tires off a Deere combine on front.

"STEERS LIKE A WHEELCHAIR"

Giant "Tricycle" Big Hit At Parades

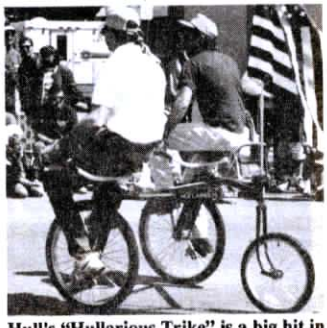
You've never seen anything like this two-rider "tricycle" built by retired farmer Marvin Hull of Ithaca, Mich.

"I call it the 'Hullarious Trike'. It's a big hit in parades and is fun to ride because it's so different," says Hull.

The tricycle, which has no chains, brakes, or gears, is mounted on a frame built from 1 1/2-in. sq. steel tubing. A pair of 26-in. heavy duty garden cart wheels mount in front and a 20-in. castor wheel mounts in back. The rear wheel is the only wheel that pivots. The forks on the front wheels are made from 3/16-in. sheet metal. Pedals direct-drive the wheels and are attached by an axle welded onto the wheel hub. Handlebars attach to the main bicycle frame, positioned just ahead of the seat.

"A lot of people can't figure out how it steers and think it must be difficult to ride, but it takes only a few minutes to learn," says Hull. "My grandchildren love to ride it. It steers like a wheelchair. Both riders have to pedal at the same speed in order to go straight forward. To turn a corner, one person pedals slightly slower than the other one. If one person stops pedaling completely, it turns around 180 degrees. If one person pedals backward and the other one pedals forward, you can turn in your tracks.

"It doesn't have any brakes. The riders slow down by pressing their feet backward against the pedals.



Hull's "Hullarious Trike" is a big hit in parades. Pedals direct-drive wheels.

"I didn't use regular bicycle wheels on front because I didn't think a bicycle wheel axle would be strong enough. One problem is that the front forks aren't built heavy enough. When the tricycle makes a sharp turn the forks spring out of shape, allowing the wheel to brush the side of the fork. However, the forks return to their original shape after you're done turning. Rigid tubular forks would work better.

"The rear castor wheel is attached to a set of front wheel bicycle forks that I turned backward so the wheel would be farther back for more stability."

Contact: FARM SHOW Followup, Marvin Hull, 7255 E. Fillmore, Ithaca, Michigan 48847 (ph 517 875-3840).

"IT REALLY RIDES SMOOTH"

Home-Built Rubber-Tired, Half-Scale Steam Engine

Paul Miller, Fulton, Mich., built a half-scale steam engine that's equipped with one unusual feature - large rear tractor tires.

The rubber-wheeled steam engine, made from parts out of a Deere 45 self-propelled combine, has 12.00 by 26 tires salvaged from an old Oliver combine on back and 16-in. tires off a Deere combine on front. It can be used to belt-drive a miniature sawmill that Miller also built. The tractor, 11 ft. long and 4 ft. high, is powered by a 20 hp 1-cylinder Case wood or coal-fired steam engine. It has a 3-speed transmission that's chain-driven off the engine.

"I've always been interested in steam engines and wanted to build my own. It took me 1 1/2 years. I didn't pattern it after any particular model," says Miller. "I take it to steam engine shows and drive it in parades. Top speed is 6 mph. It runs beautifully and looks and sounds like the real thing. Exhaust comes out an 8-in. dia. opening on top of the 9-ft. long, 17-in. dia. boiler which I salvaged from an old furnace boiler.

"My father insisted that I put my steam engine on rubber tires, and I'm glad he did. I can do so much more with it than I could if it was mounted on steel wheels. Other people have mounted rubber tires on steam engines, but they usually are 16 or 18-in. tires that aren't proportional to the machine. The big rear tires ride much smoother than steel wheels and provide much more traction.

"The 3-speed transmission is really nice for parades. If the parade is going fast, I can kick into another gear and keep up. However, I can also win any slow race. I haul my steam engine on a home-built trailer that I also use to give rides.

"I bought the 1/2-scale Case engine from Tom Terning, Valley Center, Kansas (ph 316 755-2269) who builds 1/4 and 1/2-scale engines. My engine is built half scale to a Case 65 steam engine. However, the boiler is a little bigger than half scale. It weighs over 4,330 lbs. when filled with water."

Miller used the final drives, transmission, brakes, and steering axle off the Deere 45 combine. He cut most of the shaft off each final drive, then bolted it to a flange and welded the flange to the side of the boiler. The engine chain-drives the transmission which chain-drives both final drives.

Miller built the boiler as well as the two large water tanks in back. Part of each tank can be used to store tools.

Contact: FARM SHOW Followup, Paul Miller, 164 R. Dr. So., Fulton, Mich. 49052 (ph 616 729-9252).