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wagon so we could push or pull it into place easily when manually filling feed bunks. We built up and leveled the wheels with framework we took off the digger so the wagon cleared our 30-in. high bunks.

The wagon held about 800 lbs. of corn silage and 300 or 400 lbs. of haylage. It worked well for us for years and cost nothing to build. (Dan Peschel, University of Wisconsin, Agricultural Research Station, 7523 University Farm Road, Lancaster, Wis. 53813; ph 608 723-2580)

Last year, Dad and I decided to switch to liquid starter fertilizer from dry. So we removed the rotted out fertilizer boxes from our Deere 290 two-row (38-in.) planter and replaced them with containers for liquid.



We used two 15-gal. chemical containers we got for nothing from our local co-op. We made a framework out of an old curved bed frame and welded it to the planter frame. We plumbed the containers with valves and plastic tubing. The system makes an ideal liquid fertilizer drip applicator that cost practically nothing to build. (Ken Schultz, 4121 S. Albany, Chicago, III. 60632; ph 773 927-7336)

FARM SHOW readers might be interested in what I call my "Ron Deere Jr", a home-built 4-WD tractor with articulated center steering and equipped with a shop-built blade for moving dirt and pushing snow.



I've got a 10 hp walk-behind snowblower but this is much faster. I can clean my entire 125-ft. driveway in 15 minutes.

The 8 by 4-ft. tractor is powered by a used 8 hp Briggs & Stratton engine with belt drive. It's coupled to a 4-spd. transmission out of a Toyota car. The enclosed flywheel, clutch and pressure plate mount on front of the transmission on a bearing. A pulley on front of the transmission drives the flywheel and clutch.

I used a Nissan 4-WD truck transfer case to drive the front and rear ends. Two wheel bearings out of a front-wheel drive car are used for steering, while one bearing is used to allow the tractor to pivot in the middle to keep all four wheels on the ground over rough terrain. The two rear differentials came out of a Chrysler rear wheel drive car.

Axles are fitted with spoked rims off a 1/2ton truck. They're fitted with used 33 by 15in. tires to provide plenty of flotation.

It's equipped with rack and pinion steering out of a Dodge Dakota truck. I built the frame out of 3-in. channel iron and the fenders out of 1/4-in. thick plate. It's fitted with an iron seat out of an old farm tractor.

A 52-in. wide blade was built. Flat iron was used for the cutting edge. Angle of the blade is adjustable manually with two bolts and height is adjustable up to 4 in. off the ground with a lever built out of pipe on the operator's left side. Out-of-pocket expense was about \$500 (Canadian).

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I built another 4-WD tractor similar to the one described above for my son, Kevin.

It's powered by an Aries 2.2 liter engine and has a transaxle running through a Nissan transfer case. The cut-down rear end is out of a Chrysler car.

It's fitted with 33 by 15-in. tires on back and 2.15 by 15-in. tires on front. It features tilt steering and adjustable seat.

It's fitted with a Fisher plow on front and my son uses it for plowing snow around his place. (Ronald Morse, R.R. 1, Wilmot, Nova Scotia, Canada B0P 1W0; ph 902 765-4450)

We have a lot of trouble with deer breaking down our pasture fences. So about five years ago I came up with this low-cost method to



get deer to jump the fence rather than go through it.

I hang empty white 1-qt. oil containers on the top fence wire between posts where there's been a break. I simply hang them on the fence with baling wire and cut a hole in the bottom to let rain drain out. They work great because the deer can plainly see them during the day or at night. I haven't had to mend a fence where I've used the oil containers.

I also hang two white oil containers on our gates so I can see from a distance whether they've been left open. (Russell L. Nelson, R.R. 1, Box 238, Monroe City, Ind. 47557; ph 812 743-2005)

Being in the seed business, we used to clean out truck boxes between loads and that always meant climbing over the sides of the raised box to get the last 10 bushels out of the corners.

Now, we use this corner scraper to make the job easier and safer. It consists of a 24 by 8-in. paddle cut out of corrugated grain bin steel. The T-shaped 7-ft. long handle is a piece of 3/4-in. dia. reinforcing rod and is fitted with a gusset between the handle and



paddle. There's a hook near the paddle that we use to hang the scraper on the side of trucks.

Besides cleaning out boxes, we also use the scraper to level loads in bins and trucks.

If your box has a hatch narrower than 14 in. you'll have to offset the handle in order to reach the comers of an 8-ft. box. (*David Mol*, *Meadowbrook Farms, P.O. Box 3113, Charlottetown, Prince Edward Island, Canada C1A 7N9; ph 902 894-3862*)

For what it's worth, I wanted to offer a couple pieces of advice to farm equipment manufacturers.

First, please put a reasonable tool box on equipment. Something that holds more than



We stay cool baling hay on even the hottest days thanks to the "poor man's" "sun shades" that we installed on all three of our tractors.

We used 4 or 5-ft. dia. plastic wading pools turned upside down. Uprights are made of 1in. dia. pipes bolted or welded to the tractor. A light rod hoop, the dia. of which matches the inside dia. of the pool, welds to the uprights. To anchor the pool, we simply cut small slits in the sides of the pool and use electrical tape to fasten it to the uprights.

We built our first pool shade five years ago and liked it so much we now have them on our Deere 5400, 6200 and our old M.

The pools cost only \$11 or \$12 (a far cry from what you'd pay for commercial sun

a pliers and a hammer and is built out of more than 29 cents worth of materials.

Next, please make protective shields that come off easily. In time, bolts on bolt-on shields get rusty and have to be chiseled off. I've changed many of mine over to a stem and tube drop-in style to save valuable time. Also, how about easier access to every-

thing? By the way, FARM SHOW is the greatest. I'll always subscribe. *(Walt Ackermann, Rt.*

l'ill always subscribe. **(Walt Ackermann, Rt.** 2, Box 42, Lakefield, Minn. 56150; ph 507 662-5303)

I use an extension on my steel bale spear to haul three round bale feeders around the farm.

It's a 7-ft. plus length of 3 1/2-in. dia. steel pipe I had lying around. It simply slips over the 4-ft. bale spear I use on my Case-IH 485 tractor. shades). It doesn't matter whether pools are decorated with duckies or fishies, they all work great.

Incidentally, the Deere 5400 in the photo is also fitted with 24.5 by 11-in. winter grip radial truck tires on front. I find conventional bar grip tractor tires leave too many ruts in fields for my liking, especially on hay ground. The truck tires put more rubber on the ground. Also, there's tremendous strength in these tires; you never have to worry about wearing them out on pavement. They make the tractor ride just like a Cadillac. (*Ernest Ivany*, *Ivany Farms Ltd., Box 533, Lister, B.C., Canada V0B 1Y0; ph 250 428-4509*)

To use, you simply back up to the bale feeder and slip the extension through the sides, then raise the 3 pt. The bale feeder slides toward the tractor until it's stopped by the 3-pt. hitch attachment. The feeders counter balance nicely on the tractor when the 3 pt. is raised.

Sure beats rolling feeders around the place by hand and didn't cost anything to build since I used scrap pipe. (Tom Trenary, 2090 Keefer Lawrence Ville Rd., Corinth, Ky. 41010; ph 606 824-6216)

The PC computer software I design for farmers (I am a farmer myself) was named one of the top 20 inventions in the recent American Farm Bureau's Farmer Idea Exchange.

"History of Fields", as it's called, may be the most user-friendly farm record-keeping

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Here's an air boat I built mostly for recreation on the extremely shallow rivers we have in Western Oklahoma.

The 16 by 8-ft. air boat is designed for optimum maneuverability and speed, with weight totaling just 1,000 lbs., compared with 1,500 to 2,500 lbs. for the swamp boats they use in the Everglades.

The completely enclosed airtight hull, which weighs only 690 lbs., is designed like an airplane wing with three box-type spars running the length of it. The hull is built of poplar and 1/4-in. plywood and covered with epoxy glass, which is more durable than conventional fiberglass. The bottom is coated with a super

slick polymer that makes it easy to clean off. The air boat is powered by 3.8-liter V-6 engine out of a 1984 Ford Thunderbird I bought from a salvage yard. It provides a top speed of 35 to 40 mph.

It took approximately a year to build the craft primarily out of materials that can be purchased at any lumber yard. I purchased some parts, such as rudder and controls, the 68-in. wooden propeller (mounted in a housing I built out of light 1 in. sq. tubing) and custom-built air boat seats from air boat equipment suppliers. Cost of the project was \$3,000. (Bruce J. Peoples, Box 744, Thomas, Ok. 73669; ph 580 661-2298)