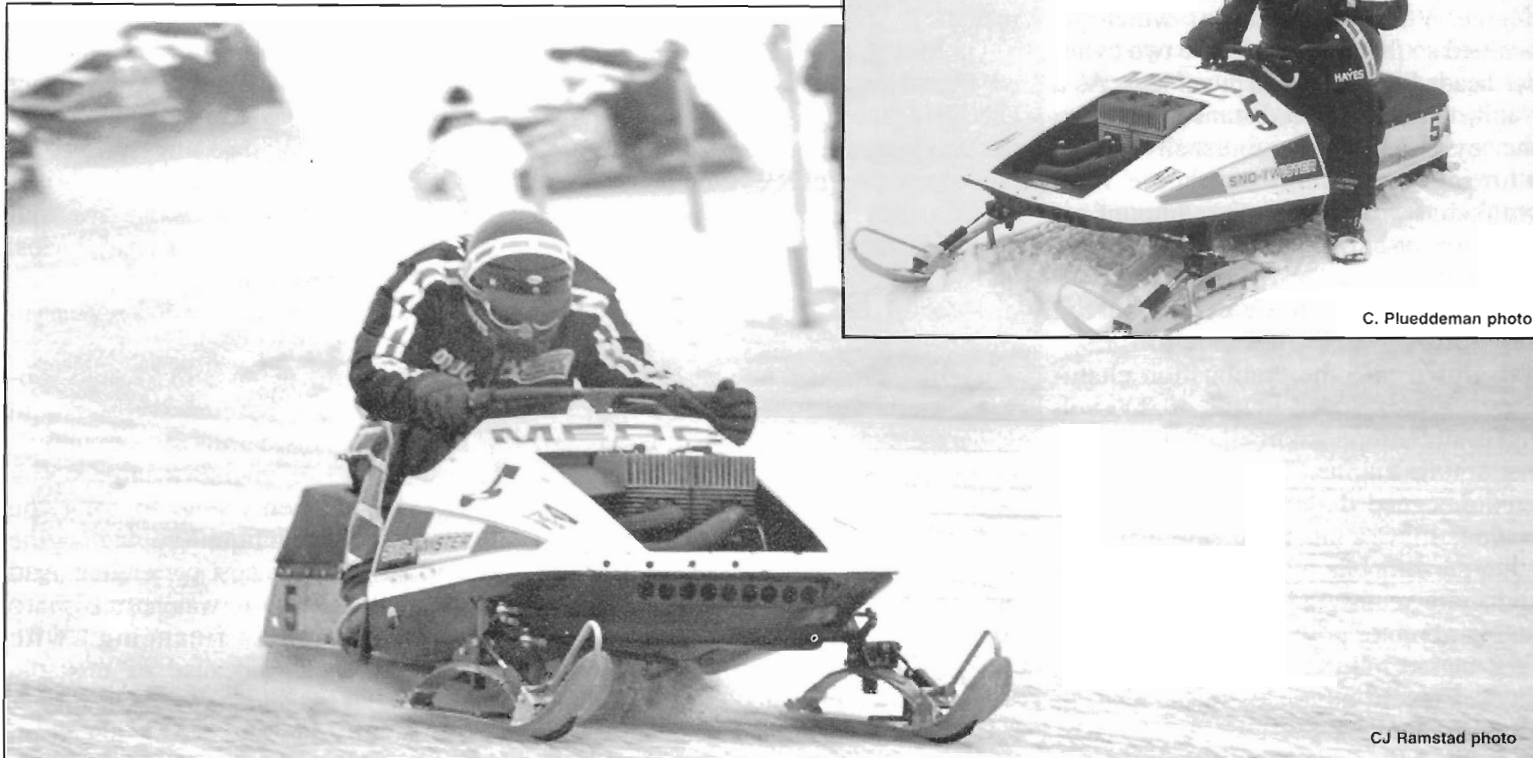


# Interview

## Doug Hayes & Lyle Forsgren



C. Plueddeman photo

CJ Ramstad photo

# DOMINATOR

## The True Story of the Mercury Sno-Twister

by Charles Plueddeman

In the 1973-74 racing season if you were not riding a Mercury Sno-Twister in the D Stock class you were probably wasting gasoline. That season, Mercury Marine, builder of great outboard motors and some very average snowmobiles, took the wraps off a new sled that was built with one purpose in mind: To dominate on the race track. It did just that. At Eagle River, Guy Peterson beat 30 other Twisters to take the Stock D crown.

How was Mercury suddenly able to burst onto the racing scene and steal the show? The get the straight scoop, I went

to two of the men who were intimately involved in the Sno-Twister program, Mercury engineer Lyle Forsgren and Hall of Fame racer Doug Hayes, who raced for Merc from 1973 until 1976.

Forsgren had worked at Boeing and designed a successful sport-racing auto called the Forsgrini before going to work at Rupp snowmobiles, where he helped design the 1972 Magnum.

"Mercury had decided to build a serious racing sled, and I was recruited by another engineer who had worked at Rupp," said Forsgren. "I was to build the sled, and we hired Les Cahoon to do the engine work. They gave us a little space in the Advanced Research Group

at the factory in Fond du Lac, Wis. We literally had to start from scratch in October of 1972."

Forsgren says he thinks Merc was long overdue to build a race sled. "The decision was made before I got there, but at the time Merc was not doing well in the snowmobile business, and of course it had always had a performance image in the marine industry," says Forsgren. "The Twister project was a natural extension of that philosophy.

"It was made clear that we were not part of the snowmobile operation. I worked for Ted Morgan, who was director of research, and while we were next to the snowmobile office, the door

Doug Hayes leads the pack in 1975 aboard a Sno-Twister factory racer he helped design (left) and is reunited with the same sled in 2001 (inset left).

between us stayed locked,” said Forsgren. “We had to have all the drawings done by the spring of 1973, so there was a lot to do.”

“To be legal for stock racing that year I think we had to build 1,100 sleds, and 100 had to be done by September,” said Forsgren. “Figure each sled would cost \$1,000 to build, and you’re looking at a big investment. It had to be a winner on the track and a reasonable sled on the trail, plus meet all the noise regulations. It was an exercise in compromise.

“When we got there, Merc had designed a racing engine they thought was going to be a winner, a 440 in-line six, air-cooled. It only made 35 horsepower, and was not a good idea. We ran it once or twice to make them happy and moved on,” said Forsgren.

Lacking an in-house engine, Forsgren and Cahoon had two choices, Sachs and Kohler, to power the new sled. “Kohler had a good-looking engine then in the 340 free-air with the starburst heads, and it would be easy to make it a 400. We wanted to race in D Stock, the biggest stock class,” said Forsgren. “We bought the engines from Kohler, which were made with porting specs devised by Les. He also designed the exhaust and intake.”

With the sled designed, Mercury needed to field some good racers to insure success in the coming season. Merc had an inside track on the talent pool because John Hull, head of Merc snowmobile marketing, was also president of the USSA, the leading racing body at the time. Hull invited brothers Doug and Stan Hayes, their father’s cousin “Lute” Ison, and Paul Spencer down from Crandon, Wis., in August 1973 to see the new sled. By this time, the Hayes brothers were established racers. After years of racing Ski-Doo sleds for the Halvorson team in Duluth, Stan



C. Plueddeman photo

*“The Trail-Twister was just an average trail sled. The ski stance was too wide and the track set too far back. It was terrible in deep snow.”*

Lyle Forsgren

### **1976 Mercury Trail-Twister 340**

was riding for the 1973 Polaris Sno-Pro team, and Doug for the Polaris Larson-Olson team.

“We got the plant tour and then they showed us the Twister prototype,” recalls Doug. “We rode it around on the grass some. The sled had the look of a winner. It had a wide ski stance and a low engine location. There wasn’t going to be a full factory team, but Merc promised lots of help and the potential for future employment at the factory.

“Stan already had a full-time job with Polaris and decided to stay put,” Hayes said. “I could make a living off my winnings, but really wanted the full-time job that might come later. So Lute, Paul and I decided to race the Merc from our shop in Crandon.”

Hayes says for the 73-74 season, Merc provided him with sleds and parts, technical advice and covered expenses.

“I really didn’t want to race in stock class, but they wanted a winner there first,” says Hayes. “I went to Ironwood and raced D Stock and 295 Mod. The stock final was all Merc, so it was clear it would dominate there. I don’t think I raced in stock for the rest of the season.”

Riding sleds tuned by Cahoon, Hayes focused on Mod I and Mod III for the rest of the season, was the high-point champ in both classes in the USSA Central division and won the Mod I title at the national championships held at Eagle River in February. Forsgren

recalls that the first Twister was not without its design flaws.

“We used a Comet clutch that didn’t last very long, and flat grouser bar track that would lose the bars if they got rusty,” he said. “We thought a long, flat track would work on the race track, and kept the rails flat with idler wheels at the front. But on the trail, if those wheels failed, the rail would spear the track and tear up everything. We should have curved up the front of the rail.”

Those problems were fixed for the 1975 models. That year there were Sno-Twister models with 340 and 440 free-air Kohler engines, and a Trail-Twister 440 with a Kohler fan-cooled engine. Other than the more docile engine and blue graphics, the Trail-Twister was the same sled as the Sno-Twister, says Forsgren.

“The 74 and the 75 models were very similar. I think we went to an Arctic Cat clutch and changed the slides,” says Forsgren. “One change we did make was to shorten the length of the sled by about four inches specifically so they could get two rows of crated sleds crossways in a semi trailer, which cut shipping costs in half. We had to change the muffler and a few other parts to do that.”

Forsgren was put in charge of the entire Mercury snowmobile operation that year, and the decision was also made to field a full-time factory racing team, with Doug and Stan Hayes han-

dling the driving chores, Jerry Witt and Bob Mendlesky as mechanics, and Cahoon and Dick Bahr working on the engines.

"That was the year of the PDC, or Professional Drivers Circuit, in which the factory teams would race at key events in the 340 and 440 mod classes, and leave the rest of the racing to the amateur drivers," said Hayes.

It was a small team, set up in a rented building across the street from the sprawling Mercury outboard plant in Fond du Lac.

"The four of us built the sleds," said Hayes. "I fabricated a lot of parts for the sleds myself, and we put in 18-hour days. We did have tremendous support from other areas at Mercury, though. They cast us special magnesium chain-cases, and had a vacuum-form plastic facility that could make any body part we wanted. We worked with Dr. Robert Kern, a mathematician in Advanced Research, who taught me the math of clutching and wrote computer programs to help develop exhaust and clutching. Merc backed us better than anybody.

"The rules that year were that the chassis and crankcase had to be stock," said Hayes, "but we could change anything else, and we did."

While the team raced hard that season, Hayes said their real mission was research and development.

"Our focus was the development of a stock racer that would appear for the next season," he said. "We were using basically the same air-cooled engine we had run the season before, and it was down on power because the engine guys were working on the liquid-cooled engine for the 76 Sno-Twister. We worked on all the other components. Every week we had some new suspension to try, a new track, new clutching, a different seat. Some things worked and some did not. We won some races but didn't dominate, though we were better at the end of the season. Everything we learned went into the 76 Sno-Twister."



**The 1976 Sno-Twister dominated stock and modified oval racing that season.**

The 76 Sno-Twister was a creation of a changing rule book and a burning desire at Mercury to build a winner.

"At meetings before the 75-76 season, the USSA had to decide on the direction it wanted to take stock racing," said Forsgren. "There are two ways to go. You could raise the quantity of sleds to be built for homologation, which would make it too expensive for anyone to build a real ringer. Or you could lower the number and let everyone build real racers. We wanted the number to go up, but the USSA lowered it to 500 units. So we built a real hot rod trail sled."

As Hayes recalls, "Mercury put unlimited resources into the 76 Sno-Twister."

The sled featured liquid-cooled Kohler engines in the 250, 340 and 440 displacements, an engine for each stock class. The chassis was shortened and the sled came from the factory with short skis, angled handle bars with a loop on the left side set up for the driving position favored by Doug and Stan Hayes.

"The suspension, track, chaincase, seat, bars, tapered fuel tank with a sump on the right side, were all parts we developed the year before," said Hayes.

At Eagle River in January 1976, Stan Hayes qualified for the World Championship final on a modified Sno-Twister, and Twister drivers won every stock class, every junior class, every women's class all but one Mod Stock class. It just the beginning of many seasons of success for the 76 Sno-Twister.

However, Forsgren had a feeling the

end was near for snowmobiles at Mercury Marine.

"I was getting little hints," said Forsgren. "For example, there was no pressure on us to finish drawings for the 77 models, which would have to be done to stay on schedule for production."

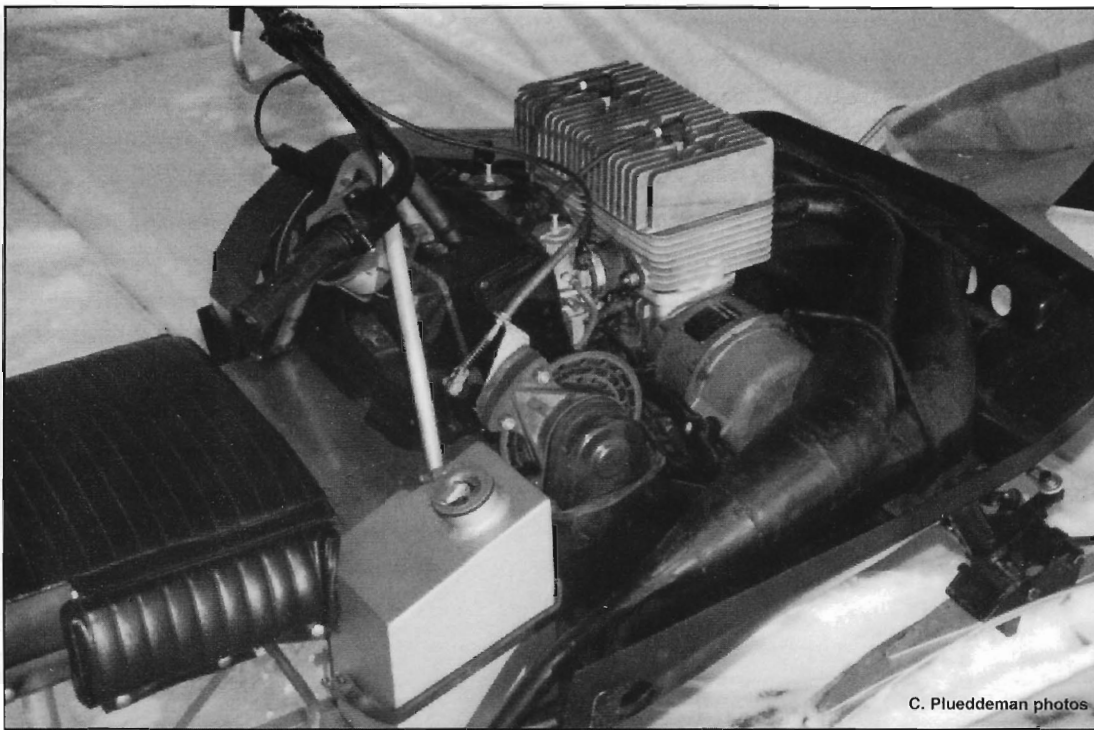
Forsgren had designed a new Trail Twister model for 1977. "The Sno-Twister would go like hell across a lake but it was really awkward on the trail. And the Trail-Twister was just an average trail sled. We designed that chassis for racing. The ski stance was too wide and the track set too far back to make a good trail sled. It was terrible in deep snow. For 1977 we were going from a 110-inch to a 120-inch track on the Trail Twister, with a narrower ski stance."

In February 1976, Brunswick Corporation, the parent of Mercury Marine, announced it would pull out of snowmobiles. Forsgren said it was a business decision.

"Merc still wasn't making any money on snowmobiles, and we would have to expand snowmobiles to do it," said Forsgren. "At one point we looked at moving to a Brunswick bowling plant in Michigan, but it was too big. Brunswick decided to use its available capital on expanding the outboard business, not on snowmobiles."

Forsgren stayed on at Mercury, developing outboards until he retired in 1989. Stan and Doug Hayes went to Ski-Doo where they helped develop the first IFS Blizzard racers. Doug retired from racing after the 1979 season, was named to the snowmobile Racing Hall of Fame in 1995, and today owns a powersports business in Crandon. He is still fond of his days at Mercury.

"Those were great years," he said. "I think I enjoyed it so much because we had a great group of people and because I got to do so much myself. We physically built those 75 racers with our own hands, welding and machining. It was quite an accomplishment."\*



C. Plueddeman photos

# The Missing Twister

**We Discover  
Doug Hayes'  
1975 Racer  
Stashed in a  
Wisconsin  
Warehouse**

When the 1974-75 racing season was over, Mercury factory racer Doug Hayes was informed that five of the team's six race sleds would be destroyed for liability reasons. He was to save one for the Mercury archives, and decided to assemble an example using the cleanest, straightest parts from each of the sleds. A truck from the exhibits department came to take the sled from the shop for storage.

This January, I started making inquiries at Mercury about bringing sleds from the company archives to the Midwest Ride-In in Waconia, Minn. With permission from Mercury Chief of Staff Jim Hubbard, I was allowed to poke around a warehouse used by the exhibits department. On a third-row of pallet rack I spotted this sled, the same racer Doug Hayes put together back in 1975, probably sitting right where it had been placed that year. Hayes came to Waconia to see the sled and confirm its authenticity. He gave me a detailed tour of this one-of-a-kind racer.

The chassis is a stock Sno-Twister part, but almost every other component was hand-crafted in an effort to save weight and improve performance. Hayes said the sled weighed 250 pounds, the legal limit that season.

Trick parts include a clutchguard made of titanium sheetmetal that looks paper-thin but is stronger than steel. The seven-inch brake disc

is hard anodized aluminum. The motor mounts and chaincase are cast magnesium. The chaincase has a clear Lexan cover that allowed the racers to check chain tension and lube level instantly. It is secured with a rubber strap for fast gear changes. That cover and many other plastic parts, including the belly pan, airbox and a crankcase duct were vacu-formed in the Mercury prototype shop. A wedge-shaped fiberglass hood was made specifically for this sled.

The skis were stamped in aluminum using the same tooling as the steel stock skis. Braces were added to limit spring twist in turns. Bushings in the spring bolts and plastic sliders smoothed the action. The fuel tank holds one gallon and was located on the right running board so the driver could crouch over the left side of the sled in turns. To save weight, the sled was assembled with aircraft aluminum bolts. The track had titanium cleats, and the team even used magnesium washers on the track cleat rivets.

The handlebars on this sled were bent for Doug with a 90-degree loop on the left side. This sled has a bucket seat, but the team also tried wedge seats that season. The tach still has the redline scored with red marker on its face. The Kohler engine in this sled has a 398cc tag, but Doug says the 340 and 440 jugs fit on this case. The pipes were made by Les Cahoon. --Charles Plueddeman

