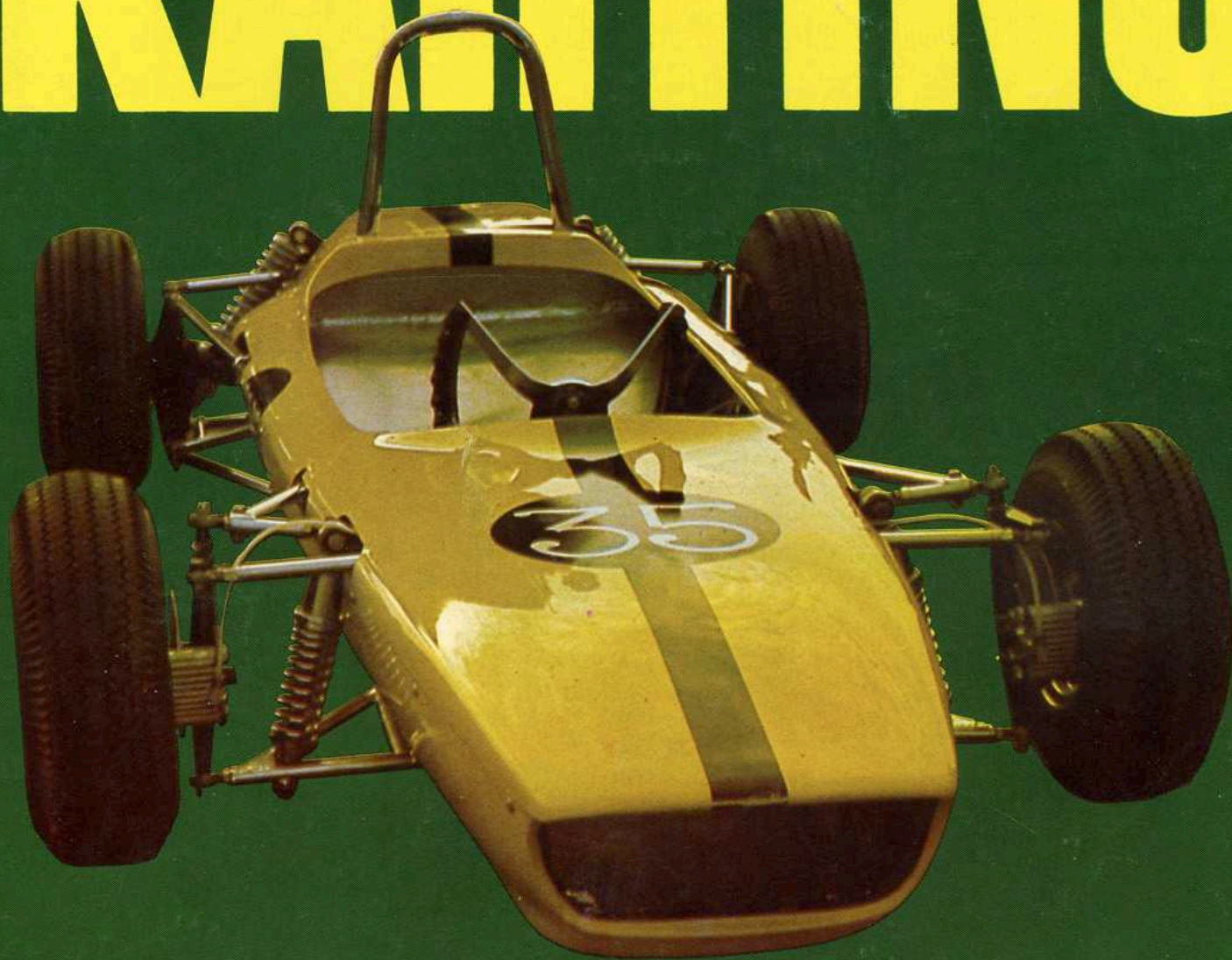


NOVEMBER 1969 - 75c

MODERN KARTING



**RACING: F/5 NATIONALS
PEPSI-COLA SPECIAL
WISCONSON ENDURO**

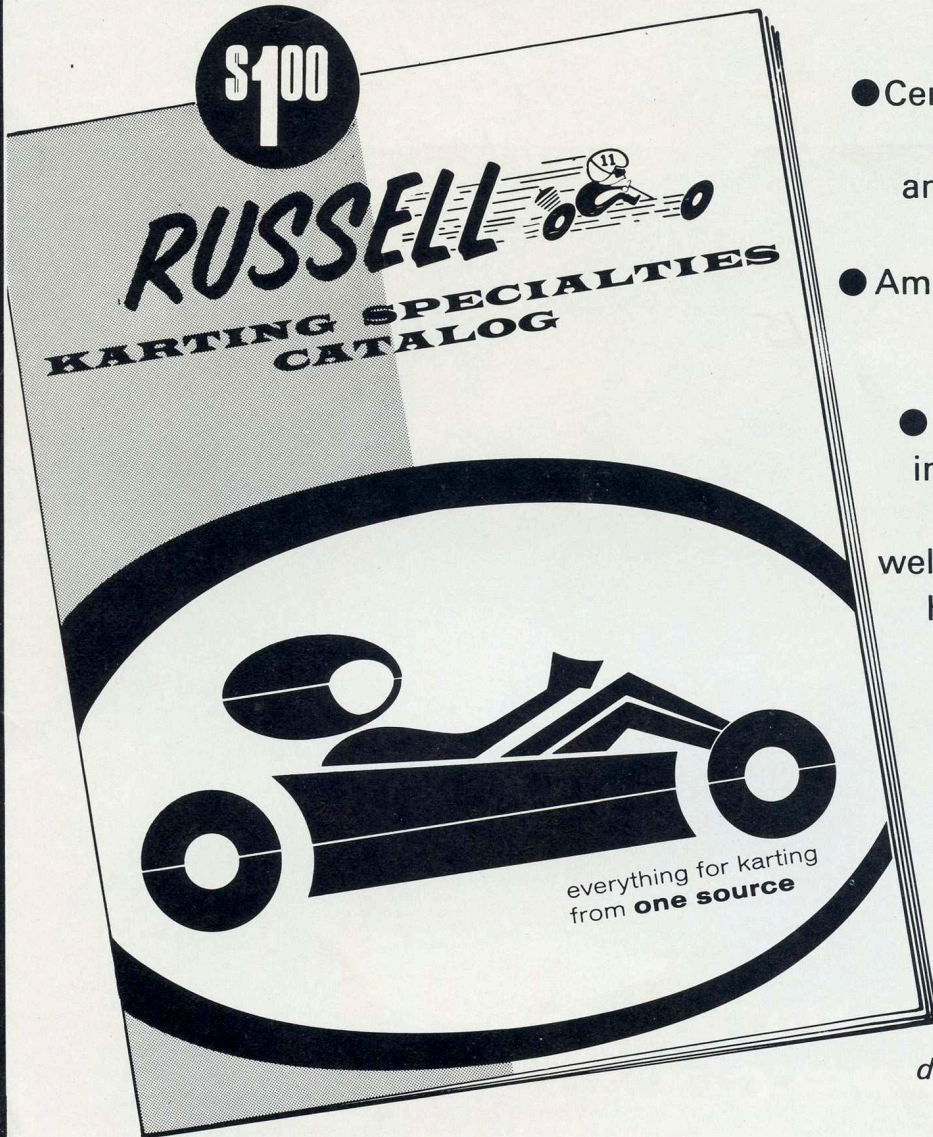
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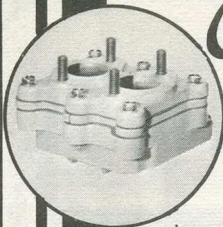
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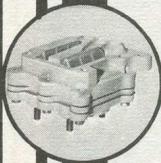
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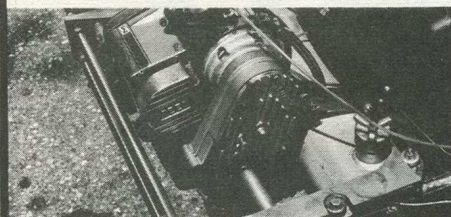
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EDITORIAL

By **RON BLACK**

There are moments in this business known as karting that are frustrating, but then, there are the other times. Many of those other times are caused by the people who make up the sport. For instance, we set out to do one of the tests in this issue, but the kart was pretty small, especially in light of the fact that I'm such a big guy. When I go out to test a normal sized kart, such as most people own, I'm usually in a bind, simply because I'm so cotton-picking big. But somewhere I got all hung up on karts, and so here I am.

Anyway, I had to do something to get myself fitted into the kart for testing, and the main intrusion into the driving/seating compartment was the steering wheel. There was nothing at all wrong with the steering wheel, it was just that it wasn't meant to have to accommodate such a big person. Of course, the obvious thing was to replace the original steering wheel with a small butterfly wheel. With this in mind, we called Wally Baynes at Inglewood Kart Shop. Wally said to bring it on up, and he'd see what they could do about it. So, on the day of the test, we headed out, and on the way stopped to see if Wally could help us. This is where our good fortunes began. When we arrived, John Julis (Wally's second-in-command) checked to see if they had a used butterfly wheel that could be put on the thing. The used wheel that was found was, as luck would have it, for another brand of steering hub, and the mounting holes didn't match. So, without even so much as batting an eye, they hauled out a brand new wheel, and proceeded to drill it so it would fit. Now, inventory costs money to these kart shop owners, but that didn't seem to enter the situation. We needed something, and they were interested enough to help us.

After the butterfly was securely bolted on, John went the "second mile" and asked if we had fuel, starter and etc. Well, since I haven't been active in karting for quite some time, I had been borrowing things to use on this test, and to tell the truth, was pretty ill-prepared. John sensed this, and proceeded to give me their standard setup service that all new owners of karts receive. First, since the engine had never been fired, John put some gasoline in the tank, drug out their starter, and attempted to fire it off. No soap. He explained that he'd expected as much, and removed the backing plate on the diaphragms of the carb. After checking to see that the carb passages were clear, he blew through them and soaked the diaphragms with fuel. The backing plate was replaced, and again the starter came into play, but this time she fired right up. The carburetor settings were adjusted, and the throttle checked. It would have, at a minimum taken me half a day to figure out what was wrong, but Wally and John did their best to make sure everything was alright. It mightily impressed me to be finding someone who cared about their customers in this day and age of "sell it quick, deliver it quick, and sell some more" attitudes.

If all this help wasn't enough, Wally and John loaned me a brand-new battery to use, since I was intending to pirate the one from my car long enough to do the test. My hat is off to you, gentlemen.

I have also run into someone else who has this helpful kind of attitude. His name is Ron Stewart, and runs Ron's Mini-Cycle City in Huntington Beach. Ron is an extremely nice fellow, and tries to help in any way he can. I have an open invitation to call him anytime I need help. Hopefully, he won't regret that he said that.

Walt Meyers, of Meyers Speed Shop is another fellow in karting that lends satisfaction to my contact with the sport. Again, he's ready to help when you need it. Maybe you are beginning to see now what I'm driving at. Doesn't it seem to you that karting is full of these people? The kind of guy that, would rather have you as a friend than just a customer? Our sport went through the stage where everybody and everything was getting in on the karting act to exploit it for what they could get out of it. These people have now dropped by the wayside, and the real "backbone" of karting is what is now left.

It just seems to me that we have an inordinate amount of nice guys and gals in our midst, and I think that we all should be aware that "good guys" don't always finish last.

Racing Roundup

SACANDAGA KARTERS

If you have never been to a Sprint Grand Nationals, then, as far as I'm concerned, you have never seen a real kart race. What a show! G & J Kartway of Camden, Ohio staged the event with the support of the local Ohio Club and District and did a fine job too.

The Ohio group put on a well planned show in a very efficient manner, despite problems with the track surface (which they corrected), 560 eager karters that came to race (a record) and some rain that fell and caused some delays. The California and Florida karters came and went home with nearly every trophy. They may not be able to stage a kart race out in the West, but they sure have the equipment and drivers to take the gold home. The double grid for lining up the karts for the start of the race was probably one of the finest time savers we have seen at any of the tracks we have been to. When a class couldn't be put together to take the green flag, back to the pits they went and out came the next class in only a matter of seconds. Ten members of the Club drove at the Nationals, which I think is a very good representation. They were: Sarge Moore, Ed Schultz, Phil Ball, Steve Ball, Bob Ball, Bill Swanson, Lou Smiley, Ray Entwistle, Ken McGuire and Pat McGuire. There were consolations to qualify for the semi-mains that were run to qualify mains in every class. The American Reed classes were very large, and one bad break and you were out of it. The reign of the Macs in the modified classes also went the way of other American engines of past years. The "foreign" engines dominated the scene and the few Macs that were able to stay close were cheered by us die-hards. Nearly all of the boys had their problems with Sarge Moore with a 9th place finish in the Modified Heavy having done the best. Sarge even had a fourth place finish in the 3rd heat, which helped earn him the 9th overall. Bill Swanson and Phil Ball competed in the time trials and the semi-main, and were right next to each other nearly all the way. Bill made the feature but the traffic was terrific, though he finished all the heats, a feat in itself. Carl Codello, who showed us the short way around our track at our Regional, also did a terrific job at the Nationals. He grabbed a 5th place finish in both the B Limited and the C Open classes,

Continued on Next Page



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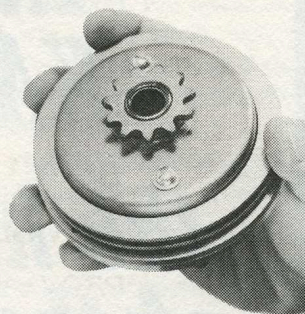
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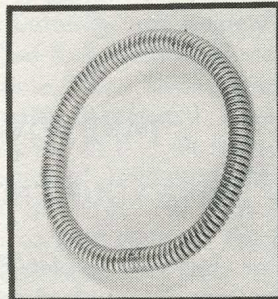


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ROUNDUP *Continued from page 5*

establishing himself as one of the top sprint drivers in the country. He and his equipment have to take a back seat to no one. Linda Emmick won the coveted Senior Grand National Championship, based on her win in the B Limited class and her very fast and record setting time trials in the B Limited Stock Light Weight Classes. With the exception of Gary Emmick, nearly all of the top drivers had fantastic equipment that was prepared by others. Of the top Junior drivers, I doubt if any even had the slightest knowledge of the karts' mechanical operation or the preparation of the engines. At least at the Grand Nationals they weren't allowed to touch anything but the steering wheel, which they did very well. It is a case where the small independent drivers can go to one Grand Nationals and then call it quits, since there is no way in the world to compete against the pros. It was fun, though.

G & J Kartway has requested our support for the 1970 Sprint G. N. and they deserve consideration, but it's my feeling that the Grand Nationals will have to be moved around the country, in order that they draw new karters to each event. It is now obvious why karting at the national level was becoming stagnant while it was out West, no one was interested in competing against the pros in all the big events. By moving the Nationals around, it helps to stimulate karting interest and it draws the karter from that area to make a try just once. I still feel that IKF is big enough and capable enough to be able to plan the next location of the Grand Nationals a year in advance. I see no excuse for waiting until 1970 to be notified of the location of 1970's event.

So until next year's event, we put away our comments regarding the G.N.

RON WAHLMAN BOWS OUT

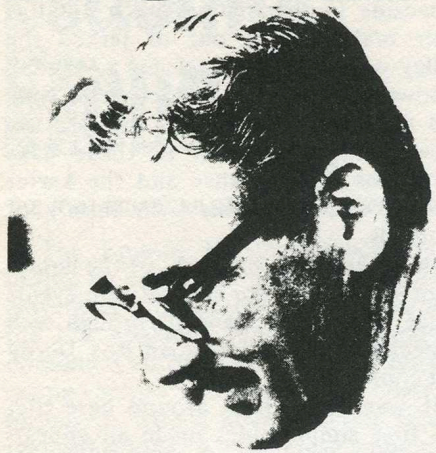
As I bow out of karting to go onto bigger and more profitable racing endeavors, I would like to take this opportunity to thank all the people in this great karting fraternity, without whose help my success would not have been possible. I hold karting responsible for the formation of my plight into manhood. From day one at the age of 12 years, until the day I proceed to that Golden Raceway in the sky, karting has been beneficial to me in so many ways. From enhancing my mechanical skills and knowledge, my ability to communicate and understand mankind, to perhaps the greatest benefit karting has given me, the choice of a woman brought up around karting for a wife.

Again, I would like to say thanks to karters and their families everywhere. I shall always hold karting very dear to my heart.

Ron Wahlman

Continued Page 9

DUKE



WHY, IKF?

by *ORMEL DUKE*
IKF Administrative Director

Down through the years of karting and IKF - that is, after the old Go-Kart Club of America expanded to become the International Kart Federation - a knotty or otherwise rule book problem has been invariably prefaced with "Why, IKF?" Well, in such cases - perhaps - it is really valid to answer a question. Simply, "Why, IKF?"

Now, as for 'why IKF,' in the long-ago days of karting nearly everything about the sport existed on a catch-as-catch-can basis. Displacement sizes were fairly well set by the engines on hand and just how many could be crowded into the space available. Kart frames ranged the gamut of individual imagination - coupled with whatever material happened to be on hand - and if paint was applied it was mainly to cover the multitude of sins present. It was not uncommon to find brazed joints, frames of electrical conduit, and even an occasional monstrosity made up of threaded water pipe, elbows, and sundry fittings. (I remember one such with a belly pan processed from the back dust cover off a refrigerator. This mess was suspended from the iron pipe frame with soft iron wire of about 18 gauge. In action, if all the joints didn't first come unscrewed, the pan was certain to part company with the parent weapon to slide wildly through the parking lot - our track - with a great clattering and brilliant display of sparks.)

Helmets, brakes that worked, upholstery, and/or any other refinement that might possibly contribute to either the safety or comfort of the driver were strictly for sissies!

For the unwary, aircraft-type lock-nuts without cotter pins were the accepted standard for attaching wheels to shafts. Sometimes, if you were fortunate, the loss of the left front wheel came simultaneously with the complete locking up of the right front and the vehicle bucked to a stop in a fairly straight line. If not so fortunate,

Continued on Page 8

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B Limited	Jim Akkerman	WISECO equipped WEST BEND
C Open	Chuck Pittenger	WISECO equipped MC 101's
SPRINT:		
American Reed Junior	Tony Adkins	WISECO equipped MC 91A
American Reed Senior	Jerry Vaugh	WISECO equipped MC 91A
A Open Lightweight	Pete Michel	WISECO equipped KOMET
A Open Heavyweight	Jack Stickney	WISECO equipped KOMET
B Open	Jack Nelson	WISECO equipped MC 91's
C Open	Ken Burden	WISECO equipped MC 101's



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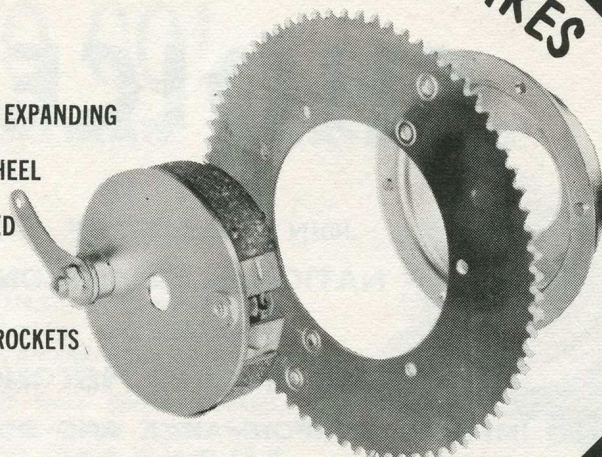
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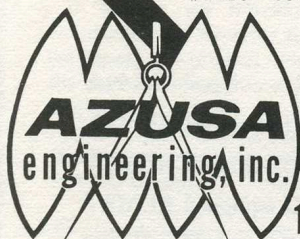
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DUKE *Continued From Page 7*

the grabbing right front looped you broadside to the charging pack - just as their brakes burnt out or jerked the pulley off the rear wheel. On a Monday following a karting spectacle, the lame and the halt were the rule and not the exception. Worse still, in those days there was no insurance and the karter had to underwrite his own supply of bandaids.

In general, the majority of the equipment showing up for competition events could never have made it through tech inspection at the local Soap Box Derby Hill course.

It was somewhere around here that the first simple rules made an appearance. However, simple as they were, it was quickly found that to have a rule and to enforce it were two totally different things. Thus, to speak, man - the karter - still was not created equal. New rules were then formulated that would make it possible to enforce and hold to the intent of the original set of guide lines.

And it is here that we get to the 'why' behind IKF.

The original rules - and all that have followed in the evolution and sophistication of karting have but one purpose. If you select a competition class, IKF assures you that all of your competitors must necessarily toe the same mark on which you are standing. Perhaps you have never considered it, but IKF makes it possible for you to run any place in the country and enter karting events without necessity of modifying or purchasing new equipment in order to meet local customs. If you cut a fat one on a given track and grab a new record with your stocker burning pump juice, a modified stroker just a wee bit bigger and lurching on fuel isn't going to take it away from you. Yes, it's a nuisance, but that's why IKF orders teardowns at sanctioned events.

Within IKF, rules have been reviewed, changed, or dropped as necessary to benefit the maximum number of competitors within a class category. When request is made - and these are many and often - to bend a rule just a tiny bit to offer an advantage to but one or two, IKF must answer with a firm "NO!" (And sometimes in the saying it is necessary to disqualify or black-flag a friend, a step that is not so easy to take.)

This could go on and on, with many, many words of explanation, but in the end the answers would still be the same. Simply, IKF provides you, the karter, an organization of support that provides you equality in your kart competition activity. Along with this, there are sanctioned national events in which you can pit your mechanical and driving talents against the best in the nation. Where else can you get it?

Racing Roundup

E.K.A. SCHEDULES REAL BLOWOUT

The Enduro Karting Association is having an enduro to end all enduros on November 8th and 9th. It will be held at the Los Angeles County Fairgrounds in Pomona, California. Some of the hottest racing action on the west coast is promised, with a course layout almost two miles long. A very great amount of pre-race planning and promotion has been carried on, and there should be quite a few spectators on hand to see the race.

EKA has done a great job of trying to bring the news of the race to the people who would not normally know about it, with a press party and luncheon, huge posters that have been placed all over Los Angeles and the surrounding area, and being pretty free with complimentary tickets with those who can do our sport the most good. There are very few local racing organizations that will go to as much trouble as EKA has just to bring the state of the sport to the masses.

Along with bringing the sport to the masses, EKA realizes that they must also bring in the competitors to put on the show and enjoy their own sport. In this line of thinking, a very extensive list of equipment and product awards has been rounded up for the participants. At this time, the following contributors have given their support and prizes: Valvoline Oil Co.-one case of oil to each class winner, Union 76 Oil Co.- free racing gasoline to all Stock classes plus \$10.00 gift certificates to the winners,

Ashland Chemical Co.- free alcohol to all modified classes, McHal Helmets- two custom-fitted helmets, Hegar 4 products- two \$10.00 gift certificates given in each class plus Hegar motor mounts to be given to all McCulloch -engined winners, Azusa Engineering-\$14.00 gift certificates to all winners, Proto Tools- tool sets to be given away. There's still more: McCulloch Corporation- two Mc91A, and two Mc101's, Inglewood Kart Shop- 14 gift certificates, Caretta Works- one minibike, to be given away as a door prize, Hartman Engineering-one Hartman "Adjust-a-slip" clutch plus six cases of Hart-Lube, Francisco Chemicals- 24 pints of Francisco "Two-Snapper", Hurst/Airheart- one complete hydraulic disc brake assembly, Kendick Engineering- two expansion chambers, Cardas Fuels- five gallons of Cardas fuel to each class winner, Peterson Publishing Co.- 14 gift subscriptions to Rod & Custom, Burco Clutches- 14 \$10.00 Gift certificates, and Twentieth Century Publications- 14 Gift subscriptions to Modern Karting. Whew!

And, (holy cow, now what?) the trophies are said to be larger than those given at the Nationals and have clocks in them! With all of that they are sure to have quite a turnout. Modern Karting will be on hand to get the story and pictures for this important event.

Continued on Page 10

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DEALER INQUIRIES INVITED

Racing Roundup

Continued From Page 9

COMPETITION KARTERS

It was a real fine day for Ken Schneider of Schneider's Bike Shop, Cleveland, Ohio; for his two drivers, Bob Meinke and Dave Kennedy, went all out and brought home a first in the Stock Class and a second in the Modified Class.

This race is not just any Enduro, it was the biggest Enduro of the year, held at Mid-Ohio Sport Car Track and put on by the Mansfield Kart Club. The race was 250 miles long and took three hours and 45 minutes to run, so you can see this is not any ordinary Enduro. The "250" is a real test of driver and machine and both must be in perfect condition; but all the boys look forward to this big one for it is a real challenge to all drivers and their pit men.

When the flag was dropped at 9:30 in the morning, drivers and pit men were ready and the karts left the line in a cloud of smoke. When the modified boys came around for the first lap, Drew Turnbull was in the lead and Bob

Meinke was coming up through the pack. Drew fought to hold first place for two hours, but then broke a gear and lost a chain. This move brought Bob Meinke into second and there he stayed for the rest of the race. Dave Kennedy was in first place for the stock class. He got a very poor start off the line, but worked his way up to first in the first half hour and there he stayed until the checkered flag was dropped. Both Dave and Bob had to make two pit stops for gas and oil. When Bob Meinke came in for his last pit stop, he said the floor pan had popped its rivets. Well, at the end of the race he had a hole right through the pan and upholstery. We asked him how he felt when the race was over and he said he really had a hot seat, but second place can sure cure a lot of ills.

So when you come into Schneider's Bike Shop and see the big smile he is wearing, you will know why. He is just plain pleased with the fine job these two drivers have done.

To Dave Kennedy we say - Well Done. You did a first class job of driving, but Dave's Dad and pit crew had better keep a good eye on him from now on when it is time to come in for gas. Dave came in and the pit crew was looking out on the track for him to come around. One of the boys in the pits saw him coming and gave a yell. You can bet there was some fast moving from that point on.

So we thank Mansfield Kart Club for a fine day of racing and you can bet we are looking forward to next year's big "250".

RACING IN FRESNO

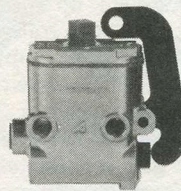
The Lions' Club of Fresno, along with the River Kart Club, hosted a benefit race at River Kart Track on Sunday, October 4, 1969. Seventy-three karters signed in and nine classes were run. The races were run practically without unpleasant incidents and the karters were on their way home at an early hour. Members of the club had worked hard and long hours and the track was in very good condition. The weather was also just as ordered, bright, warm and sunny all day.

During intermission, a kart with a side car, owned by members of the club, and driven by Mr. Riffel, President of River Kart Club, was used to give the young children a ride around the track. Each child brought a new or repairable toy as his ticket for the ride. The Lions' Club was very pleased with the race, the proceeds of which will be used to help their many charitable activities. Several boxes of toys were donated. The trophies, given to fifth place, were beautiful lamps with a kart mounted on a wooden base.

We are hoping to make this a yearly event and want to thank the many karters who were present.

new heavy duty discs

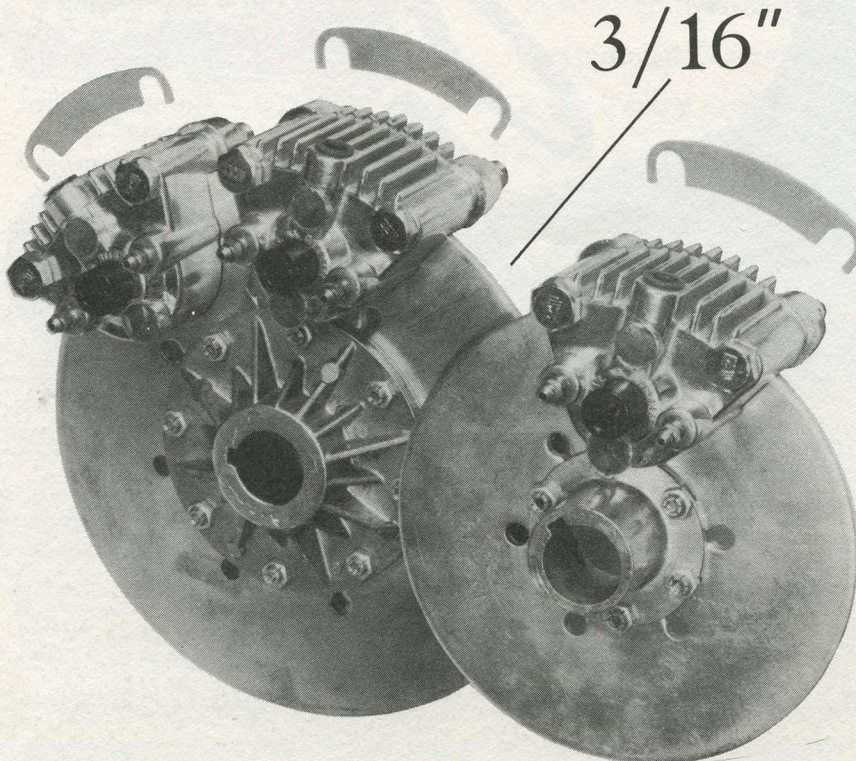
The new 3/16 inch thick discs for karts are now available in popular 6 or 7-3/4 inch diameters. Hurst/Airheart heavy duty discs run cooler, resist warping, extend pad life, eliminate puck breakage, increase reliability. Bolt right to standard hub and mounting brackets. Spacers used in calipers to compensate for extra thickness. Both discs and spacers may be ordered separately or in complete single or dual caliper brake kits from your local Hurst/Airheart dealer. Add that extra measure of stopping power now.



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Letters

RE: PORTING TECH. ARTICLE

Thank you very much for printing my article in the October issue. I found a couple of type setting errors in the port timing article. Unfortunately, they would affect the answers, so I thought I'd better pass them along.

1) In the expression for piston acceleration the entire expression should have been under the radical after you substituted the values in it, as follows:

$$N = \sqrt{\frac{100,000 \times 2189}{1.635 \left(1 + \frac{1}{2 \times 1.53}\right)}}$$

2) Part of the expression for determining blow-down time was inverted. However, it was printed correctly when the values were substituted.

$$\text{was: } T = \frac{60}{N} \times \frac{360}{E}$$

$$\text{should be: } T = \frac{60 \times E}{N \times 360}$$

Nevertheless, I think you did a very nice job setting it up. Thanks again and keep up the good work.

Bob Lawley
Los Altos, California

Regarding "The Porting of Two-Stroke Engines" by R. W. Lawley, the Hepworth and Grandage formula first appears on page 34 as:

$$N = \sqrt{\frac{Ax2189}{S(1 \text{ plus } \frac{1}{2}n)}}$$

Immediately thereafter, on page 35, if the letters are reinserted in place of the figures substituted in the example, and ignoring the obvious misprint involved in the placement of the radical, the formula appears as:

$$N = \sqrt{\frac{Ax2189}{S(1 \text{ plus } \frac{1}{2n})}}$$

In the first case, $\frac{1}{2}n$ would be one-half of 1.53, or 0.765; this figure plus 1, or 1.765, multiplied by 1.635, giving 2.885775, and divided into the product of 100,000 x 2189, or 218,900,000, would give 75,854,839, the square root of which is approximately 8,709.4, or N.

In the second case, the reciprocal of $2n$ would be 3.06 into 1, or 0.32679; this figure plus 1, or 1.32679, multiplied by 1.635, giving 2.16930165, and divided into 218,900,000 would give 100,908,050, the square root of which is approximately 10,045.2, or N.

Although the result in the second case is closer to the stated value of N, 10,100, it still causes doubts, because the equivalent values given in the tables for the Mac 101 and Saetta/Parilla, if rounded off, are rounded to the nearest 10. Nor does the use of slide rule

instead of electric calculator help account for the discrepancy.

Because I found the article interesting, and would like to pursue it further, I am most interested in ascertaining the correct version of the Hepworth and Grandage formula, whether it be one of the two presented or, indeed, some other; and a clarification of the 10,100 figure.

There is also another item, contained in "Tuning the Komet" by Jim Petitti (January 1969, page 21), which I considered too unimportant to be made the subject of a letter, but which I will take this opportunity to mention.

In the article, under Komet K-88 Specifications, rated horsepower is given

as 15 @ 8200 and maximum torque as 6 lb./ft. @ 7800 rpm. This maximum torque figure is demonstrably incorrect, since the engine's torque is 9.6 lb./ft., or more than half again as much, at 8200 rpm in order to develop 15 horsepower (hp x 5252 divided by rpm = torque in pound/feet; 15 x 5252 = 78780 divided by 8200 = 9.6).

I will also take this opportunity to state my enthusiasm for the inclusion of technical articles in your magazine. The leading magazines devoted to other types of motor racing do so, and karting should be particularly benefited by this type of article, since there is an abundance of enthusiasts with limited know-

Continued on Page 38



MAX-TORQUE CLUTCHES are engineered to help you get around the track faster. Forget about oiling clutches or making them rev higher—Max-Torque engages your engine to the drive train at the one rpm range where your engine is putting out its maximum torque, not just out of the hole, but every time you get back on the loud pedal. If you want to win races—run a Max-Torque clutch.

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Ye olde editor got his bulbous carcass astride a Caretta the other day, the occasion being to test the new thinking that has been instituted around the Caretta Works. As some of you may already know, Lou Borelli has sold his interest in Caretta to Hank Paronelli. Hank has incorporated quite a few changes in the Caretta, and considering Caretta's past history, any major change at all would have to be considered revolutionary.

The Caretta is one of the oldest kart designs around and from the very first edition, was considered to be one of the, if not THE, very best handling machines around. Dick Connors drove one of the early Carettas to a Grand national Championship way back around the turn of the decade. Through the years, the Caretta has changed very little, and was built in the L.A. suburb of Echo Park by Art Ingels and Lou Borelli. The familiar loop sissy rails with the louvered panels and the transverse driveshaft chained to the "pin drive" wheels have been on the karting scene for a number of years now.

Hank Paronelli and his two sons, Rick and Tony, have used Carettas for their racing endeavors, and their experience has helped them to prove the ideas incorporated in the "new" Caretta SDE 1970.

Starting at the rear, the SDE has the usual live axle riding in new bearing carriers located at the junction between

the side rails and the rear crossmember. The bearing itself is of the high-speed precision ground ball variety, and rides in its circular machined carrier/socket that forms the corner of the frame. The large diameter rear crossmember is welded directly between the two axle bearing sockets. The axle runs inside the crossmember, but is exposed outboard of the frame rails. The bearing sockets and enclosed axle has always been used on Carettas, however, previous models have enclosed the axle throughout its total length, and the sockets were outboard, directly next to the wheel. Since the whole axle was enclosed, no axle drive components could be used. The SDE, on the other hand, has exposed the axle from the frame rails out, and the rewards of this new system will be seen later.

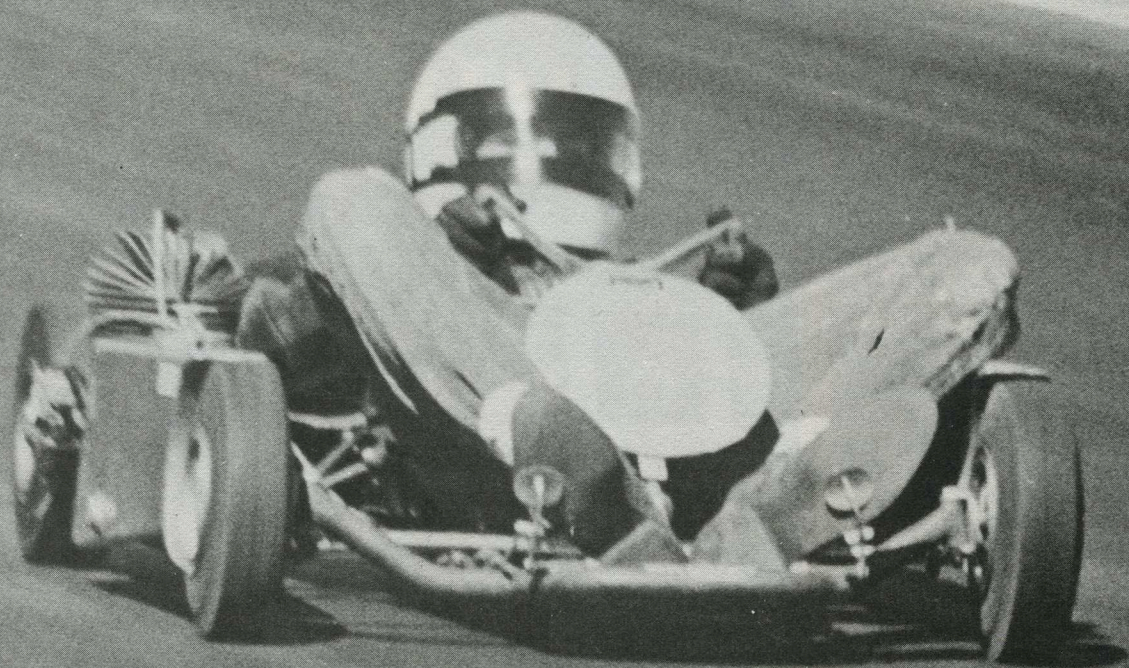
Taking a peek further forward, we find that the unique Caretta "driveshaft"--is gone! In the past, a crankshaft "extension" or "driveshaft" was used that ran from the end of the magneto side of the crank, beneath the sloping seatback, through a pillow block bearing, and was terminated (on the opposite side of the frame from the engine) by the centrifugal clutch. Many Caretta owners have removed this "driveshaft", deciding that the arrangement was a bit complicated and its advantages (less strain on the crank) were outweighed by the need for simplicity. The SDE incorporates this

thinking and the "driveshaft" has passed into history. The drive is now taken in the more familiar manner, from the clutch, mounted directly on the engine.

The braking system and the drive have both been changed in accord with the new design. The previous drive system was the "pin drive", where the chain turned the wheel and the wheel turned the axle. The wheel on this drive setup had cast mounting bosses or "pins" sticking out from the inside edge of the Go Power wheels, and the drive sprocket was bolted onto these "pins". Due to the "driveshaft arrangement", the actual drive was taken on the opposite side of the kart from the engine, and the disc brake mounted on the wheel on the engine side, using the same pin drive arrangement to hold the disc. It sounds kinda hairy, and it was too—but it worked pretty cotton-picking good!

Hank has simplified all of this by simply exposing a section of the rear axle on each side of the frame. This allows a normal Azusa "Vari-Hub" sprocket mounting directly on the axle - and on the same side as the engine. The Hurst/Airheart spot brake is on the right-hand side with a full floating disc, and it too has been mounted on the exposed section of the axle. The extra leverage that is placed on the axle due to the inboard mounting of the bearings has not been disregarded either. The rear axle material is now 1-inch, centerless

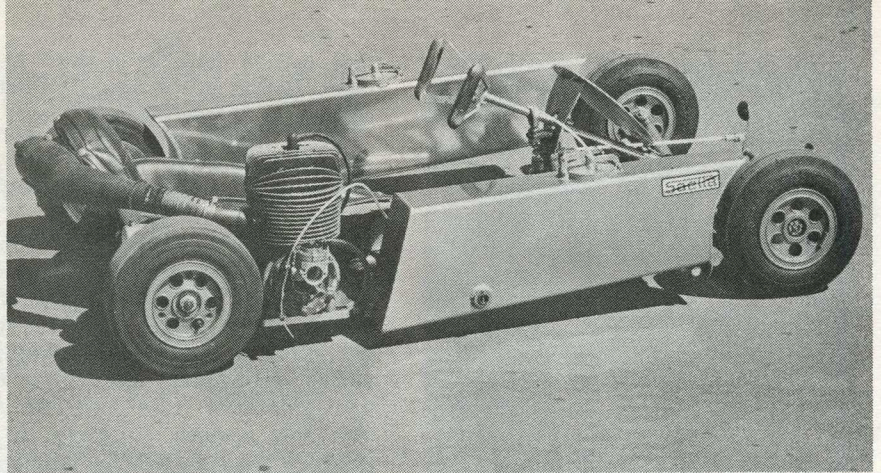
Rick puts the Caretta through its warmup paces.



ground, stress relieved, and carries one of those "ohmigawd" strength ratings.

A "floating" engine mount hangs on a single bearing from the left side of the axle, and is snubbed at the front by two rubber-bushed mounting bolts. The small tank for chain oiling is mounted on a bracket off of this engine mount bearing. The kart that we tested had a spot of bother with the bearing hanger, but more about that later.

The tanks have been enlarged for 1970, and the alky burners will appreciate the 5¼ gallon capacity next summer when the temperature blows its cool. The tanks are made of silver-anodized aluminum, and taper rearward (both in width and height) so that the rear wheels and mechanicals are nicely streamlined. The tanks have integral sumps at the rear edge so that the carb won't have to hunt for its fodder. The tank mounts have also been revamped. At the front, a 1¼" diameter appendage has been welded onto the frame, but out about halfway the diameter swedges down to 7/8" diameter. The 7/8" section goes beneath the tank at the front edge, and at the rear the swaged section inserts through the tank. All mounts are cushioned with neoprene to keep vibration damage to a minimum. The front tank mounts do not continue across the frame on top of the floor pan as previously, but each side has its own welded-on appendage on which to mount the tanks. The



You can see what happens if the flex pipe comes loose.



Proof that your editor was able to get in the machine.

REVOLUTION AT CARETTA!

conversion of kart frames from the original sprint versions to the enduro is now complete with the tank mounts looking as if they were designed in instead of tacked on in a "make do" style.

The new Caretta also has some changes in the seating position. The steering hoop has been moved farther forward and the seat hoop rearward. The result is a machine that will accommodate even a big lug like myself. The smaller among us (say six-foot and 'bout 200 lbs.) will use thicker "jewel pads" at the steering hoop. Hooray! The world may not have told us King Kong-sized people to go play somewhere else after all!



The 'Lil 'Ol shopkeeper himself!

Not only does this increase the driver compartment square footage, but it also moves the center of gravity further forward—which should increase the sure-footedness of the front end. A longer “front porch” in front of the front axle keeps the controls at relatively the same distance from the steering hoop. You won’t have to sit on your heels to operate the pedals on the SDE.

The familiar loop sissy rails have given way to a single tube, curving out from the lower part of the seat hoop and rejoining the frame at the steering hoop. This rail, coupled with the two hoops make a very comfortable looking “basket” to put your ol’ bod into. The steering and front axle arrangement is unchanged from the previous Caretta. Whew! Did we say that the new Caretta was revolutionary at least according to its past? A bit of understatement there, wouldn’t you say?

Now, then, what does all this lead to on the track? First, I’d better explain that the kart that we tested was actually a prototype for the SDE 1970. It was constructed for Rick Paronelli to run at the Enduro Nationals, and incorporates the weight shift and drive/brake changes. However, as the pictures show, the seat hoop, sissy rails, steering hoop and tank mounts that are different than has just been described. Some of the shots were taken of a new SDE that was under construction, but since these items are of detail importance, and would not affect the performance under racing conditions, we thought that MK’s readers might like to hear about our experience with Rick’s machine. Especially since this is the very machine

that carried Rick to a third place in Open Heavy and a fifth in Open Lite against the best in the land.

After having to wait to get onto Riverside Raceway due to the L. A. Police Department testing their new thunderbikes, we immediately set about cutting some hot laps. Rick took the machine out first so he could check the tuning. He explained that this was his best running engine (Saetta) and he would just as soon risk fouled plugs as a stuck piston-fancy that! I was totally and absolutely sure that we would somehow manage, somehow, to blow the engine sky-high!

Then it was my turn. After some shoehorning and scootching around, we decided that we had better raise the steering wheel just a bit so that I could manage to herd the thing through the corner. Of course, Rick had no problem at all, but I’ve got this belly, see....anyway, I finally felt as though I could probably keep the machine under control.

We headed out through the esses at a conservative pace, and while I was at it checked the steering response by twitching the wheel back and forth to see what effect it would have on the kart. The legendary handling of the Caretta is still kicking around in there somewhere, and the twitching of the wheel merely altered the position of the kart with respect to the track width. There was no fuss, no bother, no tricks - just an instantaneous changing of line. The recovery of line “stability” after twitching the wheel was non-existent, mainly because the stability never left! The thing was as stable as a house.

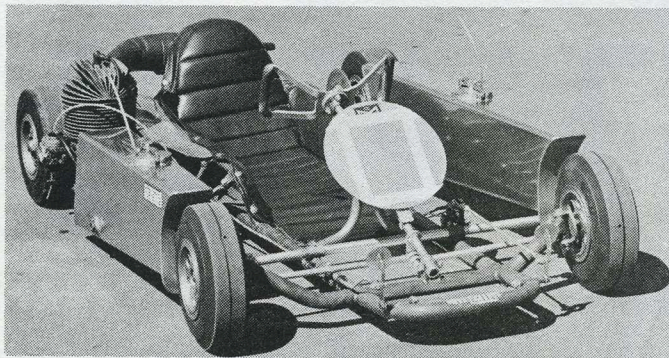
Rick never needed to have a helmet

pad installed because the seat back was high enough for a guy his size, but the back of my helmet was hooking over the back edge of the seat hoop. The helmet picked up the vibration from the frame and transferred it directly to my skull. After unscrambling my eyeballs just a bit, I found that I could scrunch down even further in the seat. The driving position was beginning to get positively comfy, especially since the eyeball bouncing had been cured! A

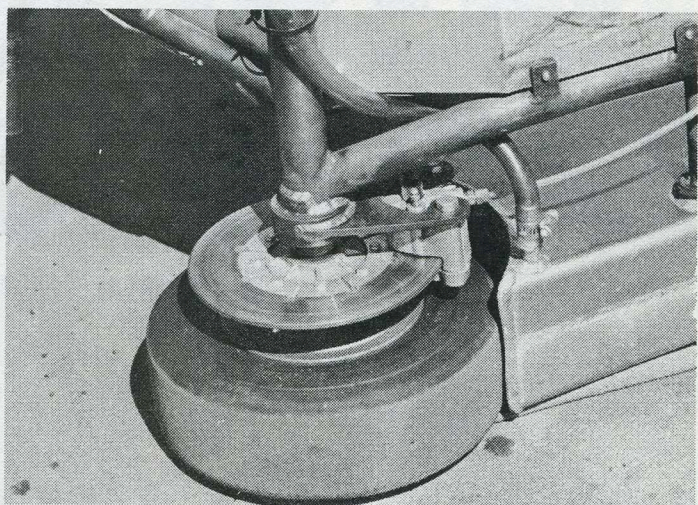
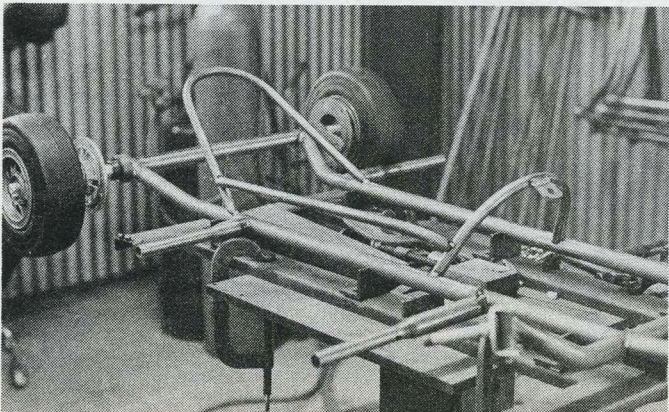
particularly wicked sweeper (known as No. 8 at Riverside) was up next, and the matter is complicated by its being off camber due to being placed on the downside of a hill. A touch of the throttle showed the handling to be nearly neutral, but with a slight tendency to oversteer. The front end seems to grow “roots” in the track surface. Couple this with the Caretta’s predictability under power and the thing seems to almost have front wheel drive -- pulling you through the corner. The speed was still relatively slow yet, but I was determined to test that sweeper a bit more strenuously on the next lap.

Meantime, the lack of a more vertical helmet pad was becoming a bigger problem. Coming off the sweeper, the sun blinded me pretty badly. It was at this point that I found that there was really not too much sweat in handling the Caretta with one hand while shading my eyes with the other. The visor on my helmet just would not cut it so we wailed down the straight one-handedly.

Back in the esses again, a little more weight was poured on the go button and the Caretta could take several different



This is the prototype for the new Caretta, and carried Rick Paronelli to a 3rd and a 5th at the Nationals.



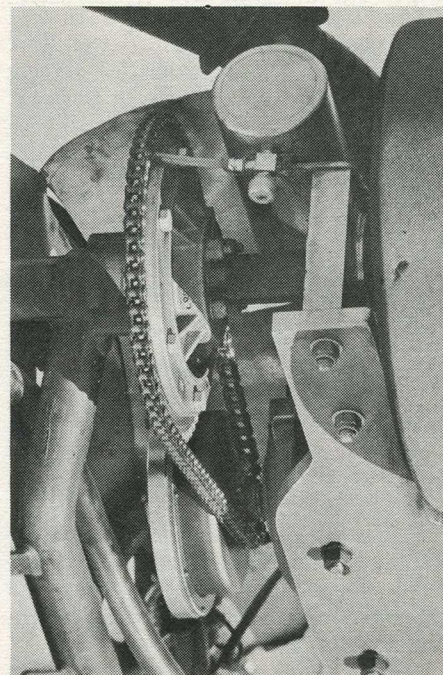
New mounting for the Airheart — gone is the old pin drive set up.

New hoop positions, sissy rail, tank mounts.

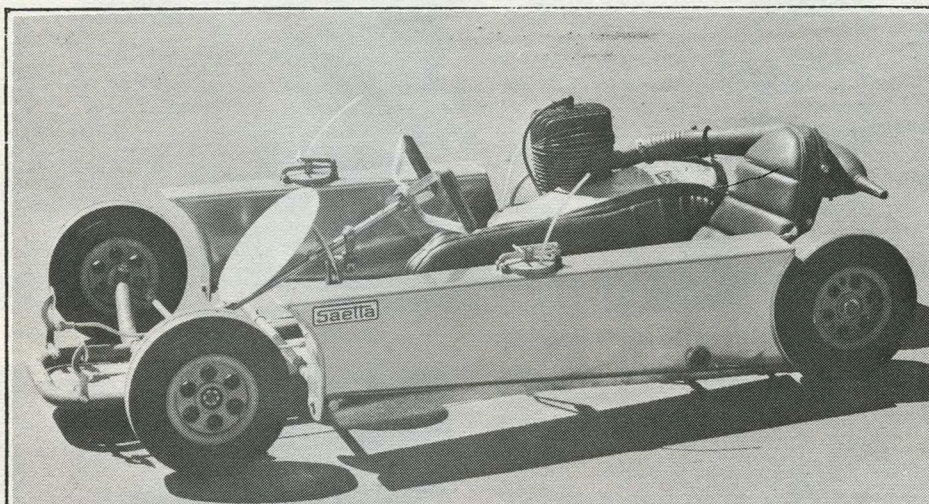
lines through without apparent problem. The track surface was freshly laid about a month ago, and adhesion was great, so experimentation with several "grooves" was possible.

The off-camber No. 8 was coming up and I realized that the track will always surprise you because the radius starts immediately beyond the crest of your vision. You set up for it and then it seems like somebody just picked up the track and moved it over about twenty feet! Unfortunately, I never got to try

it, because, while setting up for the curve, the whole world exploded in my left ear. I was sure that the engine had blown itself to bits, and I found out that those Hurst/Airheart binders will bring you down pretty fast. To my relief the engine had not lunched itself, but the unholy beller in my ear told me that the marriage between the exhaust flex pipe and the muffler had just gone "on the rocks". This left the flex pipe 10 inches from my ear and pointing just behind my head. Folks - there just is no



The newly-exposed axle allows vari-hub and engine mount directly on the axle.



SPECIFICATIONS

MANUFACTURER	Caretta Works, Inc.	1833 San Fernando Rd., Los Angeles, California
YEAR AND MODEL	1970 Caretta SDE	
LIST PRICE	\$600.00 less engine	
CURB WEIGHT AS SHOWN	140 lbs. (approx.)	
CURB WEIGHT LESS ENGINE	110	
FRONT AXLE GEOMETRY		
CASTOR	15 degrees	
CAMBER	0 degrees	
KING PIN INCLINATION	0 degrees	
TOE-IN	0 inches	
STEERING	Direct - modified Akkermann	
REAR AXLE	36" stress-relieved centerless ground steel	
KING PINS	AN 732 aircraft bolts	
SPINDLES	Caretta Special	
UPHOLSTERY	Fuel resistant, black Naugahyde, foam padded	
FRAME CONSTRUCTION	1 1/4" diameter .083 wall seamless steel.	
OVERALL LENGTH	64"	jig welded (heliarc)
OVERALL WIDTH	38"	
WHEELBASE	45"	
TREAD WIDTH (center-to-center)		
FRONT	32"	
REAR	32"	
WHEELS	Go Power magnesium, 5" diameter all around	
BRAKE SYSTEM	Hurst/Airheart hydraulic disc on rear axle	
OPTIONAL FEATURES	Custom-color (anodized) fuel tanks	
ENGINE MOUNTING	Floating, axle mounted bearing and rubber	
NUMBER PANEL	10" diameter	bushed bolts
STEERING WHEEL	Butterfly	
STEERING WHEEL ATTACHMENT	Keyed and tapered hub, IKF approved	
PEDALS	Caretta. chrome	
AXLE BEARINGS	Sealed ball type	
FUEL TANKS	Saddle type, capacities:	
	right hand - 2 1/4 gallons	
	left hand - 3 gallons	

louder noise in the world than a two-stroke at full song!

Motoring as briskly as my ears would stand back to the pits, Rick and I discovered that the setscrew on the motor mount bearing had let go and the whole mount had slipped sideways on the axle, and was rubbing the wheel and tire. Of course, the exhaust system was just the spokesman for the problem.

Since the setscrew's a major problem to reach, this ended the testing abruptly and rather prematurely. Rick had never had this problem show up before so it was probably just a fluke. When we got back I mentioned to Hank that I felt the need for a helmet rest and he assured me that the production models of the SDE were going to have one at the top of the seat hoop.

The brief taste of the Caretta SDE 1970 was delicious, and if I've got anything to say about it, I'm going to get a sample of the main course sometime. But for now, we'll reluctantly have to leave it at that. The legendary Caretta does not seem wont to shed its fine reputation, and the extremely fine showing at Indy suggests that Hank Paronelli might just build quite a few before he's through. Especially since he is lowering the price of the complete machine. He is making noises like \$600.00 for the whole kart!

But may I make a suggestion in passing? If you order the SDE, buy, borrow, steal, fabricate, or sub-contract (pick one or all) a metal guard that effectively deflects the exhaust noise in case that flex pipe "does the deed" on you. Just ask my ear if two-strokers are loud -- OH! WOW!

The weekend of October 11th and 12th saw the members of the Kart Owners and Drivers Association staging a race at Kerman Kartways, in Kerman, California. This was a very special race in that the Pepsi-Cola Bottling Company of Fresno, California donated the trophies and acted as a sponsor of the whole affair. It seems that this race might just be a harbinger of Pepsi-Cola National becoming interested in the sport of karting. At least we hope so, because there is no better show put on in any type of racing than in karting.

The trophies were very unusual, having a bottle of Pepsi (trying to mimic a giraffe) mounted on a walnut base along with the usual cast and gold-plated kart.

There was also a trophy given for the entrant who came the greatest distance. Larry Piper, the IKF governor of Alabama, packed that one off while in California for a vacation.

Qualifications started late Saturday afternoon with a few entrants running in the cool of the evening. The track records started to fall at that point and before everybody had finished, most of the previously standing records were made a shambles. The previous overall track record was broken by Kyle Adkins, but it was broken again Sunday morning by Bill Dietz, and both were in the Stock Jr. Class! Those big twin-engined machines really have to go some to beat out the kids.

After qualifying came the racing, starting at noon on Sunday. The rookies went out and James Van Tassel really got with the program to take a long lead, leaving Jerry Kutumian and Bill Norris fighting over second. Jeff Nelson and Rick Pollock followed, and the finish was Van Tassel, Kutumian, Norris, Nelson and Pollock.

The first heat for American Reed Jr. was up next and first crack out of the box, there was a big pileup in the first turn. Tony Adkins was right in the middle of it and was run under, over around and through by everybody. Tony was very lucky, though, and only injured his thumb; but it was painful enough that he passed out while in the kart. The race was stopped, and Tony was taken to the hospital for a checkup. It was determined that he had only received a very bad dislocation, but it ended his day of racing pretty effectively.

On the restart, Kyle Adkins took the lead, but was pushed hard by LeRoy Stanton Jr. and David Andreson, Andreson was also being chased hard by Randy Wallace and Rod Van Dusen. Kyle stretched his lead a bit over Stanton, and Stanton, in turn, stretched his lead over Andreson. Andreson still had his hands full trying to keep Wallace and Van Dusen behind him, but finally held them off till the checker fell on Adkins

THE KERMAN PEPSI-COLA SPECIAL



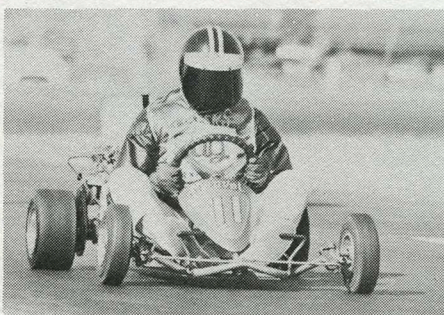
Who didja say sponsored the whole affair?



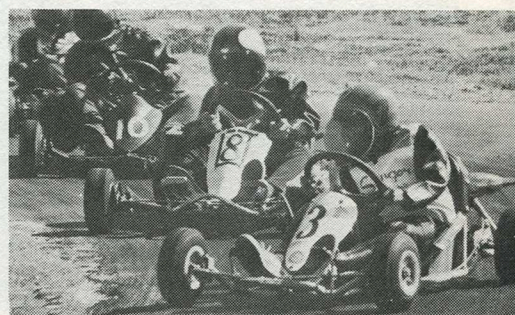
B Limited winner Gary Wisener is pushed by Don McDonald while Gary Emmick leads Open Heavy right behind them.



Kevin English was the fastest man in group no. 2 of American Reed.



Manuel Lopez cruised to the B Open win.

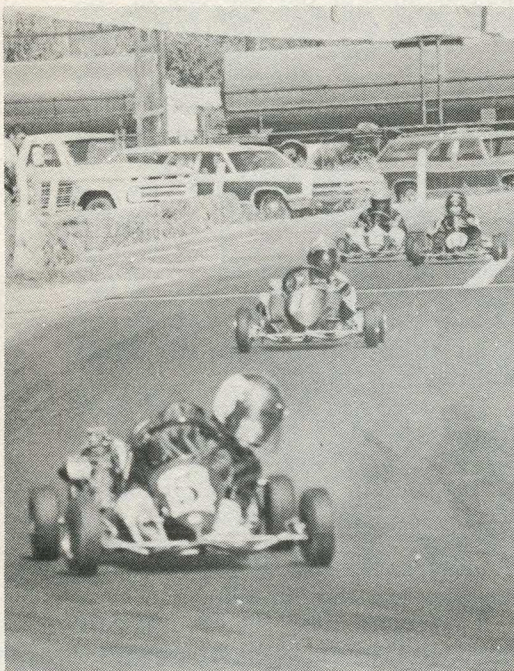


Stk. Jr. action — Kyle Adkins, Ray Lencioni, Greg Cournas and John Stewart.

first, Stanton second, Andreson third, Wallace fourth, and Van Dusen fifth.

American Reed Senior showed up in force and the pack was broken up into two separate races. The first heat for the class was flagged off and Fred Hashimoto took the lead with Ron Quentano

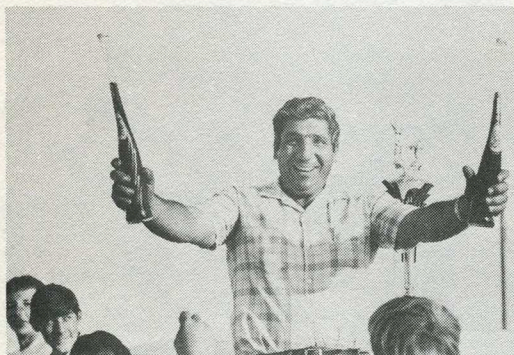
right behind. Turn number two had a big pileup when somebody spun, but everybody just got themselves straightened out and went on. Russell Prickett took over the number two spot behind Hashimoto, while Quentano and Larry Leidig had it out right behind. The



Rookie winner James Vantassel (No. 1) gets set to take Patrick Church, No. 5.



Linda Emmick harries eventual winner Jim Claybrook in Open Lite.



Race Director Jake Kevorkian put on a great show.

finish was Hashimoto, Prickett, Quentano, Leidig and Tony Brunetti beat out Geoffrey Lowe for fifth.

The second section of the Reed Seniors went out and John Kirkpatrick decided that this race was his and took it with him all the way. Meanwhile, Jim

Bettini, Terry McGowan, George Blackstork, and Kevin English really mixed it up over the next few places. Bettini and McGowan got together in turn four. Blackstork and English took advantage of the situation by beating it on into 2nd and 3rd respectively. At the flag, it was Kirkpatrick, Blackstork, barely beating out the hard-charging English, and Robert Sharpe took fourth ahead of Garry Christensen.

Stock Junior was up next and man, what a show they put on! These kids really got with it and even though Kyle Adkins had the lead from start to finish, one mistake on his part would have allowed any one of five others to take it. The members of this hassle included Ray Lencioni in second, Greg Cournas 3rd, John Stewart 4th and Bill Dietz fifth. By the final lap, Adkins and Lencioni had about one second over the next three, but all thirteen entries were on the straight at the same time. I'd call that a really well matched race! The final showed the same lineup as mentioned before.

Stock Lite had their first heat next and Sammie Parker had it all his way, leading all the way with Randy Linn, Jerry Van Dusen, Frank Ormonde and Kevin Stasio following. Frank Ormonde had some bad luck when his chain came adrift, and the checker had Parker first, Linn 2nd, Van Dusen 3rd, Stasio 4th, and Ormonde rejoined the race, taking fifth.

Open Lite went next with Linda Emmick taking an immediate lead, but even though she had stretched out a long lead by the third lap her speedy motivator had lunch on itself and Jim Claybrook took over in the lead. Cliff Hutcher wouldn't let Claybrook have it without a fight, and proceeded to give him quite a go. Chuck Ringle and Jim De Martini trailed quite a ways back. At the finish, everything had remained pretty stable, and Claybrook had managed about a three-second lead.

In the Stock Heavy affair, Steve Johnson took the lead, and was pushed by Charles Williamson Jr. This tussle continued for several laps until Johnson spun, then Williamson grabbed it off and went all the way to the checker. Bill Oldham and Frank Ormonde had a war of their own until Johnson came chargin' back and separated them. The final was Williamson, Oldham, Johnson, Ormonde, and Jim Burckhard in fifth.

A very small turnout in both B-Limited and Open Heavy caused both classes to be run together. In B-Limited, Gary Wisener took home the lead, while in Open Heavy, Gary Emmick ran off and hid with the lead over Chet Vettors Mc 9. However, Gary found himself without any connection between the engine and axle sprockets shortly, and Chet cruised home for the win. Don McDonald followed Wisener in for 2nd

in B-Limited, just ahead of Ron Christian.

B-American Reed showed that it is going to be a very popular class, with eleven entries. Bill Howell and Walt Myers were, for a time, disputing the lead, but Howell got away from Myers, and Myers in turn, had a fair lead over James Caualla and Gregg Buckley. Larry Piper followed a ways back, and that is just the way the first heat finished up.

Things were a bit touchy in turn five during the last laps of the B Amer. Reed class when somebody caught a bale of hay and it broke, spreading itself all over the track. That makes for some mighty slippery cornering.

Manuel Lopez drove to the wire first in the B Open and C Open (combined) race. There was some spirited dueling going on between the C Open of Terry Ives and Mike Lawson's B Open machine, but there just didn't seem to be quite enough track space for Ives to get around.

The second round of heats were lined up in an inverted order of the finish in the first heat. Thus, the winners of the first heat were relegated to the back of the pack in the second heat. After some confusion on the lineup positions, the Rookies set off with Mark Verzi in the lead. Bill Sharpe was really carving his way through the pack, and took the lead away from Verzi on the third lap. Jeff Nelson was really getting with it too and followed Sharpe through to take second one lap later. Sharpe increased his lead over Nelson, and the winner of the first heat, James Van Tassel, clawed his way up to third by the time the flag fell. Coming into fourth was Bill Norris, with Jerry Kutumian fifth.

In the second heat of Amer. Reed Jr., LeRoy Stanton Jr. got out fast and made for the flag. Steve O'Hara, Brad Pritchett and Rod Van Dusen fought it out amongst themselves behind Stanton. O'Hara got away from Pritchett and Van Dusen a bit, but on the last lap these two got together and Van Dusen's kart went straight up in the air, while Rod flew somewhat friendlier skies (at a lower altitude) for a very spectacular cornering attitude. This put both Van Dusen and Pritchett out of it, and Danny Olson took third ahead of Scott Saylor and Kele Adkins. Stanton drove a great race, coming all the way from last row to win.

Amer. Reed Senior (group one) went out and Wayne Wallace took the lead over Harry Dandesian and Al Nunley. Nick Volpi was holding off Larry Leidig. Leidig's challenge was a little late and the checker fell on Wallace, Dandesian, Nunley, Volpi and Leidig - in that order.

Group two of Amer. Reed Sr. blasted off and Kevin English beat it right to the front and opened up a huge lead.

Frank Bonfidio and James Gardner had a real battle over second, and James Kirkpatrick (who had come from the back row) was running fourth. Gardner spun in the heat of the fray, giving Kirkpatrick third, while he came in fourth ahead of Garry Christensen.

Stock Jr. had their second heat next, and Bill Armanino took the lead, with Steve O'Hara coming up fast. Greg Cournas came up a bit faster than O'Hara, and grabbed off second. John Stewart followed Cournas' example and ducked under O'Hara. Again, there was some fantastic racing going on, and you could have thrown the proverbial "blanket" over all of these fellows at once. The checker got Armanino first, but he was later disqualified for taking a little shortcut while trying to stay ahead of Cournas, and all four wheels of his kart left the track surface. So the official results were Cournas 1st, Stewart 2nd, O'Hara 3rd, and Bobby Pruett 4th.

Stock Lite had only four entries make the grid in the second heat, but

they were probably the best matched racing of the whole weekend. Frank Ormonde had the lead for a bit, then Sammie Parker took it for a while. But Jerry Van Dusen overhauled the whole bunch and took it for good. Parker stayed in there for second ahead of Ormonde, and Randy Linn took fourth.

In Open Lite, Chuck Ringler took the lead with Jim Claybrook right behind, and Jerry Rose chasing the leaders. The three leaders were really going at it when they all overcooked it on the straight, and all three took a ride into the boonies. Linda Emmick was struggling with an engine that was a little down on power, but when the leaders all were so nice to make way for a lady, it just wouldn't be nice not to oblige them, so Linda set out for the flag in the lead. When the flag did fall, Linda still had a big lead, and Jim De Martini took second ahead of Jerry Rose and Chuck Ringler. Mark Guzzard sacked away fifth.

On the start of the Stock Heavy affair, Steve Johnson got a front wheel

hooked up into the rear end of Jim Burckhard's machine, which completely shed Burckhard of his muffler. But two laps later, Steve's machine caught the chain-throwing fever that seemed to be going around, and while he was battling Dan Freitas for the lead to boot! Bill Oldham and Frank Ormonde fought it out for second, but Oldham had his eye on the lead and stole it away from Freitas on the fourth lap. When the checker fell, Ormonde had gotten around Freitas as well, and Charles Grant took fourth ahead of Charles Williamson, Jr. in fifth.

The combined B-Limited and Open Heavy race was a carbon copy of the first heat, with Gary Wisener 1st, Don McDonald 2nd, Ron Cristtan 3rd. Open Heavy was also the same with one exception. Gary Emmick had managed to convince his chain to stay on for the duration, and won this heat.

B American Reed set off, and Neal Jones took the lead. Frank Ormonde subbed for Walt Myers in this heat and sat squarely in second, waiting for Jones



Stk. Lite was a hotly contested affair, winner Sammie Parker holds off Randy Linn.



B Am. Reed showed up in force - No. 1, Walt Myers, won it.



Am. Reed Jr. winner LeRoy Stanton, Jr. leads Steve O'Hara, Brad Pritchett and Danny Olson.



Stk. Heavy winner Bill Oldham just ahead of Dan Freitas, Frank Ormonde.

to goof. On the last lap, Frank got tired of waiting and made his move. There was this drag race for the finish line, but Jones beat Ormonde out for the win. Third went to Delbert Turnmire, fourth to Gregg Buckley, and fifth to James Caualla.

B Open/C Open saw Manuel Lopez and Mike Lawson connecting smartly and spinning in the first turn. Meanwhile Terry Ives' C Open got away from the them and really went on to tear up the track. Lawson and Lopez kept going, but Lopez' tie rods were a bit bent up and he had quite a time herding the thing through the corners.

The final round of heats went off with the Rookies first, as usual, and this time the lineups were not inverted, but were positioned in accordance with the number of points that each entrant had earned in the two first heats. James Van

Tassel took the win with Jeff Nelson right behind. Third was Bill Sharpe, fourth, Bill Norris, and fifth was Jerry Kutumian.

Kyle Adkins and LeRoy Stanton, Jr. were on the front row and promised some fine racing in the last Amer. Reed Junior heat. Kyle got into the corner first with Stanton right behind. Steve O'Hara sat right on Stanton's tailpipe, and Art Prickett was right behind when his chain lost its way. The finish was Adkins, Stanton, Danny Olson, who jumped into third, with Randy Wallace fourth and Scott Saylor fifth.

The final heat of group one of Amer. Reed Sr. had Harry Dandesian and Wayne Wallace spinning in the first turn. Wayne was out for good, but Dandesian chugged on, out of contention. Fred Hashimoto had the lead, but was having trouble with his helmet visor coming off, and Larry Leidig seized the opportunity to grab the lead. The final had Leidig first, Hashimoto second, Geoffrey Lowe third, Al Nunley fourth, and Ron Quentano fifth.

Group two of the Amer. Reed Srs. had James Kirkpatrick assuming the lead, but spun, giving Kevin English the lead. The fleet English was not about to lose his lead at this point and went all the way to the checker. Frank Bonfidio beat out George Blackstork for second and Kirkpatrick worked himself back up into fourth ahead of Larry Viani.

Stock Jr. did their final next, and Kyle Adkins took the lead, never to be headed. This is not to say that it was easy, because Greg Cournas was right on top of him all the way. John Stewart took third behind Cournas, and Ray Lencioni took fourth ahead of Bill Dietz.

Sammie Parker took the lead in Stock Lite, with Jerry Van Dusen and Frank Ormonde right behind. The finish was exactly the same order and Kevin Stasio took fourth.

Claybrook with the... finish line, Linda... brook, but Jim's... the line first for the win... took third, Jerry Rose stuck it... fourth ahead of Chuck Ringler.

In Stock Heavy, Bill Oldham was able to stave off a determined bid by Steve Johnson, and Frank Ormonde grabbed third. Dan Freitas and Charles Williamson, Jr. had a real battle over fourth, but Freitas held on and Williamson got fifth.

In B-Limited/Open Heavy, Gary Wisener did his thing again, ahead of Don McDonald. Ron Christtan had problems and had to quit. Gary Emmick was again way out in the lead over Chet Vettters, but Chet motored right on by a bit later, when Gary's chain didn't.

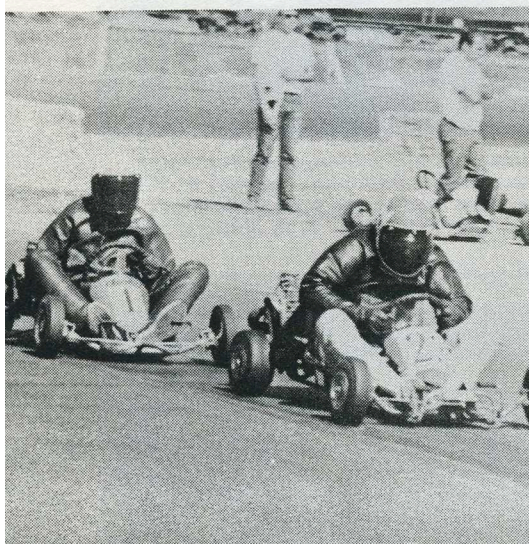
B American Reed had Walt Myers out front with a relatively easy win, and James Caualla second. Neal Jones pushed Caualla hard, but couldn't seem to get by. Fourth was Alabama's Larry Piper, ahead of Gregg Buckley and Bill Howell - all in a pack.

The final race of the day was the B Open/C Open thing, and Manuel Lopez took an early lead over Mike Lawson. Terry Ives got past Lawson and set out after Lopez. Lopez finally gave up the overall lead to Ives, and the checker fell on them in that order.

The trophies were unpacked and the participants thought the unusual Pepsi bottles were all right. Race director Jake Kevorkian got set to hand out trophies, and since there were some light showings in some classes, awarded the trophies down farther than the usual fifth places in some classes. Everybody went home happy from a fine raceday and we hope that we will be seeing more of the Pepsi-Cola name in karting in the future.



Manuel Lopez's granddaughter checks out her toy kart and the trophy situation.



George Blackstork works hard to hold off Am. Reed 2 winner Kevin English.

RESULTS

Kerman Pepsi-Cola Sprints

- ROOKIE**
1. James VanTassel,
 2. Jeff Nelson,
 3. Billy Sharpe
 4. Jerry Kutumian
 5. Bill Norris

- AMERICAN REED JR.**
1. LeRoy Stanton, Jr.
 2. Kyle Adkins
 3. Danny Olson
 4. Steve O'Hara
 5. Randy Wallace

- AMERICAN REED SR. (1)**
1. Fred Hashimoto
 2. Larry Leidig
 3. Al Nunley
 4. Wayne E. Wallace
 5. Ronald Quentano

AMERICAN REED SR. (2)

1. Kevin English
2. John Kirkpatrick
3. Frank Bonfidio
4. George Blackstork
5. Garry Christensen

STOCK JUNIOR

1. Greg Cournas
2. Kyle Adkins
3. John Stewart
4. Ray Lencioni
5. Bobby Pruett

STOCK LITE

1. Sammie Parker
2. Jerry VanDusen
3. Randy Linn
4. Frank Ormonde
5. Kevin Stasio

OPEN LITE

1. Jim Claybrook
2. Linda Emmick
3. Jim De Martini
4. Chuck Ringler
5. Cliff Hatcher

STOCK HEAVY

1. Bill Oldham
2. Frank Ormonde
3. Charles Williamson, Jr.
4. Steve Johnson
5. Dan Freitas

OPEN HEAVY

1. Chet Vettters
2. Gary Emmick

B LIMITED

1. Gary Wisener
2. Don McDonald
3. Ron Christtan

B AMERICAN REED

1. Walt Meyers
2. Neal Jones
3. James Caualla
4. Bill Howell
5. Gregg Buckley

B OPEN

1. Manuel Lopez
2. Mike Lawson

C OPEN

1. Terry Ives

first...LS was... F/5 drivers... travel extensively, their cars in smaller... closer to home. But the... that came to Blackhawk (near Rockford, Illinois) put on an interesting "show" and a MK photographer was on hand to cover the action.

Except for a driver-blinding late afternoon sun, the weather was perfect for racing. The relatively new Blackhawk Farms track is a good one for F/5 competition...not too tight, not too open, lap length 1.8 miles. "FORMULA FIVE CARS, WELCOME" appeared on the printed program prepared by Race Director, Bob Yeager. His Chicagoland club knows how to put on a first class race meet!

Each F/5 driver drew a number to determine his starting position, and Phil Reed got No. 56 in the front row again, just as he did in the Wisconsin race four weeks earlier (see MK's October issue). Dave Jacobs' gorgeous No. 26 was on the pole, with eventual winner, Joe Romans in row two. Dick Balestrieri showed up with a brand new home-built

"five", scarcely finished and not as slick as it will be after he spends more time in his workshop. Nevertheless, the cars looked just great formed up on the track in staggered rows of two, and they also performed very well....like "pretty is as pretty does".

1:34 may not sound impressive, but considering the configuration of the Blackhawk track, plus an unusually tight scoring chute, that's cranking....and Phil Reed is the F/5 driver who turned it. When the race was 20 minutes old, he had built up a 23 second lead over Joe Romans in car No. 40. Then a plug change cost Phil a lap in the pits, Joe looped it and kept going (ala Jim Clark at Indy) and Phil couldn't make up the lost distance. Joe isn't an easy guy to catch anyway. He drives well, and his B-bomb GOES! Don Dipert, with a stronger engine than he used in previous F/5 races, held on to third from start to finish. All but one of the "fives" entered had suspended chassis, and they handled beautifully!

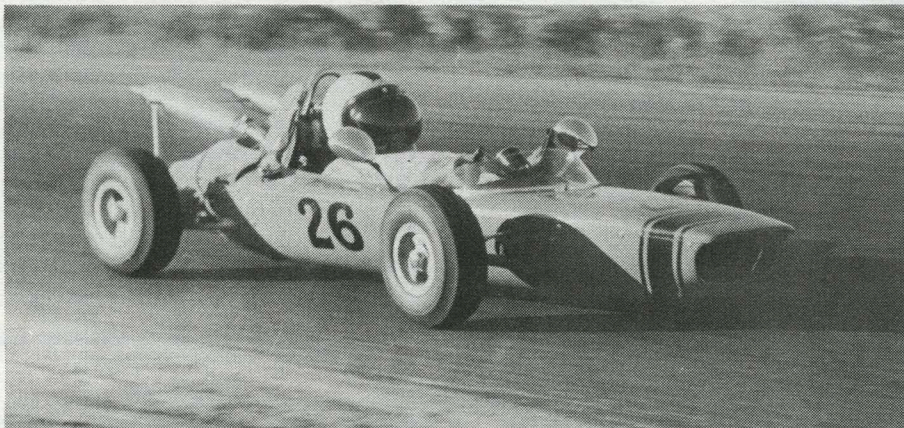
From other MK issues, you probably know that F/5 cars are small Grand Prix type racing machines with bunches of eye appeal....and that the F/5

organization is most cooperative, anxious to help new enthusiasts in any feasible way, etc. What you may not know is that the marvelous looking little body shells (available in finished form, if you wish) are an aerodynamic advantage relative to performance. On a long main straight, such a body is "worth" up to 20 mph extra at the top end! FORMULA FIVE CARS pierce the "wind" almost like needles, the result being tantamount to additional engine power! F/5 cars are plenty groovy to see and/or drive, and they're exceptionally safe too, but "they ain't tame, Charlie"!

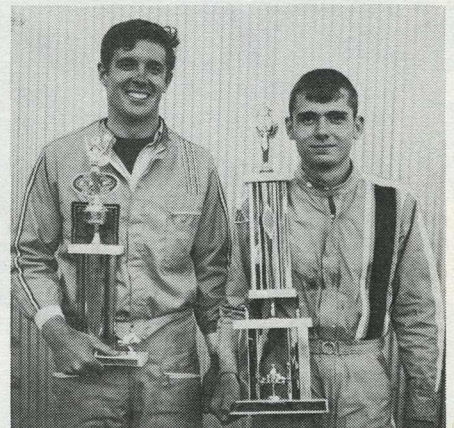
If you're interested, take a squint at the F/5 News Column in this issue and contact FORMULA FIVE HEADQUARTERS in Evansville, Indiana. Then make it a point to pick up the next issue of MK which will feature the very first FORMULA FIVE NATIONALS!

R E S U L T S - (the first five "fives"): (1) Joe Romans, Indianapolis, Indiana (2) Phil Reed, Racine, Wisconsin (3) Don Dipert, Walkerton, Indiana (4) Dick Balestrieri, Brookfield, Wisconsin (5) Joe Pohlhammer, West Allis, Wisconsin.

F/5 GRAND PRIX de BLACKHAWK



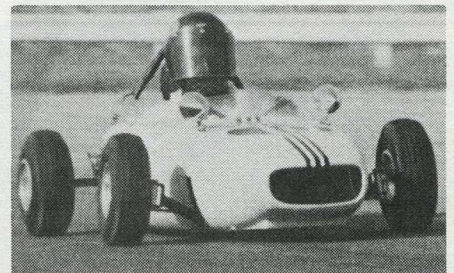
This superb looking F/5 MONTE CARLO CLASS CAR (owned by Dave Jacobs) was built by Charles Brooks. Its Yamaha powered on a fully suspended chassis. None of the "big" 360cc Formula Five "Conti" class cars showed up for the Blackhawk competition but several are under construction, soon to be track ready. They'll look very much like Dave's car No. 26 but mount larger wheel/tire diameters.



Happy drivers, runnerup Phil Reed (left) and winner, Joe Romans, holding the F/5 trophies they won at Blackhawk. Next race: the FORMULA FIVE NATIONALS!



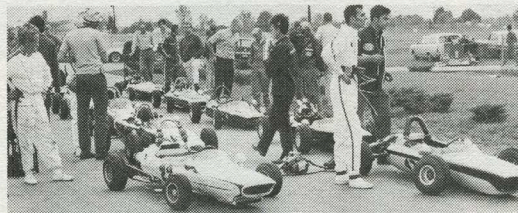
Under a late afternoon sun on a beautifully clear day in northern Illinois, Central States point leader, Phil Reed (car No. 56) leads his group of "fives" into action (in quest of more points) at Blackhawk Farms.



Nearly all F/5 cars have suspension, but this particular AMERICANA CLASS CUT-LASS is one of the few rapid little "fives" currently competing without benefit of a suspended chassis.



FORMULA FIVE NATIONALS



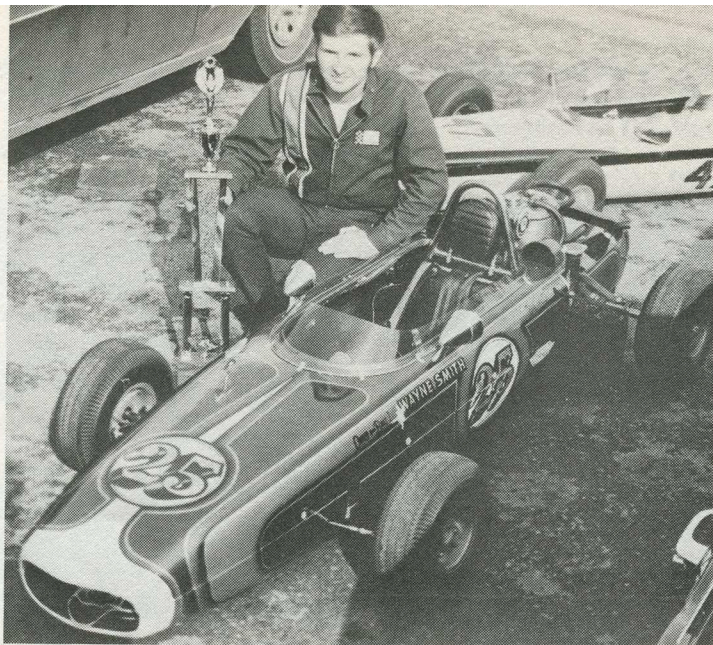
1969 is the first year for Formula Five racing and the F/5 Nationals, staged October 11 - 12 at Indianapolis Raceway Park, was the tenth (and most important) event in which points were awarded toward National Driver Rankings, scored coast to coast, from Virginia to California. In one way, the I.R.P. show was "you ain't seen nothin' yet" racing because next year, three Formula Five Championship Circuits will culminate in a 1970 Grand Nationals...and then there'll be many more cars in the competition. Fact is, lots of them have entered the construction stage during recent weeks, to be completed this winter and ready for quick laps by early Spring. Most enthusiasts order a finished body shell from F/5 and proceed to fabricate their own chassis.

A true "Nationals" it was at Indianapolis, even to the big sign atop the Ford Tower. Entries came from only seven different states, but California and

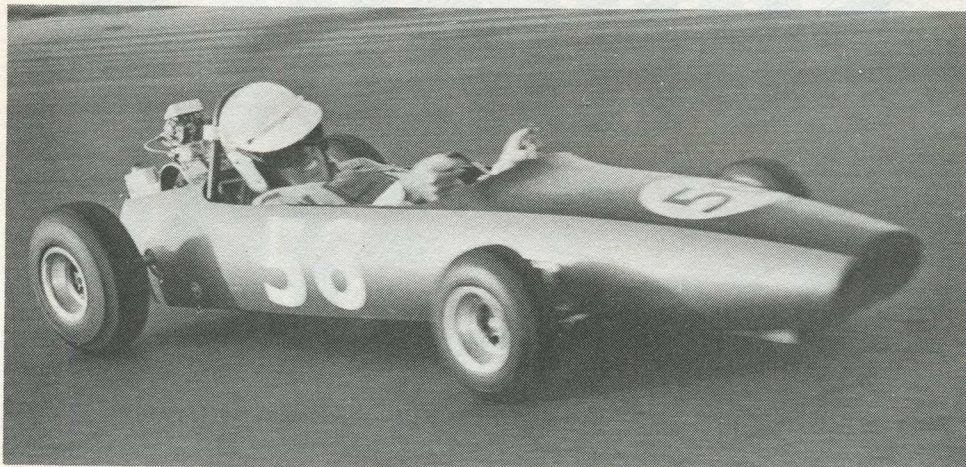
North Carolina were represented so the atmosphere was definitely "National" in flavor as drivers met each other for the first time, augmenting the excitement created by the magnetic eye appeal of the super-slick compatible little F/5 cars which, incidentally, were surprisingly well matched in performance as well. Nobody ran off and hid from other well prepared challengers, and the finish of the final event could hardly have been any closer! It was something to see!

Charlie Hays, who lives north of San Francisco, took ten days off to make the 5,000 mile round trip. He's a great little guy as is Harvey Packard, from Bay City, Michigan. These two fine drivers were the F/5 point leaders prior to the Nationals with Charlie leading Harvey by a very slim margin. With preferred grid positions for the first race, it was especially interesting to see cars No. 22 and No. 23 on the front row, side by side, neither driver knowing what to expect from the other.

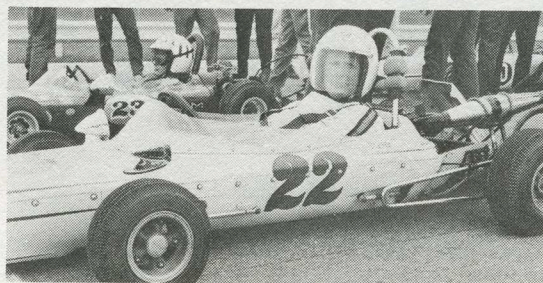
Wayne Smith's beautiful No. 25 car is running stronger now. . . enough so to get Wayne his 4th place National trophy.



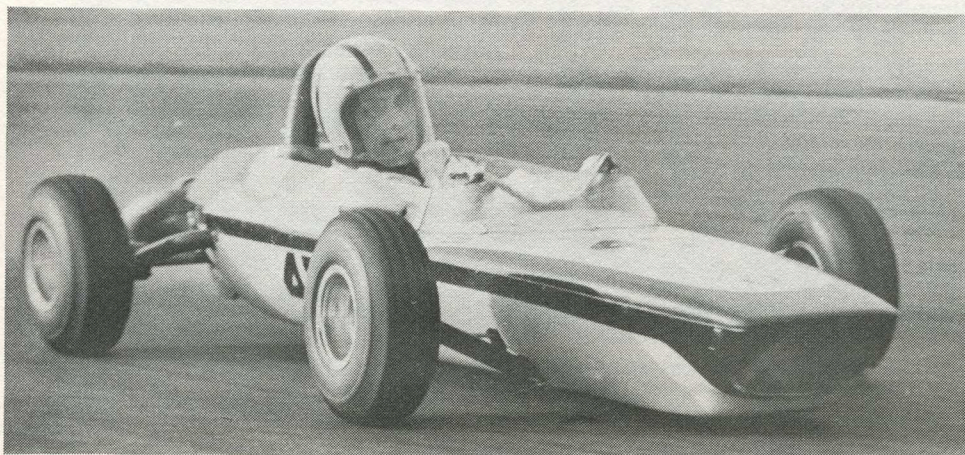
In Sunday's last run for the national gold, 6'-3" Phil Reed tiggered for all he was worth, only to lose the important race by four feet, netting him the 2nd place trophy.



Charlie Hays came all the way from California to participate in the very first Formula Five Nationals. His No.22 car was quickest of all, too, but rotten luck reduced Charlie to a 5th place finish.



Bobby Nelson made the long tow from North Carolina with his F/5 Broadsword car.

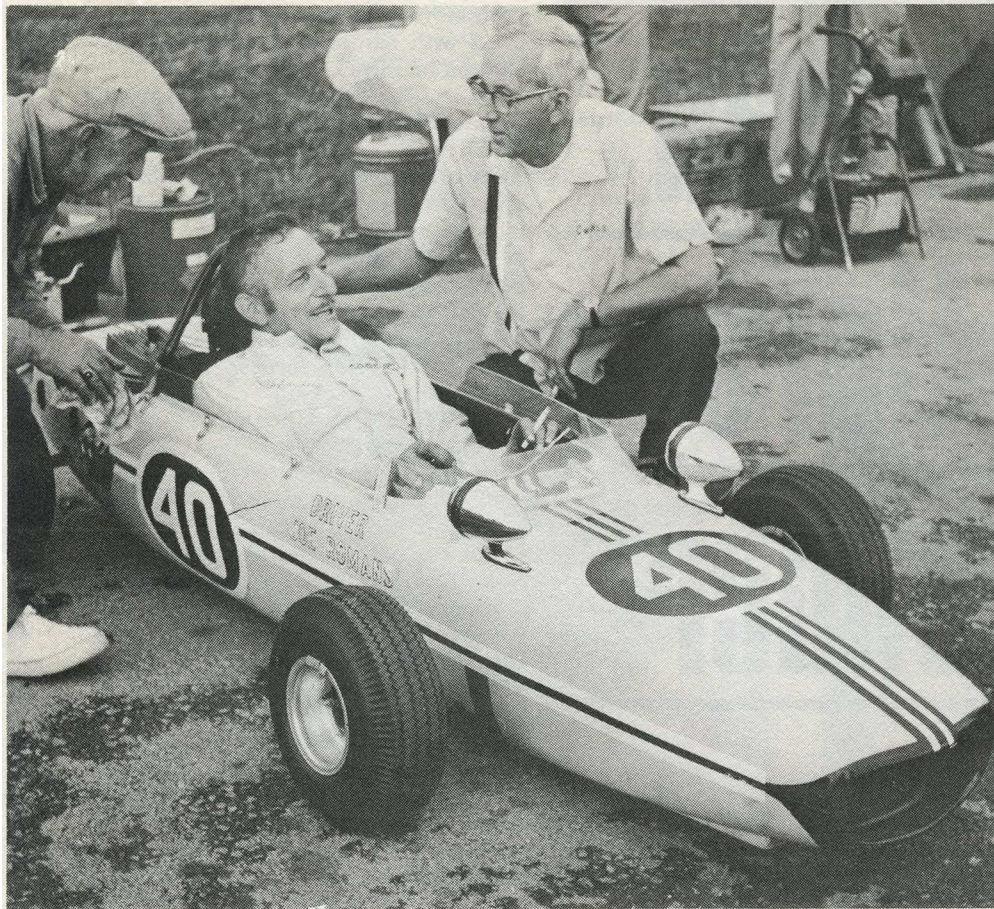


Bobby Nelson towed his No. 47 car from Winston-Salem, North Carolina. He's a superb driver and extremely well liked, but "there ain't no way" a fellow can be any more likable than Phil Reed who hails from Racine, Wisconsin, and drives No. 56...and he is a driver too! Another strong entry was Wayne Smith of Cleveland, Ohio, who has recently switched to a water cooled powerplant. Lots of people have admired Wayne's richly decorated No. 25 car (which adorned MK's April cover) but his on-track performance surprised more than a few. Uncle Sam (inconsiderate soul, on occasion) nabbed Joe Romans exactly two days before the F/5 Nationals so veteran driver Bill Sanders, who lives in Indianapolis, took over for Joe in car No. 40.

Some thought that one engine type would prevail but not so, really. It was apparent early that the competition would be primarily between the six cars and drivers already mentioned. No. 23 and No. 47 are Mac powered, No. 56 mounts an 820, a "personally" water cooled Komet makes No. 25 go, while "good" B-Bombs are in No. 22 and No. 40. Their lap times were pretty similar which was rather gratifying, showing that engine quality is more important than engine type. Yes, there were a couple of cars which simply couldn't compete favorably with the front runners but the rest were "in the races" and certainly not humiliated...and the action included several intriguing dices.

From his second row grid slot, Bill Sanders stacked up the most points in Saturday's competition, with Phil Reed not far off the pace. But most of the fascinated onlookers watched the battle for third between Bobby Nelson and Wayne Smith. These guys swapped positions more than 20 times in 30 minutes with Bobby finally prevailing. When the first green flag of the meet was waved by Ed Fry, Charlie Hays beat everyone into the first turn. He had stuck his engine in practice because of a fatigue fracture in his fuel system, which occurred during the long highway journey from the Pacific Coast. Alas, he "grabbed it" again during the competition but worked like fury 'til well past midnight to get the damage repaired for Sunday.

The weather was touch and go, wet a good share of the time, and generally threatening. Fortunately, the races were run on a dry track...yet the rain took its toll in other ways. For example, Harvey Packard blew two engines on Saturday but had a well modified 101 back in his car by 10:00 p.m. and was feeling confident about his chances. It rained most of the night and until past noon Sunday so whadaya spouse Harvey did? Yep, he gave it up as wash out and headed for home. A few others did likewise, but Harvey had precious F/5 points to protect...and when the final



The winning car and crew. . . Bill Sanders in cockpit, owner Charlie Romans at right.

Formula Five race went off the grid in the middle of the afternoon, it went without car No. 23, Regrettably! Thereafter, F/5's Driver Standings tallies left Charlie Hays on top with 62 points, Romans/Sanders with 56, Phil Reed had 52, and poor Harvey dropped to fourth with 43 points.

The most gloriously crafted car in the whole show belonged to Barry Basse... full house F/1 suspension, all slick and chromed fit for a solacy! Its a blast just to walk up to car No. 35 and push down...to watch the wondrous suspension work! A bunch of time and energy went into the car, its lone detraction being a lacking windscreen...only because it was damaged in transit...but it was a distinct treat to see Barry's beautiful F/5 Broadsword "in the flesh". All of the cars entered had suspended chassis except one, and that one suffered noticeably in the handling department, even though it was very capably driven.

So here comes the Sunday run for the gold, grid slots based on Saturday's results. Charlie Hays went cautiously for awhile. Bill Sanders took an early lead but couldn't shake Phil Reed 'cause Phil had made some effective changes the night before and he was ready. Bobby Nelson moved well at first, slowed perceptibly, made a costly pit stop, and got passed by Wayne Smith. Then, while Phil continued to press for the lead,

Charlie got on it all the way and made No. 22 fly, gaining a fat 4 seconds per lap on the leader while No. 40 was cranking on laps just a shade off the two minute mark!

There's no doubt whatever that Charlie Hays can turn I.R.P.'s 2.5 mile road course in 1:54 or 1:55 but before he gained enough ground to get in front, his chain called it quits...after all his other troubles had been corrected. Ain't that a kick in the head when you're 2500 miles from home! Bobby Nelson's luck was better, but not by much. He broke a crank late, after driving a very "smart" race, managing a fourth Sunday and third overall.

But the excitement was up front on Sunday...like was it ever! Phil kept No. 40 in his sights and charged like there was no tomorrow until on the very last lap he took the lead...but he also took a normal line through the last turn, not knowing exactly where No. 40 was, and got passed just before reaching the finish line. Phil lost a first place national trophy by a mere four feet but he lost to an expert driver in a strong machine. The victorious Bill Sanders is deserving of hardy congratulations for keeping the national title "at home" (in Indianapolis). What a breath-taking finish it was! Wow! Fifteen turns a lap for half an hour and the margin of victory was scarcely more than a half a car length! It was a fitting climax to a fascinating

show, put on by good drivers in handsome little formula cars...**FORMULA FIVE CARS!**

The F/5 Nationals shook up driver rankings considerably. The Romans/Sanders tandem moved from 7th to 2nd; Phil Reed advanced a notch to 3rd; Pat Petersen dropped from 3rd to 6th; Harvey Packard went from 2nd to 4th; Bobby Nelson made it all the way up to 5th; Joe Pohlhammer climbed from 10th to 7th; Wayne Smith moved up to 9th; Bruce Sutton plummeted from 5th down to 12th; Don Dipert held on to 8th, etc.... and there are a few new names in the top 20 too. Take a look at the current driver standings published in conjunction with this article.

Beyond the much appreciated efforts of certain F/5 directors and others who were instrumental in staging the **FORMULA FIVE NATIONALS**, particular thanks should go to: Ed Fry, Bud Coffee, Paul Stainbrook, Ed Hickey, and Ron Muench...and Formula Five has already thanked MK for its coverage of the event. Our pleasure! Interest in F/5 is developing at an ever increasing rate so, if you'd like additional information regarding this highly appealing new formula, refer to the Formula Five News Column in this issue and contact F/5's Indiana Headquarters.

F/5 NATIONALS - RESULTS:

1. Bill Sanders, Indiana
2. Phil Reed, Wisconsin
3. Bobby Nelson, North Carolina
4. Wayne Smith, Ohio
5. Charlie Hays, California
6. Joe Pohlhammer, Wisconsin
7. Don Dipert, Indiana
8. Harvey Packard, Michigan
9. Tom Johnson, Wisconsin
10. Ed Hickey, Jr., Indiana

NATIONAL FORMULA FIVE DRIVER RANKINGS - 10/15/69

(After the tenth point race, the F/5 Nationals)

1. Charlie Hays, California
2. Romans/Sanders, Indiana
3. Phil Reed, Wisconsin
4. Harvey Packard, Michigan
5. Bobby Nelson, North Carolina
6. Pat Petersen, California
7. Joe Pohlhammer, Wisconsin
8. Don Dipert, Indiana
9. Wayne Smith, Ohio
10. Saravia/Martinelli, California
11. Tom Hutson, California
12. Bruce Sutton, Michigan
13. Tom Johnson, Wisconsin
14. Bill Zarevich, California
15. Mike Meldeau, Florida
16. Johnny Jacumin, North Carolina
17. Ed Hickey, Jr., Indiana
18. Jim Johnson, Wisconsin
19. Dick Balestrieri, Wisconsin
20. Dave Jacobs, Illinois

"Jim Akkerman Bends 24 Horses Out of a Bender"

Article by Jim Akkerman
Photos by Charles H. Eldrige

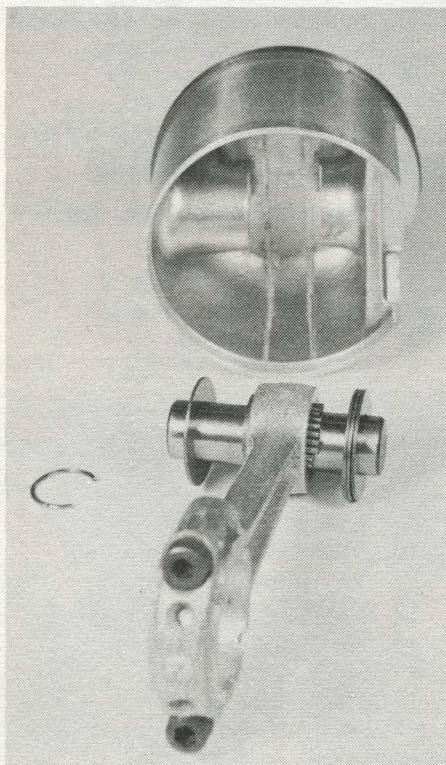


Fig. 1 — Piston and rod ready for assembly. The bearing arrangement will run many hours.

Chrysler's version of the old West Bend 820 can be made competitive in the B Limited class. A saving in cost and kart weight can be achieved if you are willing to take the time to make the necessary modifications.

The parts you will need are: the 820 engine, a dual top manifold (GEM V12), a flat side piston (Wiseco), a pair of alcohol carbs (Crescent), a "beefed up" cylinder head (Horstman), a piece of 4130 hot rolled heat treated steel 3/8" X 3" X 12", and a piece of 4130 hot rolled heat treated steel bar 3/8" diameter and 24" long. Also, you will need a piece of aluminum plate 1/4" X 3" X 6", some 1/2" OD X 1/4" ID fuel hose (tygon), about 8 oz. of epoxy (Hysol), a Kaydon Wristpin bearing Part No. KNO81110, four Torrington thrust washers, Part No. TRA815, two Circlips and finally, two Allen brand cap screws No. 10-32 X 5/8.

The first step is to set up the rod and piston assembly so that it can be used to lay out the port heights in the cylinder. The bearing which comes stock in this rod will ordinarily fail in about 20 minutes when used in a modified engine. The problem is with the shoulders that hold the needles. They will crack off, go through the engine and generally make a mess. An arrangement similar to that used in the foreign engines works much better. The Kaydon bearing has rounded-end-type needles that are similar to the foreign engines.

By removing the shoulders and replacing them with hardened washers, the problem can be solved.

Remove the bearing from the rod and replace it with the alternate Kaydon bearing. With the needles removed, grind off the needle retaining shoulders. The Torrington thrust washers will retain the needles and center the top end of the rod. Continue to grind away the bearing race until it is 1/16" longer than the thickness of the piston end of the rod. Grind the race as square as possible and try to avoid overheating the unit. Check the "stack-up" of parts by placing the rod and the three washers in the piston to verify that there is about 0.010" or less side clearance. About 0.003 clearance is desirable. When the spacing is right, replace the spherical ended needles and install the wristpin. Note that the 820 wristpin must be shortened for the flat side piston, or a WB 610 wristpin can be substituted. With the bearing race flush with one side of the rod, three washers and the "flush" side of the bearing should be toward the flat side of the piston in order to center the rod under the piston. See Figure 1. The reason for putting the "flush" side of the bearing race toward the flat side of the piston is not really understood. It seems that the rod always moves to that position anyway. The only way to keep it from moving out of place (away from the center of the piston) is to put the three washers on the "flat" side and let the rod ride against them. With the pin in place, install the Circlips. Now the piston and rod assembly is ready for racing without the worry of losing the wristpin bearing.

Next, we can reinstall the piston and rod assembly without the piston rings and mark the port height. The chrome cylinder is too hard to scratch, so layout fluid is required. Using a degree wheel, locate the crank at 94 degrees after top-dead-center. With the edge of the piston as a guide, scribe a line on the cylinder in the area over the exhaust ports. Reposition the crank 19 additional degrees from top-dead-center and again scribe a line to indicate proper height for the transfer ports. Again, reposition the crank four additional degrees and scribe a line in the area opposite the exhaust ports. This will be the top of the future "eight" port arrangement. Finally, put the crank in the bottom-dead-center position and mark the bottom of the exhaust ports.

The desired port shape is shown in figure 2. This particular shape is traced from the best running engine we have. Other engines with slight differences simply will not run as well. We have tried "squarer" ports but they require more blowdown for smooth running and they result in "higher end" type engine. Engines with "rounder" transfer

passages seem to run well on low end, but lack the high speed and capability required for enduro karting on fast tracks. The particular port profile shown is a fairly carefully optimized shape and works well with the other features of the engine. It also gives minimum problem with chipping the chrome.

With the ports properly marked, we can begin to cut. At this point, we must

be careful about the "direction" of the port as well as its opening profile. The exhaust is a simple straight out arrangement. The transfer ports must be directed to promote proper "looping" of the fuel-air mixture at high speed—an absolute must for smooth powerful running. To do this, the ports nearest the exhaust must aim as flat across the piston as possible and toward the back of the cylinder, away from the exhaust

ports. The ports farthest from the exhaust should aim high in the cylinder. To accomplish this, the block should be cut as shown in figure 3. Remember, we must maintain the proper port shape while we provide proper port direction.

The next step is to insert pieces of fuel hose through the port passages to act as molds to shape epoxy while it cures. This is shown in figure 4. Figure 5 shows the fuel hose in place prior to

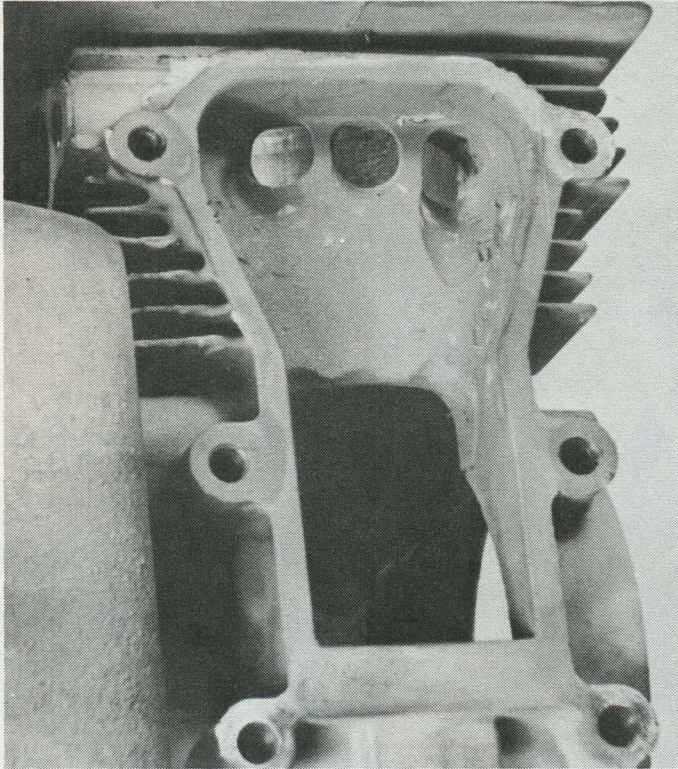


Fig. 3 — Transfer port cuts. Note that the port farthest from the exhaust is aimed highest.

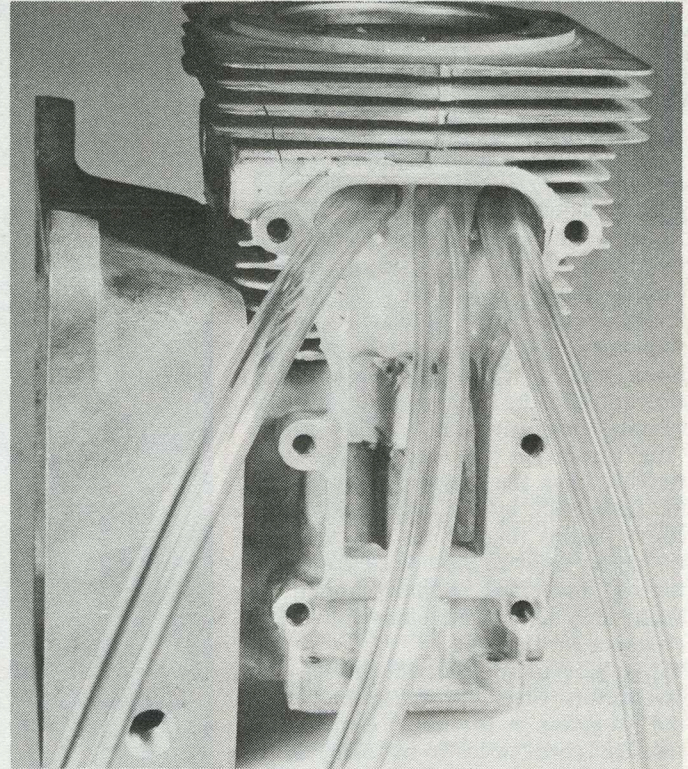
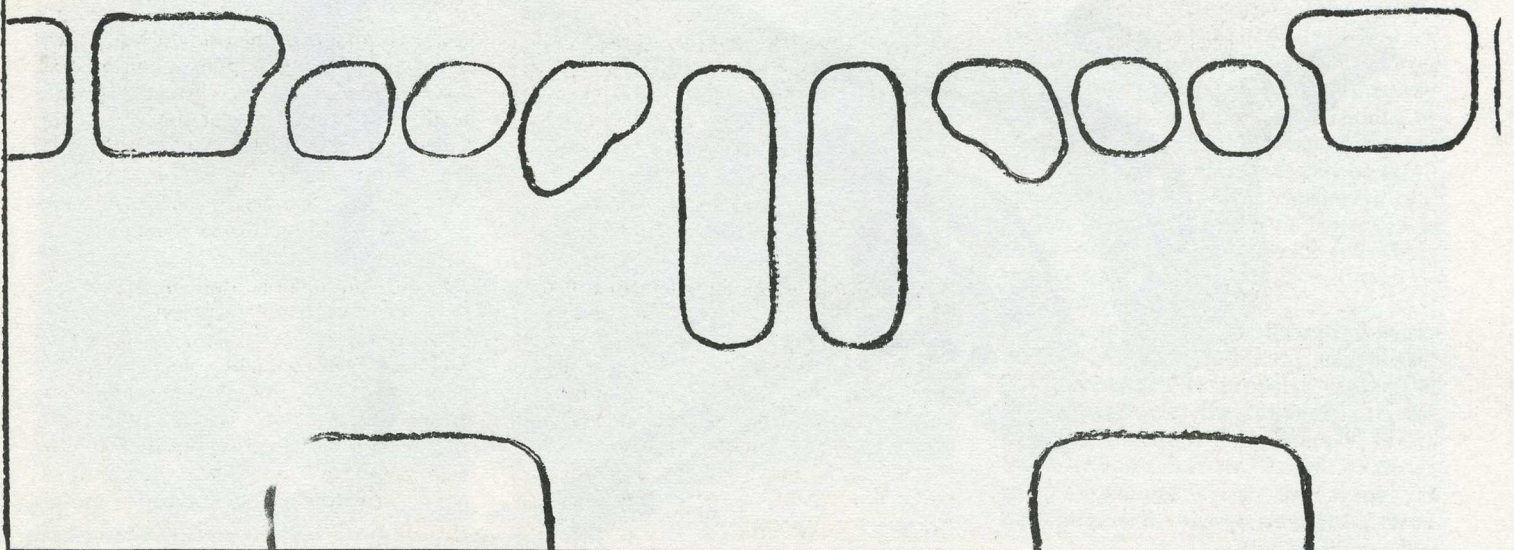


Fig. 4 — Use flexible plastic fuel hose for a mold. 1/2" OD x 1/4" ID fuel line works fine.

Fig. 2 — Desired port shape. This port shape seems to be a good compromise to give an engine with the best speed range. Ports made squarer than this require more blowdown for smooth running and tend to be very "peaky".



pouring the epoxy in. Note the directional arrangement of the hoses, and the roughening of the block to promote bonding of the epoxy. Also, note in figure 3 that the cylinder skirt is cut 5/8" higher than stock and rounded off to promote flow past the cylinder skirt and the crank. This is important because the passage is fairly narrow in this area. Some forcing is required to place the fuel hose through this area. Notice that the "gasket seal" ribs are removed also.

Before the epoxy is cast, a flat back plate must be prepared. This will be used as a cover to hold the epoxy while it cures, and later as a cover for the side of the engine. With the hoses properly installed, place the epoxy around the hoses. Warming the block to about 125 degrees F. will make the epoxy flow and give a smooth transfer passage. About 30 grams of epoxy can be placed over the hoses in the top portion of the transfer tunnel. The cover must then be installed, the block inverted, and an additional 30 grams poured into the lower part of the transfer tunnel. Be sure to push the hoses well up into the cylinder from the bottom, and a gentle "tug" from the top end on the hose farthest from the exhaust will promote its flow high in the cylinder. As the epoxy begins to cure, be sure to push the epoxy aside to provide clearance for the rod and crank. A small amount of epoxy may have to be removed to allow clearance for the rod.

It is best to do the side having the carburetors first, but remember, only the 30 grams in the upper part of the transfer tunnel needs to be filled, allowing a flow passage from the carbs to the underneath side of the piston. The intake manifold must be flattened off to fit against the epoxy. The finished epoxy job locks as shown in figure 6. Removal of the hoses is easier if some light oil is applied while pulling on the hoses from first one direction, then the other.

The "8" port is shown in figure 7. The

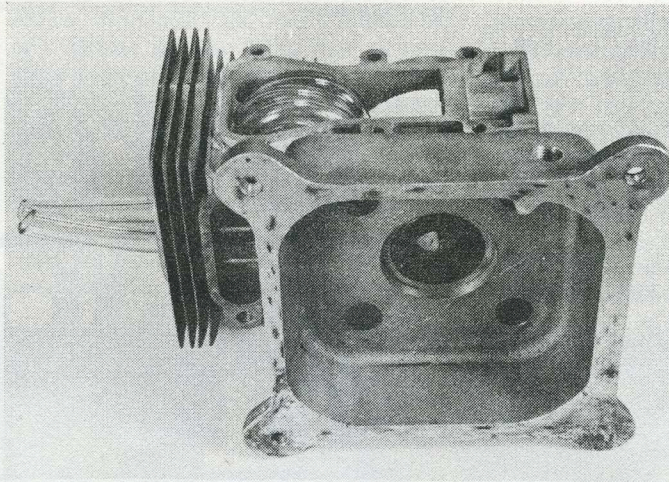


Fig. 5 — Fuel hose in place and ready for epoxy to be cast.

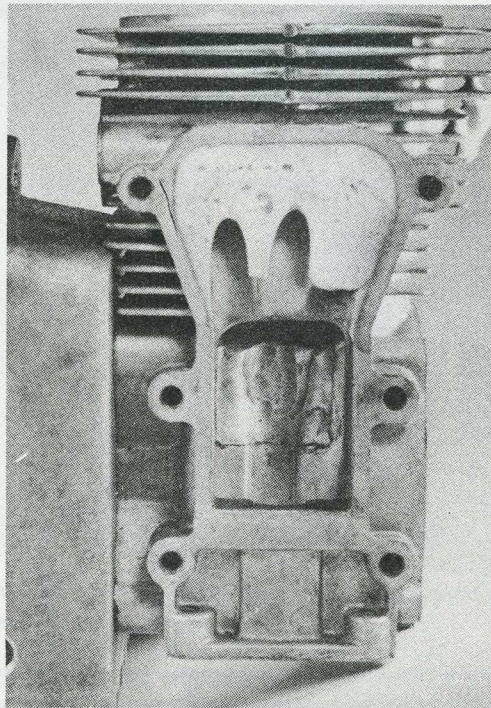


Fig. 6 — The finished epoxy work. Note that clearance must be provided for the rod in the back portion.

Fig. 7 — Eight port arrangement to take advantage of flat side piston.

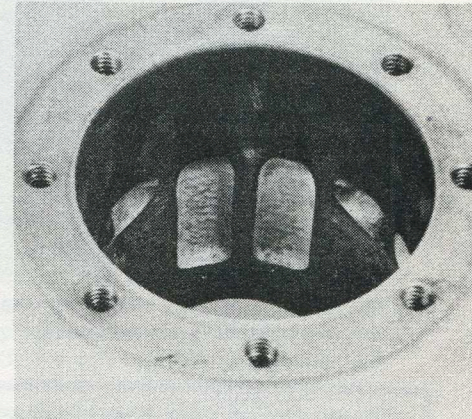


Fig. 8 — The full-circle conversion of the T crank is not complicated but does require some special attention.

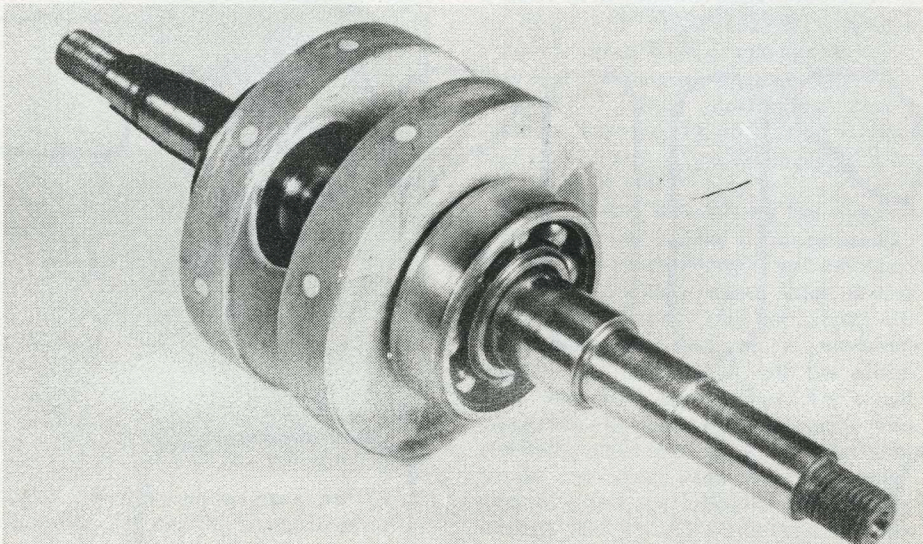
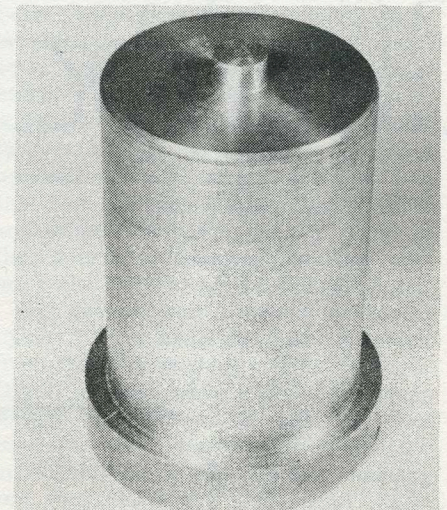


Fig. 9 — Crankshaft centering tool fits the bore and the stub indicates location of crank journal. Proper alignment is important!



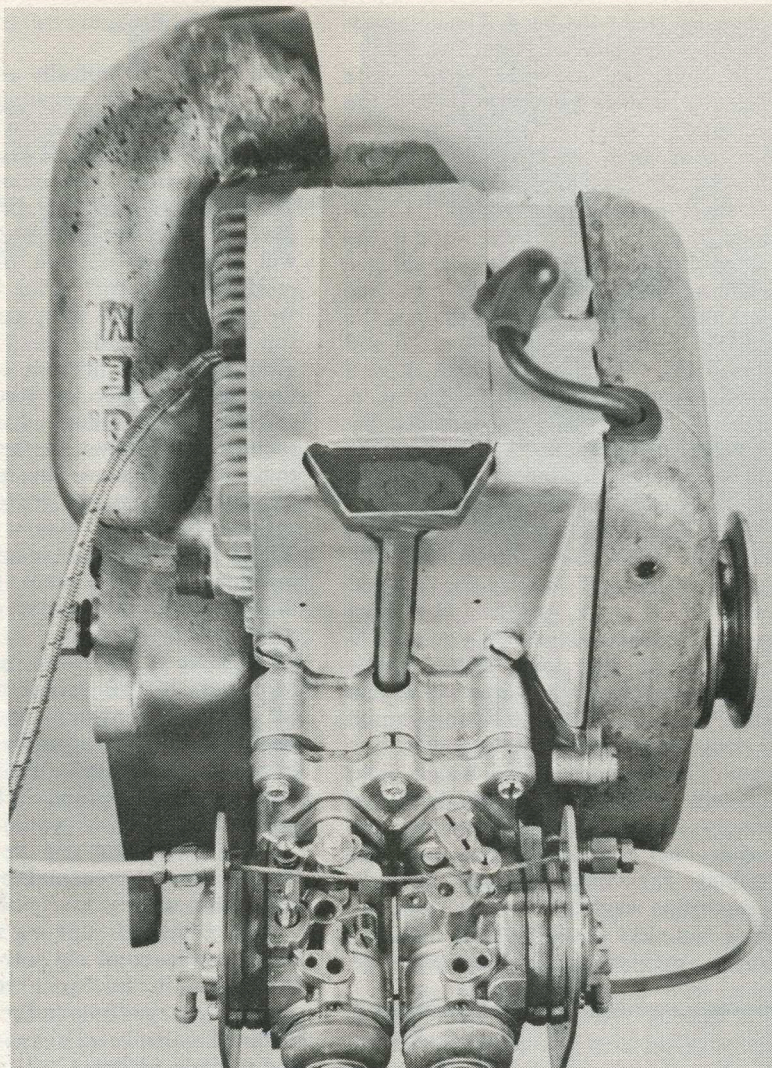


Fig. 11 – A reinforcement plate top and bottom will help hold the cylinder together. The restraining rod passes through the manifold between the reeds. The cooling shroud can be cut to fit over the top plate.

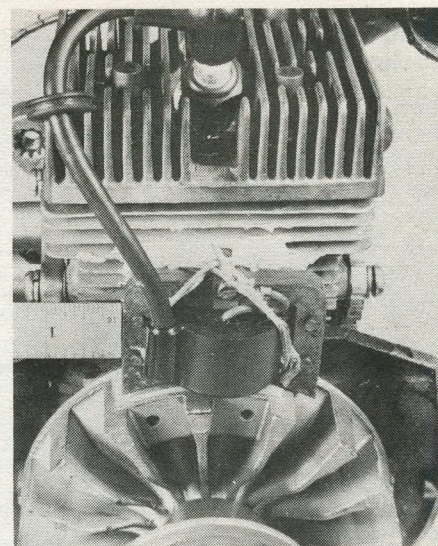


Fig. 10 – Ignition assembly showing proper position of the stator plate. Also, proper position of flywheel when points open. Note coil "T-job" and epoxy to reinforce stock stator plate.

two grooves should be about 1/8" deep and 1-1/4" long with about a 30 degree angle at the top to direct the flow high into the cylinder. The cylinder is only about 3/16" thick, so be careful to not remove too much metal.

A careful and thorough sandpapering of the cylinder wall will complete the job. Be sure to do a good job of smoothing the exposed edges of the chrome so they won't catch on the rings. Also, be sure to sandpaper away all the epoxy protruding into the cylinder because it will skuff the piston. The aluminum piston and steel rings will wear away much faster than the epoxy.

With the piston and rod assembly completed and the block modified, we are ready to work on the crank. Conversion of the T crank into a full circle unit is not complicated but does require some special attention. The process requires installation of 1/16" thick counterbalance weights, proper cleaning and casting of about 43 grams of epoxy on each side. A metal ring should be used to provide reinforcement for the epoxy. A makeshift mold can be fabricated using tape. The finished job is shown in figure 8. (Editor's Note: Jim is being modest. He also sells full circle cranks for those who don't want to risk their own fabrication.)

This completes the modification work. Next, we must assemble the engine. The first problem is to properly center the crankshaft under the cylinder bore. We use a tool as shown in figure 9. It fits the bore and the center "stub" indicates any misalignment of the crank. A measuring scale can be used but is more

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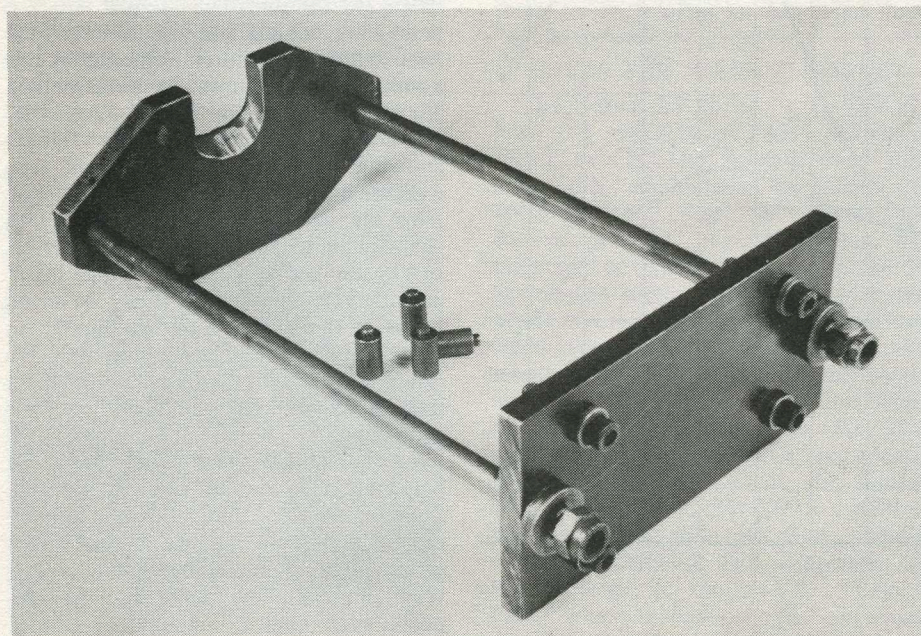


Fig. 12 – Reinforcement for the cylinder block. The four small pieces hold the upper plate off the cylinder head fins.

AKKERMAN'S 'BENDER

Continued From Page 26

time consuming. Careful centering of the crank will avoid rubbing of the rod face on the crank. This generates heat that seriously reduces power. Most engines require an .017 steel shim (old type tin can, not aluminum) under the bearing on the power takeoff side and an extra gasket on the magplate. Check for end play of the crank. It should be about .010" or less and can be checked with a feeler gage between the crank and the block.

Next install the piston using new Allen brand screws for the rod cap. A number 10-32, 5/8" long is the proper size. Torque the rod bolts to about 72 inch-pounds.

The installation of the cylinder head is next. Normally, an .032 gasket will provide the proper clearance between the head and the piston. This should be checked, however, by using plastigage or modeling clay. The clearance should be about .010" to .012". This dimension is critical. Our best "hi-enders" are always the ones that end up with the clearance close to 0.010". The turbulence generated by the close deck clearance apparently promotes rapid combustion as required for high-end operation even though we use a retarded spark timing for good low-end operation. Be sure and maintain at least 0.010 clearance or the

piston can strike the head. The compression pressure should be about 225 psi.

The ignition is installed next. Locate the stator as shown in figure 10 with the lamination about 5/8" to 3/4" ahead of the edge of the block. The points should then be adjusted to open just as the centerline of the magnets pass the trailing edge of the center lamination in the coil as shown in figure 10. This will give maximum spark intensity and minimize sparkplug problems. In this position, the ignition timing will be between 25 and 30 degrees, which seems to work well with the other features of the engine. A "dab" of epoxy should be placed between the coil and the block to hold the coil, or one of the special sturdy units should be used (FMS Products).

Next, install the bottom, the back plate, the flattened-off intake manifold, and the air shroud. We use the Crescent carbs, which work just fine if a short open type exhaust is used. If you plan to use one of the long reflector type exhausts, however, the carbs will need a little "tweaking." An 0.070 hole should be drilled through the low end section cover. (Through the little Welch plug) This will provide a steady supply of fuel directly to the low end section, bypassing the control needle; and will eliminate the "hot midrange" problem of undrilled carbs. Normally, this will allow complete shutoff of the high end needle, providing the lean situation

required for high revs using the long type muffler.

The engine is basically complete now. The only problem remaining is to keep it together. We have found that many of the light alloy blocks cannot hold together for more than about 20 minutes. The block will normally fail through the port area, or sometimes the crankshaft will push the bottom off. A simple reinforcement will solve the problem. We use a piece of steel plate across the top of the cylinder head and another piece across the bottom with a pair of tie rods to provide the restraining force as shown in figure 11. The parts required are shown in figure 12. Note that the short studs locate in the head screws and hold the plate up off the cylinder head fins. Also, a hole must be drilled through the manifold in the metal between the reeds. Be careful to drill through the center or an epoxy patch will be required.

There are a few other hints that may help keep the "gray-goer" running:

1. Be sure the exhaust header is sealed against the block properly. An air leak here will cause rough running and overheating if the long reflector type exhaust is used.

2. An extra seal can be installed on both ends of the crankshaft to guarantee minimum leakage in the crankcase.

3. A piece of tape or a big rubber band, cut from an old automobile inner tube, should be used to cover the sparkplug access hole in the fan housing. This will improve cylinder head cooling and increase power.

4. Use an AE 901, or equivalent, sparkplug.

The engine is race-ready now and will produce power as shown in the curves of figure 13, using alcohol and 6 oz. of castor oil for fuel. The exhaust length is somewhat critical but you can find the best length for your track and drive line combination by some experimenting. We use a Wiseco (or H and P) muffler with about 1" to 2-1/2" flex length showing between it and a GEM elbo exhaust header.

We are presently experimenting with this design to find out if fuel additives can be used with some advantage. Also, considerable epoxy work may be saved by using the special GEM manifold and back plate which are now available. We don't have any experience with these items as yet but they do appear promising.

Another suggestion which may be helpful is to "practice" the modification once on an "old" block. Even the most careful craftsman is likely to "goof" the job a little on his first try. It is very, very important to make the transfer ports even and to arrange for proper flow direction. It is pretty tricky to pay attention to all these things at one time and a little practice will certainly improve the results.

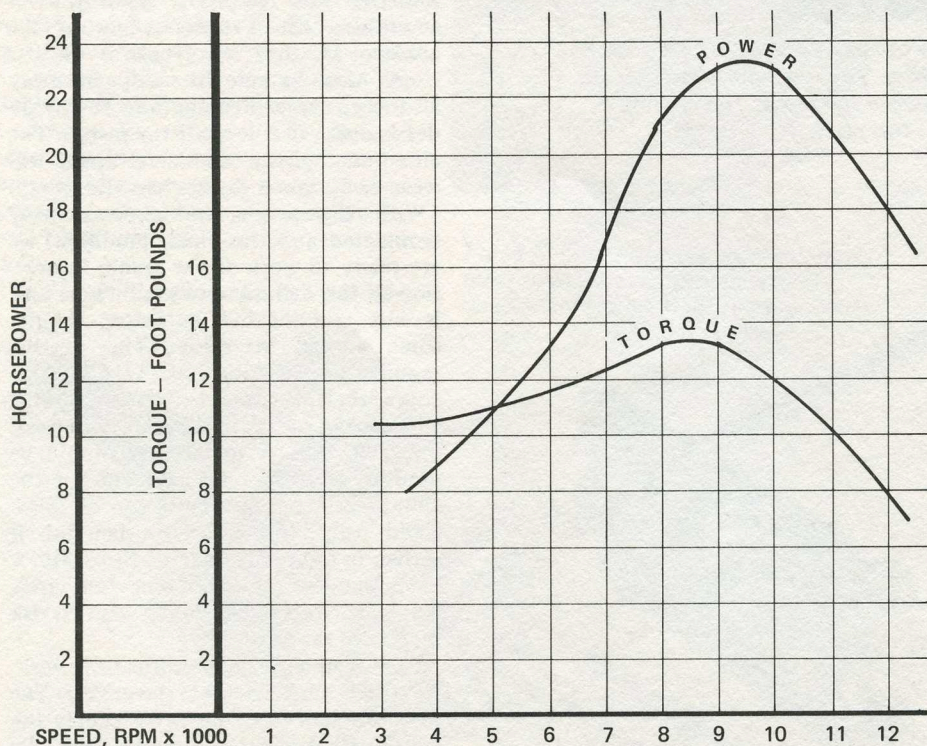


Fig. 13 — Power curves. Enough to win B-Limited at '69 Enduro Nat'l's and chunk plenty of tires when used in pairs on the "C" machine.

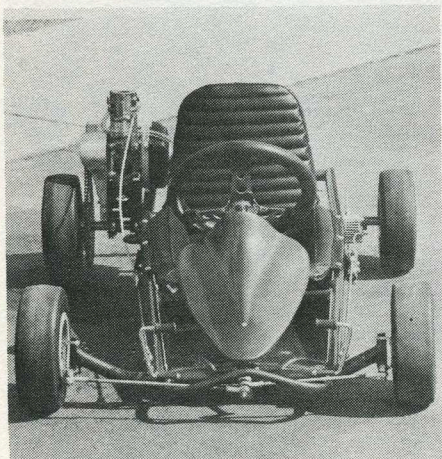
THE GREEN HORNET

How do we go about getting more people interested in the sport of karting? This question is asked by nearly everyone in the sport at one time or another. Just consider the problems faced by the new karter. He is interested in getting started and he's seen some races. He also takes a realistic view concerning what karting may cost to get on the track. His decisions must include what class to run in, but there are a myriad of rules and regulations that restrict what can and can't be done. To the uninitiated, the rules are confusing and seemingly unintelligible. Yet he must make a decision among all of these confusing alternatives and lay his money out to back up that decision.

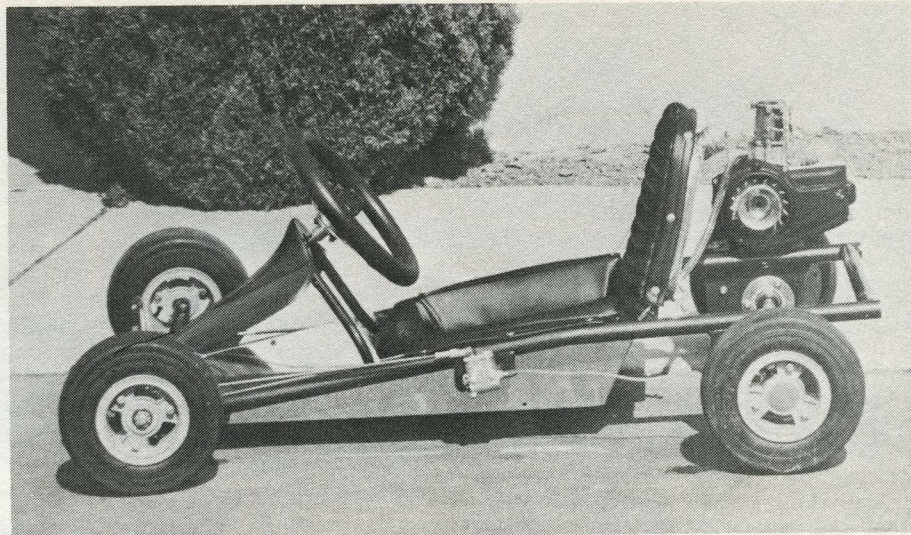
The class that this newcomer picks will determine how much he has to spend to get good equipment, but there is very little way to forecast how much he will have to spend to stay competitive. In effect, our sport is asking the newcomer to lay out hard earned coin, while at the same time, giving him no assurance that his money will bring him any useful equipment.

ENTER P&R ENTERPRISES

There is this outfit in Waco, Texas that has decided to do something about these problems that face the newcomer in karting. P&R Enterprises is that firm, and manufactures some fine racing equipment called the Hornet. Anyway, P&R tried to do something to relieve



The Nassau panel leaves little room for your heels.



the situation with their latest offering—the Hornet Sprinter “A”.

First, they asked themselves what class would be easiest to explain to someone who was totally unfamiliar with the “ins and outs” of kart racing? Answer: The box stock American Reed class. The very simplicity of allowing no modifications at all to the stock engine means one thing—his lack of knowledge and inexperience do not put him at so great a disadvantage when he races against some of the super modification experts that seem to abound in our sport. American Reed class also answers the question concerning how much money will be necessary to stay competitive. Besides, the unmodified engine shouldn't be overly cranky, and the inexperienced shouldn't have too much trouble keeping it running.

So, now we have a good class to get started in, what about the kart itself? P&R's specialty is karts, so the logical thing to do is offer an American Reed “package deal”.

ENTER THE “GREEN” HORNET

The Hornet SS Sprint, up to now has been the mainstay of P&R's efforts in sprint racing. The new offering that joins this predecessor is called the Sprinter “A”. The “A” stands for American Reed. Basically, what has happened is that P&R has taken the SS Sprint and mated its features with the needs and requirements of the American Reed class—no more, no less. Then, the whole rig is offered at a special price, and the icing on the cake is their offer of the popular McCulloch Mc 91A mounted on the chassis at a very special price. In black-and-white, the figures are: chassis alone, \$363.00—outfitted with a brand new Mc 91A already mounted, \$399.00. The completion of the package is the \$19.95 “Engine Pack” which includes the IKF-approved muffler, (Reed 500), a Max-Torque clutch, an Azusa Vari-Hub with sprocket for the axle, and a chain to connect everything together. What

could be simpler? Mount the “Engine Pack” and you are ready to race! Richard Peck (head man at P&R) says that the reason for the separate “Engine Pack” is so that the seasoned racers who already have more Vari-Hubs, mufflers, and clutches than they know what to do with, can use their own setup. In any case, you'd play heck buying the components of the “Engine Pack” separately for anything near \$19.95.

It is an attractive deal, and is set up in the simplest manner possible so that the new karter can begin to enjoy our sport with a minimum of problems. Yet, the experienced karter will be interested as well, simply because it is a well-proven and competitive machine. OK, that's the pitch, but what is the thing? So that we could find out, Richard Peck offered to send us a sample of each machine (sprint and enduro) to test. The Sprinter got here in time to make this issue, and the enduro model will be featured in the December issue of Modern Karting.



When we picked up the machine, the first thing that we noticed was the brilliant metalflake green paint job—perfect, A “Green” Hornet! The appearance is striking because of the clean design and the straightforward way things seem to be carried out. Added to this are nice touches such as the fiberglass Nassau panel, the highly polished aluminum pan, chrome pedals, spindles, steering shaft and steering wheel. It almost looks like a show machine. Speaking of the steering wheel, the unit supplied with our test kart had a full-circle Covico wheel, with a huge foam rubber grip. Talk about nice! However, the wheel was also 13½ inches in overall

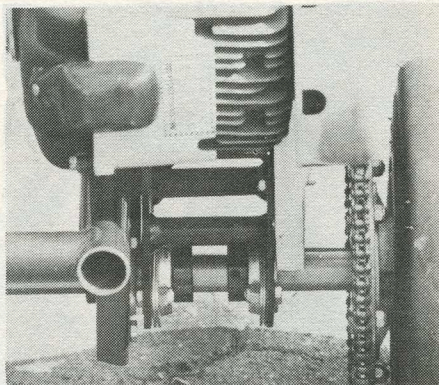
diameter and drastically hinders the seating space. If you only need a little bit more space, an alternate 12 inch diameter wheel can be specified, but the twelve inch wheel has a plastic grip.

The upholstery is really out of this world. Thick, naugahyde-covered pads encircle the seating compartment, which gives you a feeling of ultra luxury. The back of the seat has an integral 1 gallon fuel tank, and has dual outlets just in case you want to bolt on another engine or carburetor at some later date to enter another class.

The axle carries the rubber-cushioned engine mount, and the chain adjustment is via the normal sliding bolt mount that moves the engine vertically on its power-take-off side mounting plate. This side mounting plate also incorporates an integral chain guard of bright metal. Carlisle slicks are mounted at all four corners, and the brakes are Bendix internal-expanders. Our test kart was fitted with the optional Airheart hydraulic disc brakes which can be supplied for an extra \$20.

You will remember that we said that P&R had built this chassis especially for the requirements and needs of the American Reed class. The normal Hornet competition karts come standard with four-wheel brakes, but since the American Reed class usually doesn't require four-wheel brakes, the Sprinter "A" eliminates the costly front brakes. Also, the normal five-spoke Hornet mag wheels have been replaced with cast Azusa aluminum units.

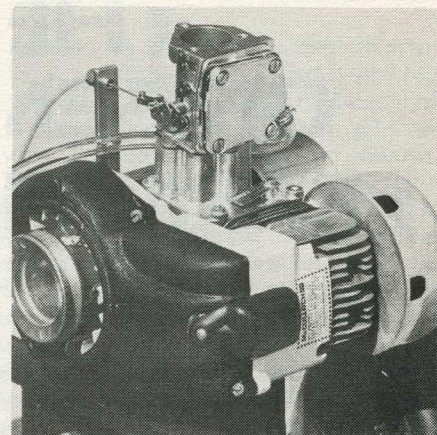
We found that when it came time to actually put ourselves in the seat that the dimensions of the kart are none too large. The smallest member of our staff still felt that he could use just a bit more room. Another new feature of the



Axle floating mount with vertical sideplate.

Sprinter is the vertically adjustable steering shaft. But still, the driver's compartment is very tight for any adult. Before this smallest member of the staff could have raced the kart, he would have had to replace the steering wheel with a smaller diameter steering wheel. The actual measures run something like this: seat bottom to bottom of steering wheel (adjusted up all the way), 8 inches. Space between the hip pads (seating room), 13 inches with weight on the pads. Seat back to steering wheel (at maximum) 14½ inches, and leg room was 17 inches (steering hoop to pedals). Measure yourself a bit to get the idea. The stock Nassau panel leaves only 2¼ inches in which to put your heels, so we'd suggest that you specify one of the alternate smaller panels.

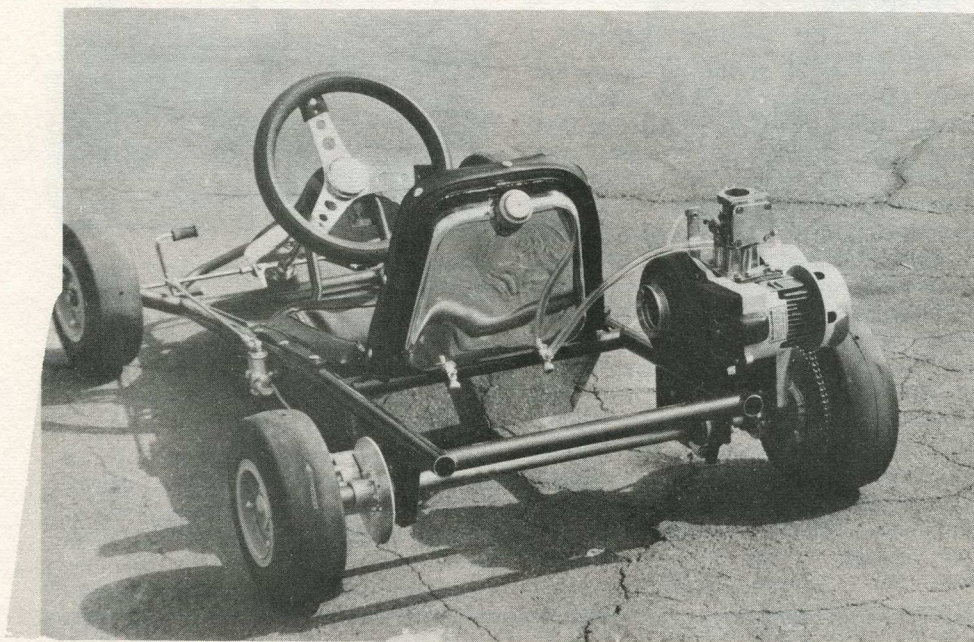
Hornets have been noted before as being rather small, especially for anyone over about 5' 8" tall. There are a great many of us that are simply not able to have a Hornet, even though it may be our first choice in karts. This is simply



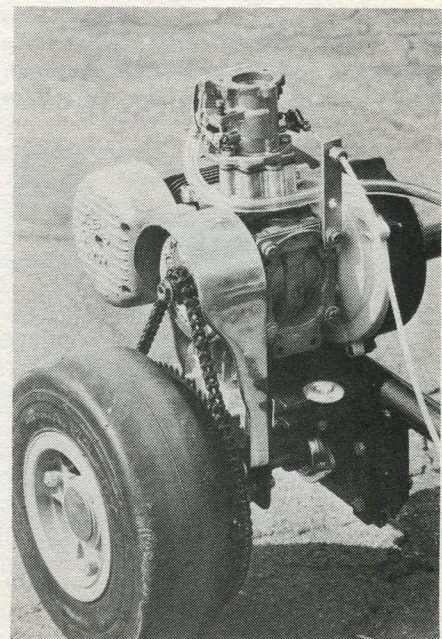
McCulloch's Mc91A can be had for \$36.00 more than the chassis alone.

because we are just too big. A little scaling up (the dimensions of the Hornet are far below IKF maximums), or even the addition of a "front porch" extension (in front of the front axle) would be a very good addition along with a bit wider frame at the seat. These simple changes would surely widen the market for P&R, because, otherwise, the machine is really spectacular. An example from actual experience: Janie Albee of the Road Runners Kart Club happened to be around while we were testing the Sprinter, and she tried the seating too. Janie is 5' 2". She found the length very good for her, but the seat was still rather narrow, and would not allow her to get completely settled down into the seat.

After a trip to Ron Stewart's Mini-Cycle City and Inglewood Kart Shop (the local Hornet dealer) to gather the periphenalia necessary for testing and adjust the seating demensions (see Editor's Column), we headed out to see how it all worked. J&B Raceway in



The rear view is clean.



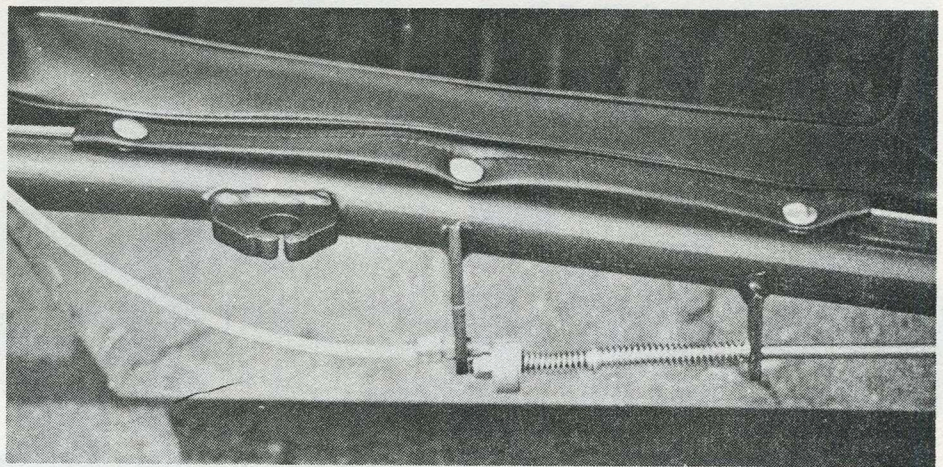
The "Engine pack" option has muffler, sprocket, clutch and chain.

Irwindale was the site we had chosen to test on.

After a few laps to break in the new engine, we started feeding the fire a bit more vigorously. First application of the brake brought quite a bit of sideward pull. This was puzzling since the brake on live axle machines acts equally on both rear tires. The next application of the brake was in the heat of some rather spirited motoring, and the rear end again went all nutty. A trip to the pits located the problem. Sombody at the factory got a bit overzealous, and stuffed about 80 lbs. of air in the right rear tire. Lesson number one for dumb testers, check tire pressures too!

Jack Johnson, the congenial owner of J&B Raceway equalized the pressures all around at 18 lbs., which he says is about right for his track, and manned the starter for our second sojourn with the Sprinter "A". This time the brakes worked fine and both rear tires grabbed equally.

The little "Green" Hornet has a heritage of fine handling karts ahead of it, and the same characteristics are built into this machine as well. Absolutely no complaints can be leveled at the Sprinter's track behavior.



The throttle return spring is just ahead of the unused sidewinder mount.

Particularly impressive was the way it handled the esses at the end of the straight at J&B. The left hander jogs back to the right, back to the left, and then into a hard, 90 degree left again. There is no straight path through. Coming full bore down the straight, we were surprised to find that no braking was needed to negotiate the whole mess. Aiming the front end was as good as making the corner! Be it high or low

speed, the front end stuck and did its job impeccably.

Broadsliding was very controllable and the rear end seemed to go out just so far and then settle into a "groove". At no time were we able to force the tail to go out and have it go skitterish. The heavy broadsliding that we did do was purposely induced, simply because the whole machine felt best going through the curve in a neutral attitude (which is the fastest way anyway). More evidence of the Hornet's good handling was the way we could pick and choose how close we came to the bales while in the esses. The rapid flinging of the machine through the back-and-forth motions necessary to get through lend themselves to unexpected lines and maybe a brush with a bale as you pass. But not with the Sprinter. The way the front end sticks and controls the kart is something that must be tried to believe. If you were barely holding off that competitor, the extra "staying" power of the front end will allow you to maintain the groove—effectively cutting his "water" off.

The throttle cable shed its end-stop, which shut our "water" off for a while. A spring link between the accelerator and the carb would be a very nice item, and might prevent the overly heavy-footed from forcing the cable stop off the end of the cable.

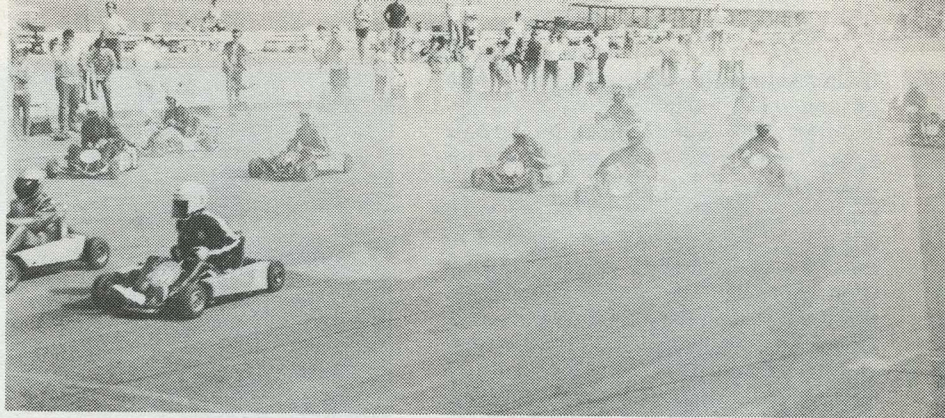
The frame and component quality on the Sprinter "A" is so far above reproach that one word will adequately describe it—superbe!

Our time with the Sprinter has been very pleasant, and this package should introduce newcomers to our sport in a most commendable manner. The sure-footedness will assure the driver/owner of the very best chances in competition. What more can possibly be asked? Just as radio's original Green Hornet was a landmark in spreading entertainment for the masses, this new Sprinter "A" "Green Hornet" is a landmark in an effort to spread the sport of karting to the masses.

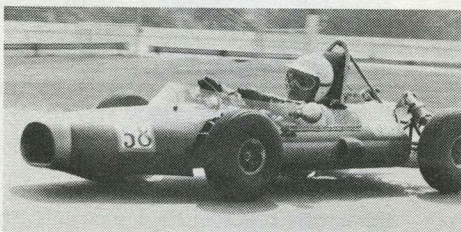
SPECIFICATIONS

MANUFACTURER	P & R Enterprises - Waco, Texas
YEAR AND MODEL	1970 Hornet Sprinter "A"
LIST PRICE	\$399.00 with McCulloch Mc 91A
CURB WEIGHT AS SHOWN	105 lbs.(approx.)
CURB WEIGHT LESS ENGINE	90 lbs.
FRONT AXLE GEOMETRY	
CASTOR	15
CAMBER	0
KING PIN INCLINATION	0
TOE-IN	0 to 1/8"
STEERING	Direct - modified Akkerman
REAR AXLE	34" stress proof centerless ground steel
KING PINS	AN 732 aircraft bolts
SPINDLES	Bolt and strap
UPHOLSTERY	Fuel resistant, foam filled Naugahyde
FRAME CONSTRUCTION	Jig welded 4130 chrome moly - 1-1/4" o.d. - .065 wall
OVERALL LENGTH	57"
OVERALL WIDTH	37"
WHEEL BASE	42"
TREAD WIDTH (center to center)	
FRONT	31"
REAR	34"
WHEELS	Azusa aluminum, 5"
BRAKE SYSTEM	Bendix internal-expanding, rear only
OPTIONAL FEATURES	Airheart disc brakes, 12" steering wheel, engine pack
ENGINE MOUNTING	Side plate, axle (swing) mount-rubber bushed
NUMBER PANEL	Nassau-type, moulded fiberglass
STEERING WHEEL	13 1/2" diameter Covico with foam grip
STEERING WHEEL ATTACHMENT	Keyed and tapered hub - IKF approved
PEDALS	Rubber tipped rod
AXLE BEARINGS	Sealed ball type
FUEL TANKS	Integral with seat 1 gallon, two outlet
ENGINE PACK COMPONENTS	Max-Torque clutch, Azusa Vari-Hub with sprocket Reed 500 muffler (IKF approved) and drive chain.

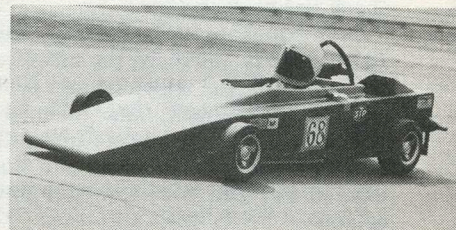
WINDUP IN WISCONSIN



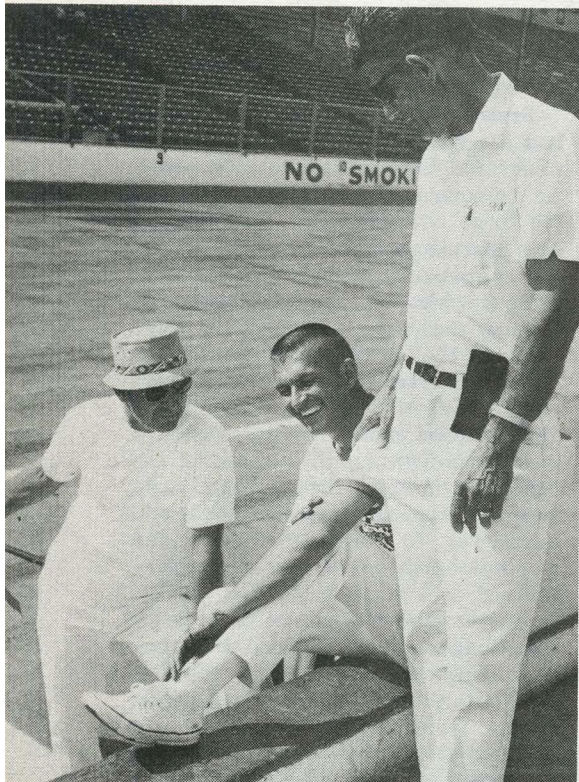
27 Stock Light machines storm into action.



This Yamaha powered FKE-III weighs over 600 pounds with driver, Jim Vovuz, on board.

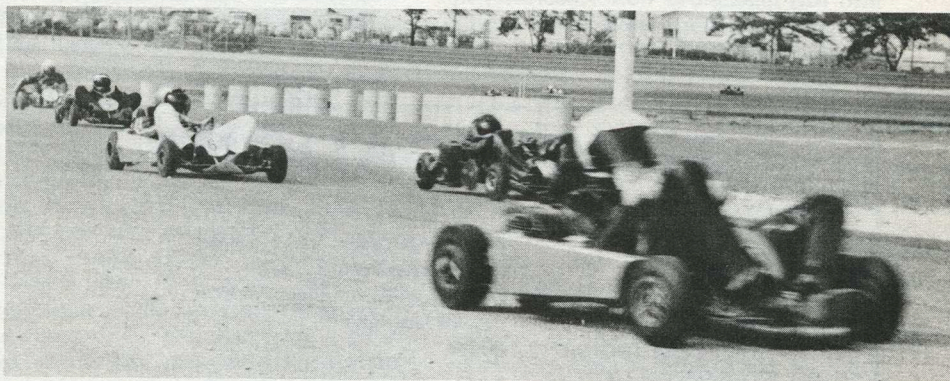


Nick Vitalore has made a real effort to look slick in his FKE-I "wedge".



Three top notch officials (L to R) Bob Yeager, Jim Hagemann, Les Van Laanen.

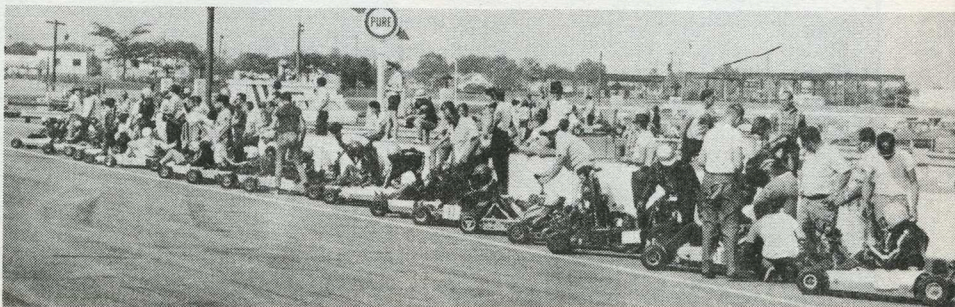
The 1969 season windup at Wisconsin State Fairgrounds drew 273 enduro entries with Illinois, Indiana, and Iowa (plus Wisconsin, of course) accounting for most of them. Illinois Governor, Jim Hagemann, was on hand as both official and participant (he finished up third in Open-Heavy) and home state Governor, Les Van Laanen did a great job of it as Race Director. Les is hard to believe when he tells you he'll be sixty-five on January first, 1970. His bronzed, somewhat weathered face might possibly make you guess him near fifty but otherwise, he's more like thirty-five... trim and energetic, with stamina lots of people half his age can't match...and he sure as heck knows what he's doing when it comes to staging a first class enduro meet. His fine Badger Kart Club did itself proud, its members equally



Stock Heavy steeds, heads for the tight, infield stuff. Don Grenier (in white pants) won in No. 6.



With 273 entries, activity stays pretty brisk.



Stock Light, near green light time.

proud of Les, no doubt. He's good to them, and well liked, and Mrs. Van Laanen works diligently at his side to help each race date evolve successfully.

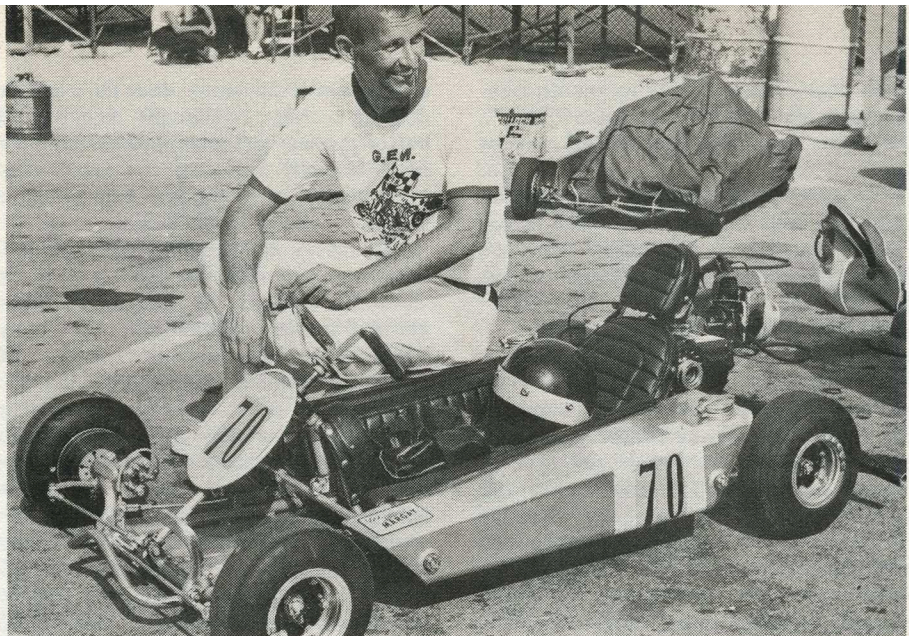
Who do ya s'pose was "gun" of the whole meet? Don Surwall? Nope! Not by a long shot. Sure, Don won C-Open. With his pro equipment on a track he knows like the back of his hand, he should be able to beat six other guys. But Bernie Cozad beat 26 other guys in Open-Lite, smoked 28 more in Open-Heavy and, for an encore, won B-Limited over some strong entries in a field of 21! That's no small feat, particularly not in enduro racing. Its tough enough to even finish three classes and Bernie won three! MK salutes you, Sir Cozad. Our readers would be delighted to learn your secret!

Joey Cottone and Robin Goettsch were the Junior victors; C. T. Cassidy won over a 50 kart American Reed pack; Don Savlo and Don Grenier were the first place trophy winners in Stock-Lite and Stock-Heavy. Numerous over zealous drivers bombarded the bank of protective hay bales where the course departs from the main oval. In fact, one fellow buried himself, kart and all. Only his head was visible one minute; then presto, he got back in the race!

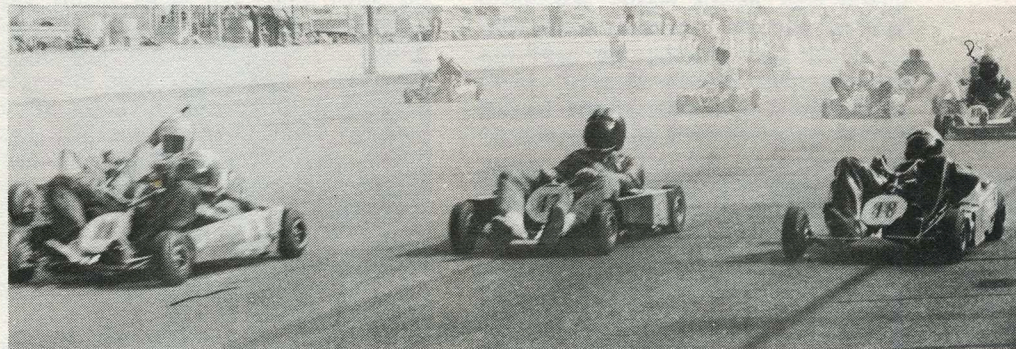
Probably the largest FKE field ever assembled except for the '69 Indy Nationals...was on the grid in Wisconsin....26 bodied rigs of wildly varied configuration, only three of which were FKE-III's. Harvey Packard had no trouble winning FKE-I over ten other drivers in his superb looking little Formula Five car. George Kletecka's luck improved, so he came out on top in FKE-II, and Joe Butterfield simply had no meaningful competition in FKE-III.

B-Stock and B-Limited shared the track with all the FKE's, and one driver had a slightly spectacular mishap.... hooked a tire inside a tight right, lost it good, and kissed the outside wall rather briskly! No serious injuries were sustained, however. Dick Davis won B-Stock and Gerald Taylor took the candy away from the rest of the B-Open candidates. Fourteen drivers chose to participate in the Sportsman event which was won by Harold Krysak.

The Wisconsin State Fair Track is challenging in the respect that the segment of the oval used as a part of the 1.7 mile layout is broad, smooth, and open, while the divergent infield road course is tight and not so smooth! Typically, spectators were sparse indeed (alas), but the drivers had a ball, and MK is glad to bring you this on the sport race coverage....coverage which would have been better if one camera hadn't gotten "busted" after it caught some interesting action....like the FKE pack... the plunge into the hay bales and a few other good shots. Anyway, MK hopes you'll want to enter a Van Laanen/Badger event next year.



Illinois IKF Governor, Jim Hagemann, drove this sharp Margay steed to 3rd in Open Heavy.



Charge!—lay-down or sit-up, but get it on!

RESULTS OF WISCONSIN ENDURO

JUNIOR STOCK: (7 entries)

1. Joey Cottone, Illinois
2. Jim Kutschencouter, Wisconsin
3. Doug Mayr, Wisconsin
4. Jim Kasprzak, Wisconsin
5. Mike Barton, Wisconsin

JUNIOR AMERICAN REED: (9 entries)

1. Robin Goettsch, Iowa
2. Bob Huston, Minnesota
3. Tony McCrimmon, Wisconsin
4. Larry DuVall, Wisconsin
5. Dave Weimer, Wisconsin

AMERICAN REED SENIOR: (50 entries)

1. C. T. Cassidy, Illinois
2. Henry Howard, Wisconsin
3. Jim Liska, Wisconsin
4. Herman Johnson, Wisconsin
5. Bob Behl, Illinois

STOCK LIGHT: (27 entries)

1. Don Savlo, Illinois
2. Steve Panawash, Wisconsin
3. Herman Johnson, Wisconsin
4. John Mathisen, Illinois
5. Tony Panzella, Illinois

STOCK HEAVY: (33 entries)

1. Don Grenier, Illinois
2. Bill Markee, Wisconsin
3. Terry Bentley, Illinois
4. Brian Mielke, Wisconsin

5. Scott Badenoch, Illinois

OPEN LIGHT: (27 entries)

1. Bernie Cozad, Illinois
2. Steve Panawash, Wisconsin
3. Steve Bystrom, Illinois
4. Dan DeBrule, Illinois
5. Mickey Yeager, Illinois

OPEN HEAVY: (29 entries)

1. Bernie Cozad, Illinois
2. Charlie Alton, Illinois
3. Jim Hagemann, Illinois
4. Jim Loffredo, Illinois
5. Joe Teresi, Jr., Wisconsin

B STOCK: (11 entries)

1. Richard Davis, Illinois
2. Rhee Caldwell, Indiana
3. Jim Holmes, Illinois
4. Bob Robbins, Illinois
5. George Hartwig, Illinois

B LIMITED: (21 entries)

1. Bernie Cozad, Illinois
2. Bob Owens, Illinois
3. Jim Aultigt, Illinois
4. Tom Christie, Wisconsin
5. John Sills, Wisconsin

B OPEN: (12 entries)

1. Gerald Taylor, Iowa
2. Jim Mannise, Illinois
3. Curt Hashman, Indiana
4. Jerry McMullen, Illinois

5. Brandt Shawl, Indiana

C OPEN: (7 entries)

1. Don Surwall, Illinois
2. Bob Tuttle, Iowa
3. Ray Besasie, Wisconsin
4. Red Cotnam, Wisconsin
5. Dave Kollar, Indiana

FKE I: (11 entries)

1. Harvey Packard, Michigan
2. Bud George, Wisconsin
3. Darrell Deering, Wisconsin
4. Bruce Sutton, Michigan
5. Gene Zarembka, Indiana

FKE II: (12 entries)

1. George Kletecka, Illinois
2. Jim Densmoor, Wisconsin
3. Eddie Villiesse, Wisconsin
4. Gordon Keup, Wisconsin
5. James Johnson, Wisconsin

FKE III: (3 entries)

1. Joe Butterfield, Wisconsin
2. Jim Vovuz, Wisconsin
3. Gary Rubst, Illinois

SPORTSMAN: (14 entries)

1. Harold Krysak, Wisconsin
2. Donald Baier, Wisconsin
3. Don Grenier, Illinois
4. Jo Ann Busse, Wisconsin
5. Joe Accardi, Illinois

Hi, my name is Thurgood Crumb-packer. My friends call me "Thug". Nobody else calls me at all, except Mom, that is.

You're probably wondering how I fell into this spot in MODERN KARTING. Well, I was tooling through Huntington Beach one day when the editor of this rag (Watch your mouth, boy!—Ed.) crossed the street in front of me. He spied me while I was waiting for a traffic light to change, and fell to a fit of laughing. Now, I'm just not about to let some yahoo make fun of me for no doggone reason, so I motored over to where he was rollin' around on the ground and asked him just what he thought was so humorous. But he was really yukking it up, so I finally just called him a few dirty names like dope, crumb, goof off and knothead. Well, that really straightened him out—a little.

After a while he got his breath and turned back to the matter at hand — why he thought I was so funny. He explained that although he had seen quite a few "Hell's Angels" types around on their choppers, I was the first one he had seen on a minichopper. I'll

admit that it probably does look a little different, but I thought maybe I'd better box his ears a little to teach him a little respect! However, he was pretty big — and even though I'm really a toughie, I've got a soft heart.

We got to talking a bit over a strawberry pop, and it wound up that he wanted someone to tell his readers about Bonanza's Minichopper. Since my "hog" is that very machine, I'm elected!

My machine is the Model CH-400 with a four horse Tecumseh providing the push. You may ask why a really tough guy like me rides a Minichopper instead of a regular "hog". Well, even though I'm tough, I've got a few smarts under my authentic World War I German helmet, too. Those big "hogs" seem to sit up so high, and are so complicated with clutch, brake and gearshifters, that I felt uncomfortable — and besides, I could never remember the shifting pattern. So, I just outsmarted the usual rough and tough cyclist, and got my Minichopper. There is no gear shifter to sweat because my "hog" has a Horstman centrifugal clutch driving a 6:1 overall gear ratio. Bonanza offers both 5:1 and 6:1 ratios. I got the 6:1 so that I could get a bunch of "dig out" and do a few wheelies. Pretty neat, eh?

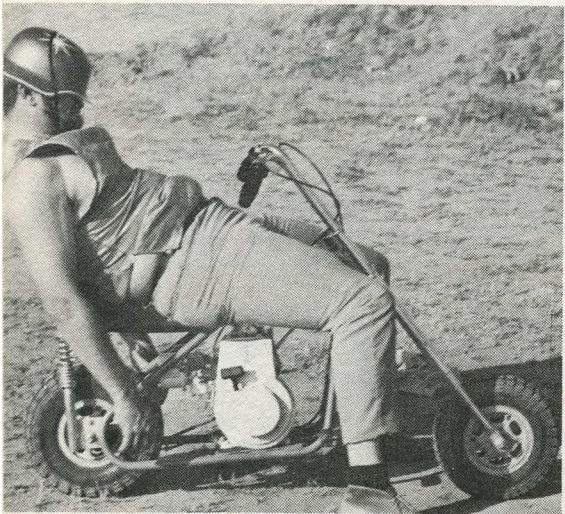
My Minichopper is also a lot lower than those complicated bikes, so if I "dump it", I don't have nearly as far to fall. Even though I'm 26 years old, Mom

still worries about me, and she doesn't like me going so fast anyway.

It's a good thing that Mom doesn't know how fast my "hog" will go. This little Tecumseh really gets with it and even with the lower gear ratio it'll do almost 35 mph. If I wasn't so brave, that might be kinda scary. The bike would probably go faster if I weren't so heavy; but, as long as my favorite food continues to be marshmallows, I guess my "hog" will have to carry all 250 lbs. of me. (That's one "hog" carrying another hog, isn't it? — Ed.)

Now how does it handle? You'd think that with the front wheel being raked so far out in front of the bike that it might be a little "squirrely". It's not

MINI CHOPPER TEST



though; that is, if you don't ride it in rough, unpaved areas.

On fairly smooth surfaces, the Minichopper handles as well as any other minibike that is built for parking lot or sidewalk bashing. However, when rough surfaces, such as ruts and small washes are ridden over, the front end will start bouncing around quite a lot. This is due mainly to the lack of weight on the front end; and if you lean forward or scoot up on the seat it helps the front end handling quite a bit.

The front fork has no suspension, and



SPECIFICATIONS

Manufacturer: Scout Div., Bonanza Industries, 1775 Monterey Hwy., San Jose, Calif.

Model: Minichopper

Price: \$199.95

Engine: 4 hp Tecumseh, 4-cycle

Clutch: Horstman centrifugal automatic

Transmission: Direct drive

Gear Ratio: 5 to 1 std.; 6 to 1 opt.

Tires: Carlisle, 3.50 x 6 x 12.5 front; 4.50 x 6 x 14.5 rear

Suspension: Front rigid; rear swinging seat coil-shock mounted

Brake: Internal expansion, rear

Accelerator: Twist grip

Weight: 80 lbs.

Wheelbase: 42-inches

Length: 55½-inches

Ground

Clearance: 4½-inches

Miscellaneous: Chrome frame mounted gas tank; chrome clutch/chain guard; optional light kit

consists of one tube bolted inside a larger tube. It looks a little flimsy, considering the long rake and all, but believe me, if that fork was going to bend, it would do it when I ride it in off-the-road trails. You must remember that my 250 lbs. are on the thing, and at speed, the fork will flex quite a bit — but it won't bend.

It is easy to pull wheelies off the line by leaning way back and gunning the engine. This little engine is strong enough to pull the wheelies, and the clutch is really positive. I don't think you could find a better engine/clutch action.

I sure skinned up my knees a lot when I first started practicing wheelies, and Mom got a little upset; but I'm a real whiz on my "hog" now and I don't "dump it" very much. It takes some adjustment and getting used to, but once you get the hang of riding the Minichopper, it is one great long blast.



Oh yeah—you become an instant hero in the neighborhood when you show up with a Minichopper—at least with the kids!

There is one thing that I would like to see Bonanza do on the Minichopper. The rear suspension is merely a swing seat arrangement, and the springs that provide the cushioning are so stiff that it's ridiculous. Even my 250 lbs. bouncing on the seat only cause the seat to give about ½". This extremely stiff springing and the narrowness of the seat (for a guy my size) will lead to numbness in the "tailsection" in short order. My long distance "runs" have been limited due to the seating problem. (You younger fellows won't have too much trouble with the seat width, but how will you keep Dad comfortable when you let him have a ride? — Ed.)

Well, to sum up, my Minichopper is just gobs of fun to diddle around on, but it sure is hard to be a big, nasty tough guy when people go around laughing at you; so I may still haul off and box your editor's ears. Of course YOU probably wouldn't look quite so strange on the machine because most people who ride Minichoppers are a lot smaller than I am. But I'm happy, even if your editor thinks I'm funny. I think he's kinda funny too, so there, smarty! (OH! I'm wounded! — Ed.)

Bonanza has lots of accessories, and you can dream up a bunch of other ideas to fix up your Minichopper. I've already got the chrome gas tank, so I think that I'll get the high speed chain guard next, then maybe a metalflake seat. One of these days I'm gonna get some stick-on flowers for my helmet, but right now Mom says no — boy when I get finished, I'll look so tough that no editor will dare laugh at me!

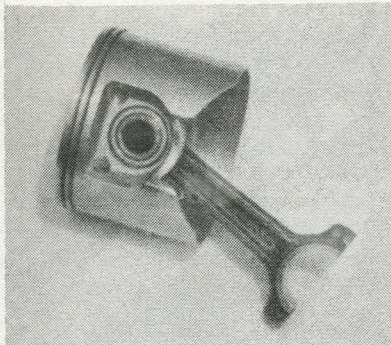
ONE MORE HORSE

By Dale Herbrandson

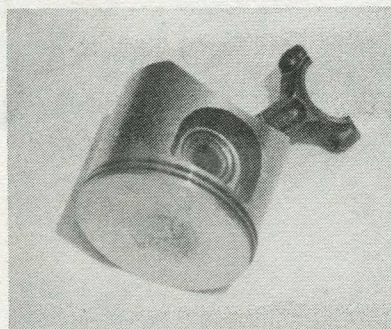
Two very worthwhile changes can be made to the piston and con rod assembly on this 125 cc engine. One concerns power, the other reliability. Both objectives can easily be accomplished by removing metal, and by a simple replacement of inexpensive parts.

POWER

The boost port on the stock MC 101 is fed only by the small diameter hole through the wrist pin. This design was aimed at moving a large amount of air/fuel mixture through the pin. This



This simple modification will result in a gain of 1hp @ 9000rpm.



Stock MC 101 piston. Note ledge at skirt — This hampers breathing of the boost port.

air flow removes heat from the wrist pin and needle bearings in the piston. The small diameter passage, however, is not adequate to feed the large boost port when peak power is desired.

The piston/con rod assembly above shows a modification which gives a 0.97 HP increase at 9000 rpm. A

competition, alcohol burning engine should realize even a greater power gain than this. Note that two new types of breathing areas have been created in the modified piston.

The smallest porting gain is in the pair of drilled holes. These move stagnant air from the center of the piston toward the boost port. The largest gain in horsepower comes from the cut-out in the piston skirt. Both conditions are treated as one change in test three below.

POWER TESTING

The power gain was measured on a dynamometer. The procedure followed here gave an insight into the effectiveness of the entire boost port system.

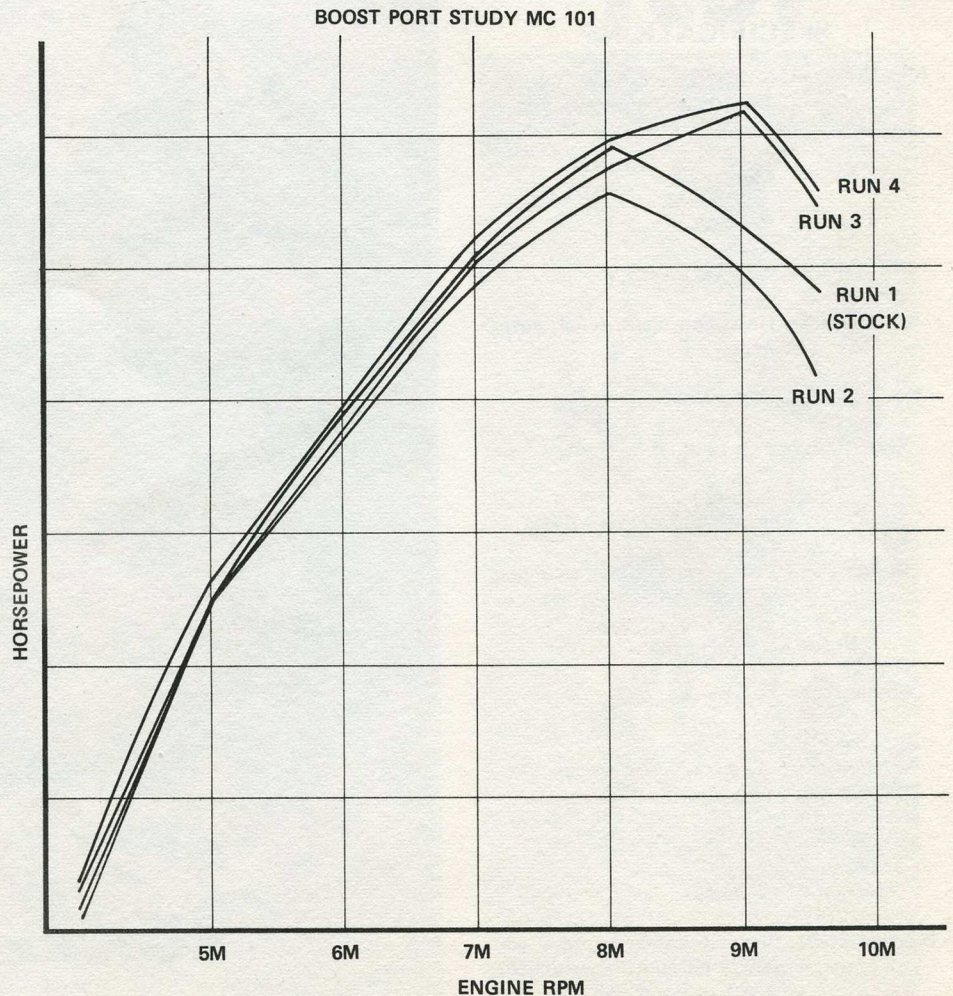
1. The first run was a production MC

101. This gave a reference output to work from.

2. The next run, on the same engine, was conducted with the wrist pin air passage closed. The plug eliminated any breathing of the boost port. The cylinder scavenging was accomplished only by the two pair of drilled transfer passages. The curve below shows that power dropped 0.4 HP when the boost port ceased to operate.

3. The third run was conducted with the plug left in the wrist pin passage. The ledge on the piston was now removed. This allowed the boost port to function, but not in quite the same manner as in run number one. At 9000 rpm, this configuration gave 0.90 HP more than the stock engine.

4. Finally, the plug was removed



FOR A MC 101

from the wrist pin, allowing all boost port passages to breath freely. This final configuration produced 0.97 HP more than the production engine at 9000 rpm. The curve below shows all four configurations plotted together. Take a close look at the horsepower at 8000 rpm. The fully modified piston is better than the stock piston by only a small margin. At 9000 rpm, however, the modified piston really shows its value. At this speed, the modified engine has just reached its power peak—at a full 1000 rpm greater than the stock engine. This extra boost port breathing will greatly improve the top end performance—without a sacrifice in the lower speed range.

The entire tuning operation described here can be accomplished by careful removal of metal. Radical metal removal is not required. Just be sure to create generous radii when filing. Remove all file marks and polish the work area to remove all signs of crack producing, sharp edges.

The piston/con rod does not have to be disassembled when drilling and filing the piston. However, be sure and protect the bearing from the metal chip that will be created. One chip can ruin a bearing, and will eventually cause power deterioration (such as a stuck piston).

Lots of masking tape over the critical areas is one way to seal the critical areas. This time consuming procedure does work, but care is required. The

to modify the piston without the con rod and masking tape in the way. Another good reason for disassembly is that the next topic coming up will obsolete the pair of Torrington B-97 bearings used in the MC 101 piston.

RELIABILITY

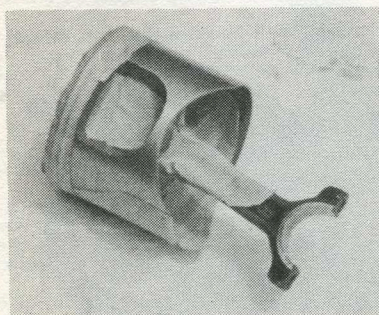
The nebulous term of "performance" must include longevity, or one never finishes a race. The reliability of the wrist pin bearings has been adequate, but not outstanding. There is a simple fix that is quite effective. The idea is currently used on McCulloch's latest 125 cc chain saw—the powerhead is essentially a detuned MC 101. Their solution for wrist pin bearing lubrication is beautiful. The drawings in Service Bulletin 1476 which describe the bearing modification, can apply to the kart engines by using a little insight into the engineering.

The Torrington catalogues mention that their needle bearings are purposely designed with a labrinth seal to exclude dirt and grit from the precision rollers. Logically, this labrinth also excludes some of the available lubricating oil. There should be an optimum size of opening that maximizes life—for we must accept more wrist pin dirt with the gain in lubrication. I have a feeling that we should be looking for all the oil we can get, and just accept any extra grit. Kart engines seem to fail from heat or lack of lubrication before they actually

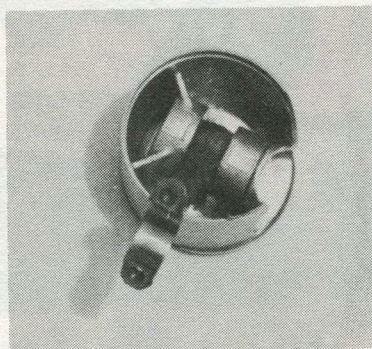
longer than the B-97 bearing, and gives the extra length desired. The longer bearings must be assembled from the boost port side of the piston. Care is required during the pressing operation as the tendency is to press the longer bearing home in a flush position. The longer bearings can be purchased from a McCulloch distributor under part number 104460. This longer bearing, when assembled into our modified MC 101 piston will look as shown below.

The needle bearing idea also applies to the MC91 series. The B-87 Torrington should be replaced with the longer B-88 (McCulloch part no. 104519). This bearing is not legal for the American Reed class, but is fair game, of course, in A-stock and A-open.

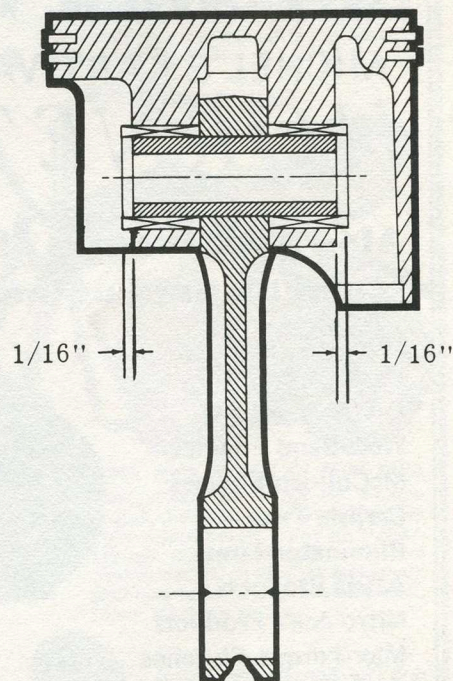
If the modification outlined in this article is done with care, the engine will go faster, and be more reliable. You can't go wrong.



Taped piston to allow piston modification without disassembly.



Bottom view of modified piston.



photograph below shows one attempt by the author using just masking tape on a clean piston/con rod assembly.

A better procedure is to pull the wrist pin and disassemble the unit. It is easier

wear out, so the following procedure seems well justified.

The fix on the 101 is to simply install a longer Torrington needle bearing in the piston. The B-98 bearing is 1/16"

LETTERS *Continued From Page 11*

how who are eager to put themselves on a par with the "professionals" which is hard to do without a regularly available, reliable source of information.

I imagine the technical article is something less than a joyful and relaxing chore to the magazine which publishes it, however, as it would seem to call for special qualifications and diligence checking its accuracy, proof-reading, and hoping the printer doesn't get things mixed up, with readers' confidence at stake. "Road and Track" has set a standard for excellence and authority in technical articles for something like twenty years, and can still be caught in an error occasionally; thus I feel that MODERN KARTING deserves much commendation and support for its efforts so far.

Eliot Dobbins
San Diego, California

The porting article in the October '69 issue of MODERN KARTING was an interesting study. Much effort has been used in it's preparation.

One point I feel is worth discussing. It concerns the rpm limitation established by the maximum piston acceleration. The 100,000 ft/sec (2) figure seems to be well documented for the relatively large engines. However, with decreasing engine size, the peak acceleration figure

can be increased. Honda is the greatest violator of the large-displacement-engine acceleration figure stated in Mr. Lawley's paper.

Reports have been made of piston acceleration in the 180,000 ft/sec(2) range on their 250cc four-cylinder engines. If we assume that these engines have an equal bore and stroke, and a crank throw/rod ratio of 1/4, the limiting speed is 13,650 rpm. Undoubtedly the engines are oversquare as they spin to an rpm higher than just calculated.

Judging just from the 10,000 rpm calculated in the article for a Mc91, one gets a feeling that 100,000 ft/sec(2) is conservative. The 180,000 ft/sec(2) figure raises the Mc91 red line speed to 13,500 rpm. I am sure the MAC competition engines are running close to this 13-K range.

Dale Herbrandson
Manhattan Beach, California

WHY EDITORS GET GRAY

I just finished reading the article in the October issue on the El Segundo street race (Grand Prix) which was held on August 31st.

I wish to bring to your attention a mistake in listing the winners of the American Reed Senior race. Ronald (Ron) Whorton was the 2nd place winner, not Rodney (Rod) Whorton.

I know it is confusing to have entries with names so near alike. These boys are

brothers. Ronald is 19 years old, a college student, and the oldest. Rodney is 16 years old and the El Segundo Grand Prix was his first race to compete with the men or seniors. He didn't do too badly either, winning both races he entered!

I would appreciate it very much if you would print a correction in the next issue of MODERN KARTING as Ronald (Ron) worked very hard getting his kart ready to compete in the American Reed Senior race. I was pleased for him that he won 2nd place after all his effort.

I don't attend many of the races, but never miss reading your magazine each month.

Mrs. Ken Whorton
Lynwood, Calif. 90262

WE NEGLECTED TO SAY....

In mentioning awards given at the Sprint Nationals, you neglected to mention that T-C Lubricant awarded \$50 to six first place winners.

I would appreciate a mention of this in your next issue, if possible.

Paul A. Moore
T-C Lubricant
Englewood, Ohio

Thanks, Paul, for bringing this to our attention. We like to give credit where credit is due, and when someone puts \$300 in prizes into karting it is surely worth mention. Sorry we blew it. — Ed.

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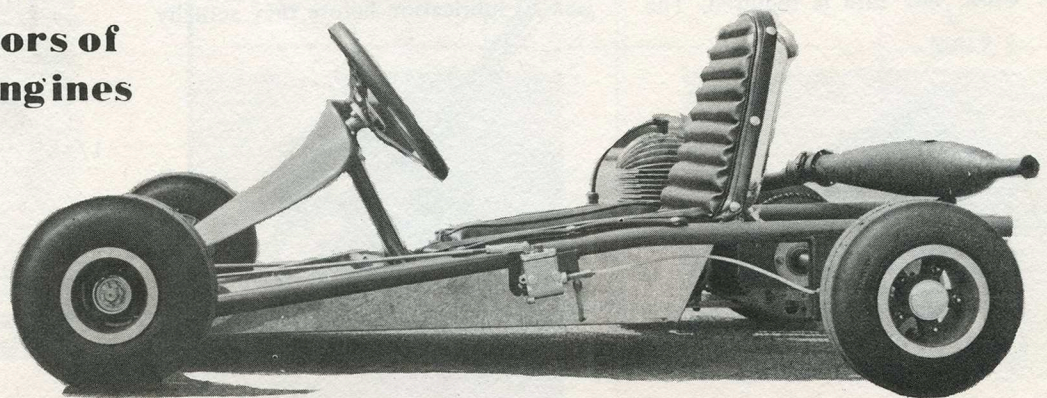
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PRODUCT MART

Azusa Engineering, Inc., a pioneer in the kart and mini-bike component industry, has entered the motorcycle industry with a steering stabilizer that promises to remove the fatigue of "steering shimmies" and the dangers when hitting a rut.

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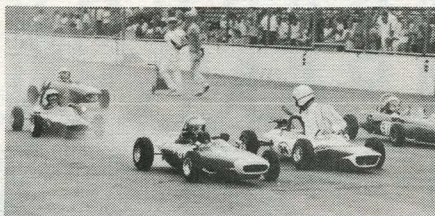
F/5 NEWS

1969 FORMULA FIVE NATIONALS: During recent weeks, several F/5 race meets have been held, attracting entries on a limited, regional basis. Five Formula Five cars are shown in the enclosed photograph. Most of these cars will have participated in the F/5 Nationals (Indianapolis) before this issue reaches print....plus new cars (like Barry Basses's superb machine) and including entries from states as far distant (from Indiana) as California and North Carolina. MK will feature this important F/5 national race in the next (December) issue.

MEET F/5's CHARLIE HAYS: Charlie has been a vital cog in the development of Formula Five in the Northwest. A courageous guy who has made the best of it after a severe accident, he has been instrumental in the construction of six F/5 cars, and in scheduling F/5 competition in the San Francisco Bay region. While this news copy is being written (October 8th), Charlie Hays is on his way to the Formula Five Nationals in Indiana, towing his potent little F/5 car! He'll be away from home for ten days and travel nearly 5000

miles. That's the kind of an F/5 enthusiast he is!

BUD COFFEE NOW WITH F/5: As many MK readers already know, Bud is a highly prominent karting executive and the "father" of FKE. He has recently joined the Formula Five Organization as co-director in Northern California and will be active as F/5's Competition Coordinator in the West. Bud is a dedicated, capable fellow whose race programming experience is tops. His Formula Five pursuits will work to the benefit of all you Pacific Coast F/5 people. Welcome to you, Bud!



F/5's 1970 RACING PROGRAM: Groundwork is now in process for three championship circuits, West, Central, and East. An equal number of point races in each of these primary regions will be scheduled, plus the 1970

Formula Five Grand Nationals. With F/5's newly adopted scoring system, national driver rankings will continue to be compiled, and reported periodically in MK. Regional standings as of October first are as follows:

WEST: (1.) Charlie Hays, California, (2.) Pat Petersen, California, (3.) Ray Martinelli, California, (4.) Tom Hutson, California, (5.) Bill Zarevich, California.

CENTRAL: (1.) Phil Reed, Wisconsin, (2.) Joe Romans, Indiana, (3.) Don Dipert, Indiana, (4.) Joe Pohlhammer, Wisconsin, (5.) Tom Johnson, Wisconsin.

EAST: (1.) Harvey Packard, Michigan, (2.) Bruce Sutton, Michigan, (3.) Mike Meldeau, Florida, (4.) John Jacumin, North Carolina, (5.) Wayne Smith, Ohio.

FORMULA FIVE RACING ASSOCIATION: Membership in F/5 is growing steadily. Large, rich looking embroidered emblems are available to members only. F/5 rules (three classes) are \$2 or included with membership. If you're interested, contact: FORMULA FIVE, 4430 Tremont Road, Evansville, Indiana 47710phone: (812) 423-1508.

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KARTING CAN BE A FAMILY ACTIVITY

BY MARY JUNE DRONBERGER

What other sport could possibly be more exciting or use as much of a boy or girl's free time and energy as karting? And - isn't it fabulous that a child as early as the age of six could be eligible to climb into one of those miniature machines and become the master of it?

There are many clubs organized for karters throughout the United States. One in particular, which I have recently visited, is the Road Runners Club of Azusa, California.

Their membership has steadily grown to approximately 100 members during the past five years. Every fourth Sunday of the month they hold their races at the J. & B. Kart Raceway in Azusa, California. This track, you know, is famous for being the first official kart track to be built in the United States back in 1958.

Mr. Tony Miglizzi, president of the club, gives most of his free time to teaching new karters the ropes. This man is regarded by the organization as one of the most generous and devoted men they have ever known. It is quite apparent that he is a "big brother" to all who need his help.

He, along with Jack Johnson, owner of the track, concern themselves with only the fact that the children have a place to race and that they get all their knowledge has to offer in learning to drive, care for their karts and develop good sportsmanship.

To be eligible to join the Road Runners as a junior, a boy or girl must be between the ages of 6 and 16 years old. Each driver is classified according to his or her age and/or capabilities. Each race day, trophies are awarded for all classes.

I interviewed Mrs. Janie Albie at the track and found that she was just as enthused with karting as were her two young sons, Paul and Phil. Not only are the boys in there racing every month, but "Mom" is going right along with them in her Women's Four-Cycle races.

So many parents hear, "Mom and Dad, you just don't understand. There isn't anything to do." This is a statement that I don't think many parents today have missed hearing at one time or another.

This particular mother made it her business to understand. She began considering some means of mutual enjoyment for the family. Mrs. Albie, along with her husband, David, and sons have been members of the Road Runners Kart Club for a year and a half and are still going strong.

What the world needs now are more kart clubs such as the Road Runners. They believe in starting them young and the idea certainly pays off. These children are not only having the thrill of

their lives driving a kart, but they are learning how to get along with others and how to meet competition fairly. The knowledge they are getting behind the wheel of a kart will be invaluable to them as future automobile drivers.

Perhaps the most rewarding bit of knowledge is the fact that they are in there working, striving for a goal that they - themselves - have set. In the club they have a "place" which gives them the sense of security that every young person needs.

I attended my first race at Indianapolis Raceway Park in Indianapolis, Indiana - home of the famous "500 Mile" race. I'll have to admit, as a spectator, I started at the top. The event was the Enduro Nationals - one of the biggest races of the year. My husband is Vice President of Azusa Engineering, Inc., manufacturers of kart parts and racewear. He was there on business and I merely tagged along. Before our stay was over I had watched just about every race and met dozens of racers and their families. I soon learned that his business interests were to become my pleasure! I was hooked as a spectator.

Since that time, we've traveled here and there attending more races each year. Now that I had become a kart enthusiast I began to look for articles and books to read about this fantastic sport. The libraries, I learned, were very limited - especially in material for the younger person who was not yet ready for the big karts. In other words - reading material with a lighter touch to serve as a "jumping off place" for the beginner. I decided to follow through with my research and write a book for them. It is my hope that this book will be so directed at them that they can associate any question they might have with it and find an answer.

It is an expressed desire of the Road Runners Club that more young people, along with their parents, become members of a kart club. If there are no clubs established in your area, perhaps you will be able to organize one. As soon as word gets around that one is available, others will join.

Working with children while they are young is one of the best insurances against teenage problems. Far too many parents today wait until their children are in their teens and then begin to worry about how they spend their time. I have heard many, many young people complain bitterly that their parents don't object to what they do as long as it doesn't involve them. Get behind them and stay with them. You'll see that this is not only what they need, but what they sincerely want.

Karting is one great way to keep that "generation gap" closed. Get involved! The reward is surely the greatest you'll ever know as a parent. It's a family raised and intact!

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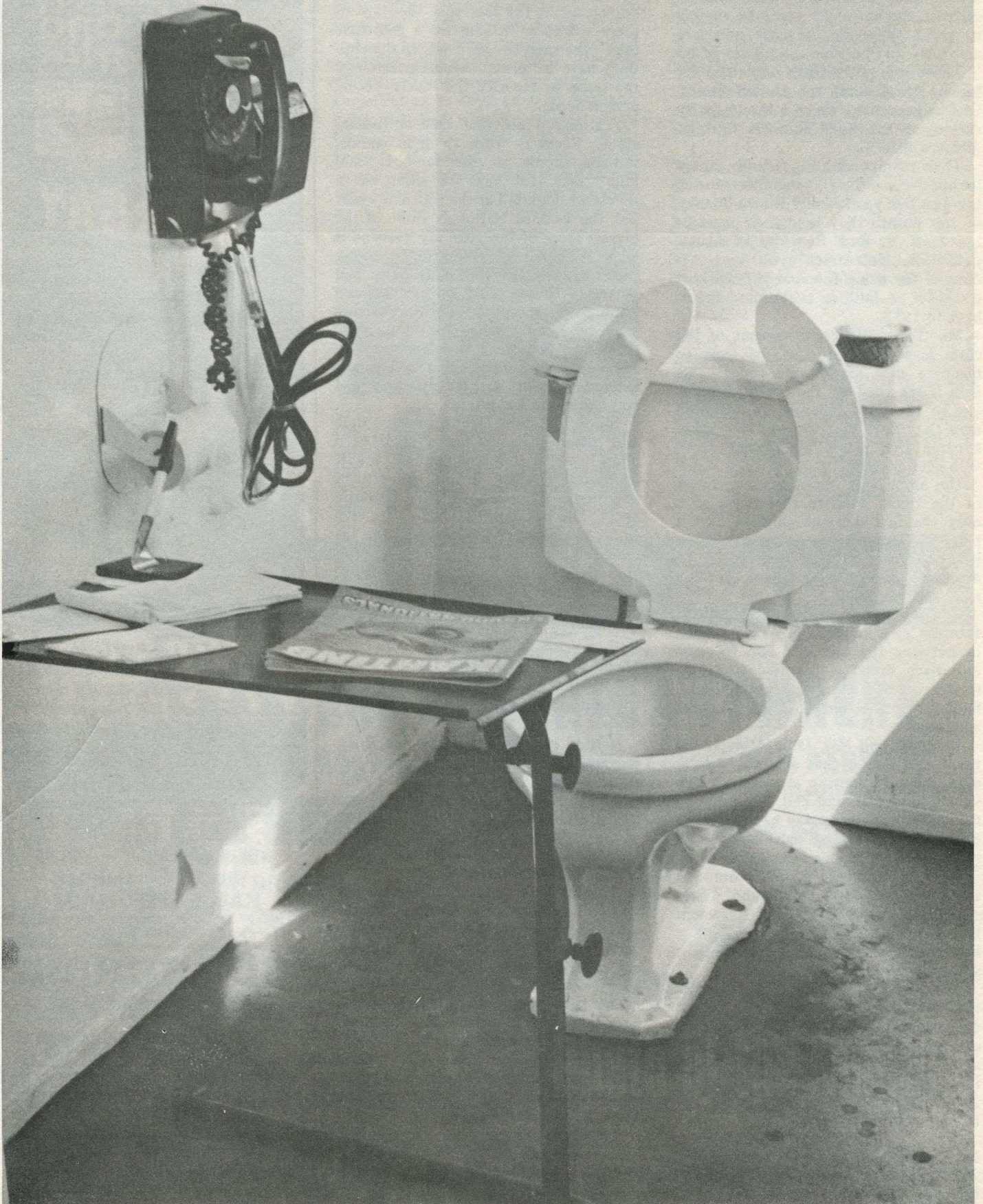
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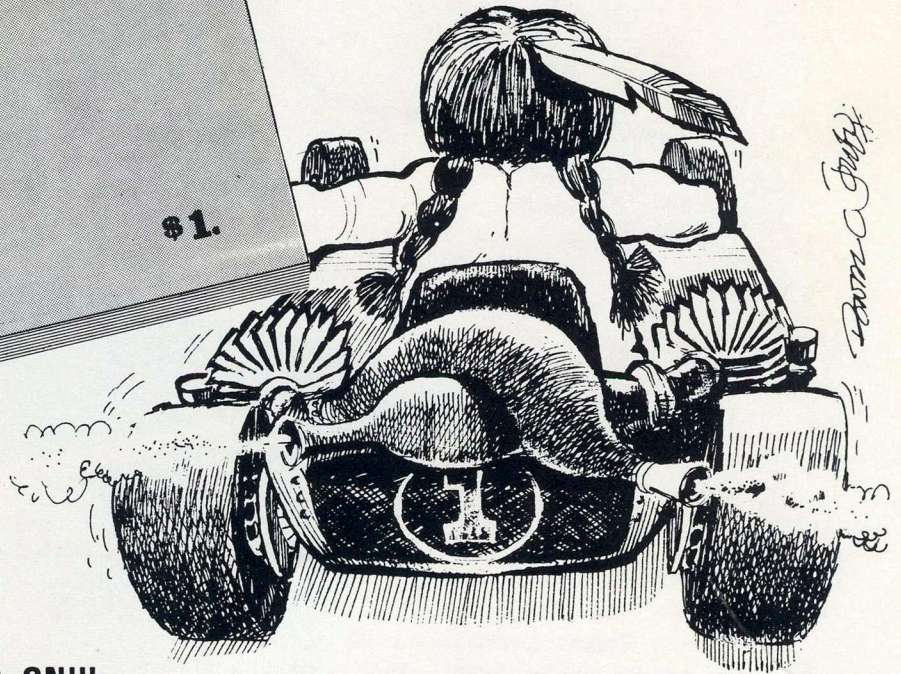
Photo of the Month

Hank Paronelli's "Thinking man's office".





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THE WILD WEST LIVES ON!!!

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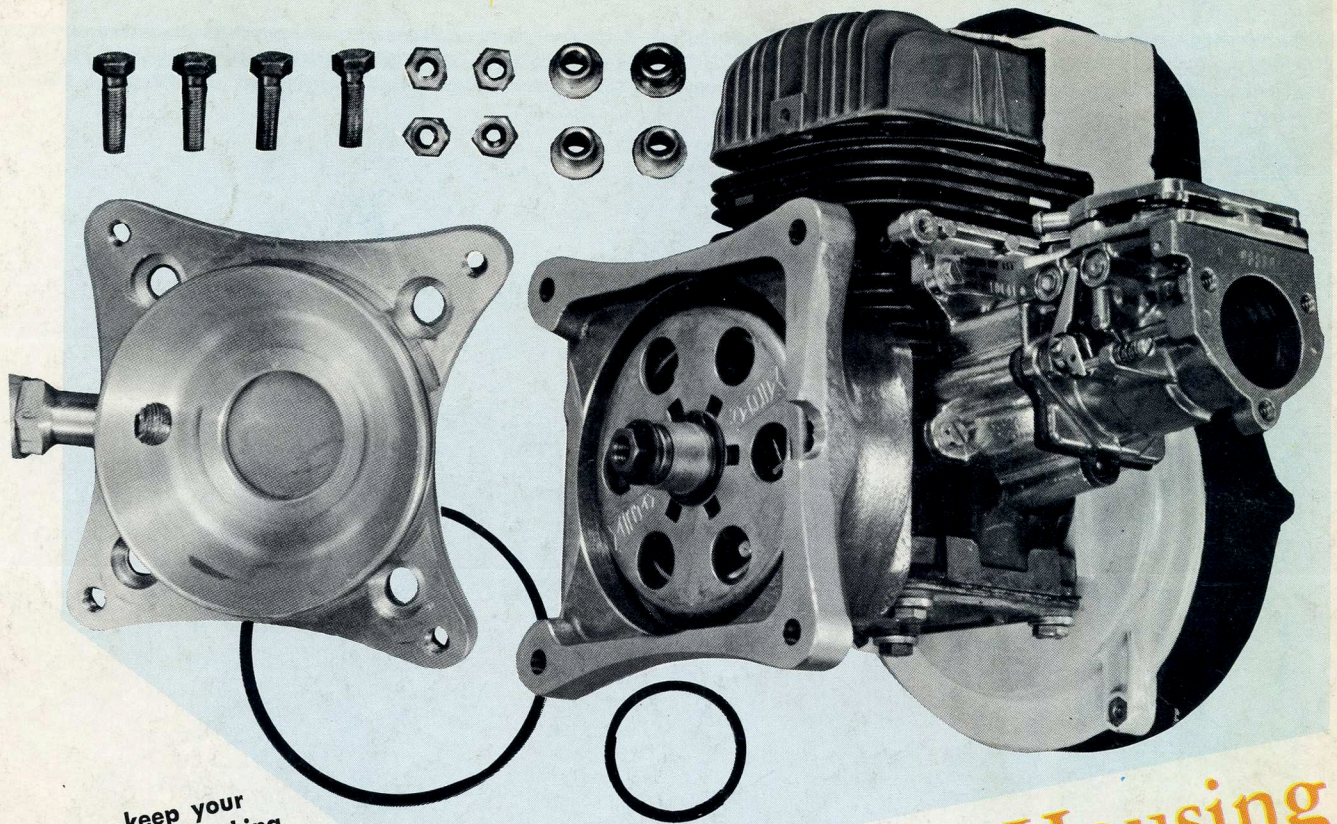
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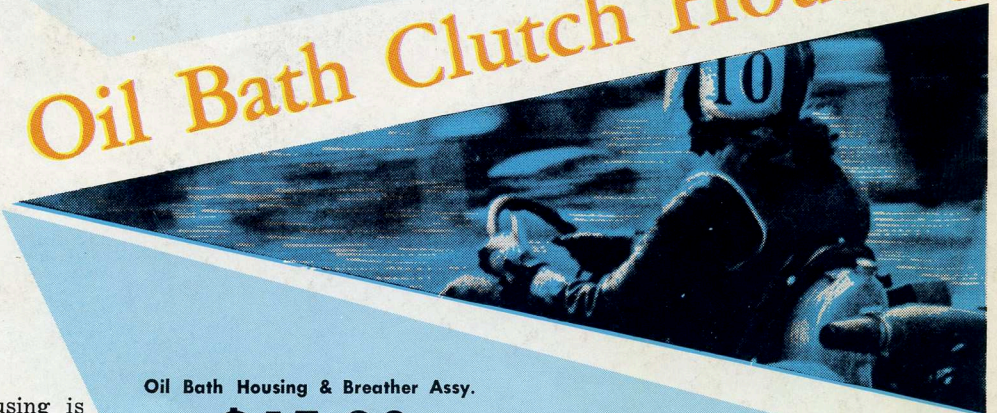
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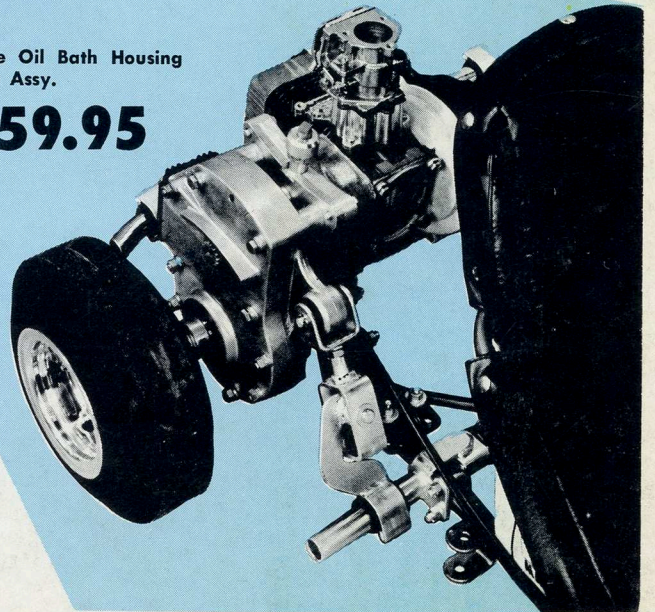

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