



# VEE LINE

NUMBER 69

JUNE 1970

## INTERNATIONAL VEE CHAMPIONSHIP

For the third time, North American drivers are going to Europe to compete with the top drivers there for the "International Vee Championship." Five U.S. drivers and one from Canada will leave on July 23, with all expenses paid by VWoA and Volkswagen Canada.

Representing the U.S. are Jim Killion (Woodsville, N.H.), Bill Scott (McLean, Va.), Tom Davey (Tenafly, N.J.), Harry Ingle (Charlotte, N.C.) and Jim Cox (Chattanooga, Tenn.). Bill Scott, you may recall, won the event at the Nurburgring in 1968.

Canada's driver is Brian Stewart (Pickering, Ont.). He was the Canadian Formula Vee Champion last year.

The race will be on Aug. 2, on one of the world's most challenging courses—Germany's 14½ mile, 176-turn Nurburgring. Five laps.

These "international" races are run in accordance with "home rules"—which means that the visitors have to make some changes in their cars when they cross the ocean. In Europe, of course, the Vees are based on 1300cc components (well, actually, their engines are a mixture of 1200, 1300 and 1500 parts, but the displacement is that of the 1300cc engine.) When Bill Scott won in 1968 he did it with a borrowed engine from one of Europe's top engine builders. Last year the Europeans didn't make the same mistake—they just didn't have any engines to spare, so the U.S. competitors built their own. They weren't quite able to overcome the extra years of experience the Europeans had, though they didn't do really badly, considering.

This year, they hope their previous experience will enable them to build engines competitive with Europe's best.

## IN A NUTSHELL

"Week in, Week out, month in, month out, we probably get more letters asking, 'How do I get started in racing?' than any other." That's the way James Crow, Editor of *Road & Track* starts a little two-page folder titled, "How to Get Started in Racing."

Actually, it's more like, "How to find out how to get started in racing." It has a complete list of racing organizations, recommended books, driver's schools, racing periodicals, etc., complete with addresses, and prices where applicable. Explanations of what you get and why you need it are brief, but complete and sympathetic.

We're now including copies of it with the packet we send to inquirers about Formula Vee. We don't insult you old timers by including it with a general mailing to members, but if you ask for one, we'll be happy to send you a copy.

## BAD NEWS

It appears that Zink owners are in for another round of body modification. In several places lately Zinks have been caught at tech, or have been protested, for being overlength. Apparently the only remedy is to bob off the nose, somewhat, on most models, although on the very late ones you may be able to get by with trimming a couple of inches off the exhaust megaphone.

If you know your car is overlength (tip of the exhaust pipes to the tip of the nose) and are waiting for word from Westport that the "overall length" will be considered that of the body only (VeeLine No. 67) forget it! "Overall length" means "length overall"—period. As Jim Patterson explained, when SCCA adopted the original Formula Vee Automobile Racing Association rules, for 1964, the original body dimensions were *not* included. (That's why the Autodynamics, which appeared on the scene early that season, did not look like a Formcar.)

Don't get that smug look on your face just because your car isn't a Zink, either. There are at least a couple of other makes which won't make it. Check for *minimum* length, too—especially if you have a Formcar with a bobbed-off tail.

## PACESETTER

Someday some open-minded racing writer, reminiscing about the good old days, is going to credit Formula Vee with starting a revolution in racing driving. Just for an example, many of you can recall the awed statement in regard to "Formula Juniors"—"They go around the corners on rails!" They did, too—until Formula Vees started passing them in the corners. They cornered so smoothly simply because they weren't going very fast. They braked yards before the Vees (often the Vees passed them before they even got to the turn), tippy-toed around the bend, and took off up the next straight, out of sight. Then a few of the drivers started imitating the Vee pushers, with amazing results. Watch any Formula race now—they're cornering just like the Vees!

## TRAGIC!

The National June Sprints at Road America (Elkhart Lake, Wisc.) were marred by the death of Vee driver Steve Backenkeller of Rockford, Ill. According to observers, a wheel of his climbed over a wheel of another car, rolling his car several times before it stopped.

## VW AWARD PROGRAM

When you register with VWoA for National prize money, include your Region. We'll try to get the news to your Regional newsletter if you strike it rich racing Formula Vee.

## BREAKTHROUGH!

After six frustrating years of struggling with the distributor drive shaft and pinion, we've finally found out how to install it (and remove it, if necessary) in seconds, rather than in minutes (hours?). We've decided that it's the thrust washer (or washers if your engine takes two) which cause the trouble by slipping to the lower side of the recess, so that the hole in the washer doesn't line up with the bearing hole. During assembly the taper on the bottom of the shaft isn't long enough to align the washer, and during disassembly the washer catches in the spiral oil groove, comes up with the shaft until it catches on the bronze crankshaft gear, and there everything comes to a halt.

The remedy? Simply tilt the engine so that the hole for the distributor shaft is perfectly vertical. Thread the washer(s) on a wire or long slim screwdriver, insert the tool into the bearing hole, and drop the washers. Still using the tool, align the washer with the bearing hole (now it won't slide out of place) and drop in the distributor shaft, rotating it slightly with a large screwdriver if the gear teeth don't mesh at first.

For disassembly, a pair of heavy duty snap-ring pliers (like the ones you should have for removing the snap-ring on the front of the crankshaft) is just right for getting a good grip on the distributor shaft. Again, tilt the engine to get the shaft vertical and lift gently on it, tapping it meanwhile with a screwdriver to dislodge the washers, which always seem to adhere to the shaft, rather than to the crankcase.

## POINT OF REFERENCE

If you're building an exotic exhaust system, and are wondering how to get or build a megaphone, the latest J. C. Whitney catalog lists them, for about ten bucks.

## IT CAN HAPPEN

Earlier VW manuals, at least, specify the "ringing test" for crankshafts before they are reinstalled in the engine. You suspend the shaft by a piece of wire at one end and tap it with a hammer, crescent wrench, or other suitable instrument. A clear ringing tone indicates a good shaft; a dull sound indicates a crack. (Poor man's Magnaflex!)

We've never tried it before—who ever heard of a VW crankshaft breaking? Well, we have. Not in Petunia, but in John's poor old beat-up VW "kid's car," which recently inherited one of Petunia's crankshafts. It had been reground for the last time, but was apparently OK, even though a rod bearing had seized on it. The break line shows that it was cracked at the time of the last seizure—the older portion of the crack was blued by the heat of some previous rod failure.

## MEMBERS' SOAPBOX

Dear Sir: . . . I want to build my own engine and I need some sound info. Do I want a 36hp block or a 40? The fellows around here are using 40hp blocks and 82mm jugs, but they tell me to use only 77mm. Now what's going on?

The Bug I got has trailing arms and brake drums larger than some of the other fellows around here have. (The drums look about 1/4" wider.) Now what's wrong here?

Are there any books on how to build a Vee engine? I hope I can also get the back copies of the VeeLine.

Biddie Biddison, Peoria, Ill.

To take your last question first, yes, you can still get all the back issues of the VeeLine. We're beginning to run low on some issues, however, and unless we can find some place which will reprint them for less than the 25c a copy we get for them, we may have to start skipping some of them. Most of your questions are answered in them, but for the benefit of other newcomers, too, we'll take them once over lightly—

Don't mess around with a 36hp engine. If you already have one, in reasonably good shape, use it as is for driver's school and perhaps your first few races (which you won't win anyhow) but don't invest any amount of time or money in it. You'll want the 28PCI carburetor for your later engine, and possibly the distributor (if it happens to be number VJR 4 BR 8 or VJR 4 BR 25, or even if it is some other mechanical-advance number) so it won't be a total loss. Also, many of the '60 and older "split-case" transmissions are still in use on Vees. They are geared a bit higher, and can't have their ratios changed, but a number of drivers seem to think they're OK.

As for the jugs, your friends are right. There are no rules for stop-light drag-racing, so 82mm is OK for a hopped-up Beetle. However, for Formula Vee only the standard VW cylinders are legal (77mm).

Brake drums were widened about 1/4" on the '57 VW. By all means use the wider ones—and tell your hot-rod friends about them!

Most of the Volkswagen manuals I have seen are blatant reprints of selected sections of official VW shop manuals, which ain't bad! You should have one of them. However I recently saw one of Henry Elfrink's "Volkswagen Technical Manual (1200 Models)" which has a lot of good dope in it that is not in the VW books. You should have one of those too. Check the ads in one of the Volkswagen magazines for addresses. For strictly Formula Vee stuff, I can only (with becoming modesty) recommend back issues of the VeeLine.

Dear Don— . . . Please explain in rule 5.5s, "Replacement of oil galley plugs with threaded plugs."

Dan Kaljian, Marblehead, Mass.

Next time you have your engine torn down, trace out the oil passages. You'll note that they take some rather devious routes in order to get to where they're going. These holes didn't grow there—they were drilled. It is very difficult to drill a hole around a corner, so they are made by drilling from the outside of the case, so that one hole intersects another to form the angle. The holes are then

plugged at the surface of the case, leaving a continuous oil passage which turns several corners. The plugs are generally just sheet metal discs, pressed into the holes. This leaves the section of the hole between the plug and the intersection with another hole as just a dead-end passage, with no actual oil flow through it. It's a good place for a chip from a ruined bearing, or other foreign particles, to hide.

If the plugs are removed, the passages, including the dead-ends, can be cleaned out with a percolator brush, which is much more effective than just the use of steam, solvent and compressed air.

The plugs can be removed easily by drilling a hole through them and prying them out with a punch or similar tool, but it's impractical to try to replace them in the original manner. We haven't tried this yet, so don't know the sizes of the passages, but probably 1/8" pipe plugs (actually about 3/8" diameter) would do the job. You'd also need a 1/8" pipe tap for threading the hole, and might have to drill it out first with an 11/32" drill for about an inch. It's also possible that the hole might accept a standard belt tap without drilling, in which case you could use a cap screw with a fiber washer for a gasket. I'd prefer a tapered pipe plug, myself, however—less likely to leak, and less likely to loosen and work out.

Dear Sir: . . . In your estimation, what are the best books available on (1) driving Formula cars, (2) Service manual for Volkswagen engines, and (3) setting suspensions?

Charles Metcalf, Springfield, Va.

- (1) a. The Technique of Motor Racing by Piere Taruffi (a classic).
- b. The Racing Driver by Denis Jenkinson.
- c. Sports Car & Competition Driving by Paul Frere.
- d. Guide to Competition Driving by Paul O'Shea.
- (2) and (3) Read the rest of this thing. One comment on suspension, though—books and instructions on setting up suspension are in the same class with those on picking a wife. What suits someone else may not suit you, so you'll end up setting it to suit yourself anyhow. It's a good idea to read all you can on the subject, so that you have some idea of what you're looking for, of course, but the only way to find it is to experiment.

## NORTHEAST VEES AGAIN

Dear Mr. Cheesman: As the winner of the 1969 Northeast Division Vee Championship, I feel I should comment on your discussion as to why Northeast Vees go so fast.

To begin with, I don't know who supplied you with your "information" (since he wouldn't identify himself), but he certainly isn't one of the top Northeast drivers. As a group there isn't a more proven legal collection of cars around. At the ARRC and the Daytona Trans-Atlantic races, the top finishers (and Northeast drivers) Bill Scott, Jim Killion (really a Northeast driver) Jim McDaniel and I were all torn down by SCCA's chief tech man, John Timanus, and declared legal. And if you don't believe Timanus will throw a car out for a technicality, just ask Fred Opert, who had a Formula Ford disqualified at Sebring for a real Mickey Mouse violation.

I also feel you are incorrect when you say Northeast drivers haven't done well in big races." Aside from my miserable showing at the '69 ARRC, the Northeast has dominated these races (with legal engines). At the '68 ARRC Northeast drivers finished 1-2-3. At the '69 ARRC they sat 1-2 on the grid. A Northeast driver won the '69 Daytona pro race, and at the '70 pro race Northeast and Southeast drivers completely dominated, finishing 1-2-3-4-5-6.

I think your statements are completely unfounded and bad for both the sport and the class. I welcome protests, but I feel the only result of your statements will be to cause the beginners to say, "Well, the winners all cheat—why shouldn't I?" And this is what will really destroy the class.

Many changes have come to Formula Vee since Col. Smith built his first Formcar. Perhaps you should look into some of them.

Thomas Davey, Tenafly, N.J.

(For the benefit of those who came in late, this discussion started several months ago, with the question, "What makes the Northeast Vees so fast?" It is an accepted fact that they turn about 500 more rpm on the straights than Vees do elsewhere, which translates to about 10 miles an hour. This brought up a second question, "How come they're not all that much faster at the Road Race of Champions runoffs, where Vees from all over the country compete?" One answer I received was to the effect that rule enforcement (interpretation?) was somewhat relaxed in the NE, or to put it bluntly, "We cheat." Now, back to the present—)

First, let me say that my "informant" is very plural, and that only one of him is—was—a Vee owner. Further, most of the comments were offered in explanation—not complaint—often with some rationalization for why the practices mentioned were justified.

As to your statistics regarding the ARRC, counting Jim Killion as a NE driver (instead of Central Division, as he was listed in the official results) the NE Division did take 1st and 2nd (also 9th and 11th; four NE cars?). The next three cars, from three other Divisions were within six seconds of the winner, which doesn't indicate a 10 mph speed differential, but I'll concede the point—two of the NE Vees were faster at the '69 ARRC, and three of them in '68. (Where were they in '67?)

I specifically disavowed any comment on the "international" races at Daytona. First, the original question was in regard to the relative speeds of Vees from different sections of the U.S. With most of them in these races coming from the East, such a comparison isn't practical. Second, there was so much grumbling (in connection with the '69 race, especially) about the quality of rule enforcement that I didn't feel that the results conclusively proved anything. For example, a number of competitors attempted to run with illegally modified carburetors. They were caught at tech, and most of them were changed, but one of the first four finishers kept his. Which car was illegal couldn't be determined, however, because somehow the identifying marks on the impounded carburetors got rubbed off. This "inspection" of carbs was reportedly the entire extent of the "teardown."

Most of this controversy stems from use of the word "cheat," which is a fighting word

anywhere, so would it be OK if I amend my informant's original statement? Let's put it that there seem to be regional (uncapitalized) differences in the interpretations of the rules. For instance—

I've been "informed" that at a Regional race at Thompson Speedway (Conn.) last year, all the Vees were weighed. Two Form-cars and two other "older" cars were overweight. Twenty cars were under the legal minimum by as much as twenty-five pounds. This was considered the result of using tires lighter than those for which the cars were designed, rather than as a deliberate attempt to cheat, and since nearly everyone was in the same boat, the cars were all considered "legal." Further, since everyone would be faced with the very difficult(?) task of bringing his car up to the legal weight, there was a "gentlemen's agreement" to just forget the whole thing. Presumably, they're still "legally" underweight.

Or let's talk about generators (one more time!). I've been told so many times that I can no longer question it that it's general practice in most of the East to set the voltage regulators for an output of about 4½ volts, which results in a generator which won't function with a normally charged battery. There are several other cruder methods of accomplishing this, of course, such as use of worn out brushes, insulated brush leads, etc., but this one has two advantages. First, it can be proved, with a partially discharged battery, that the generator is operative, and, second, if for some unforeseen reason the battery voltage does drop drastically, the generator will then provide sufficient power for the ignition. Apparently, in some areas, this is considered a "legal" interpretation of the rule, "Nothing must be done to interfere with the normal battery charging function of the generator."

Or take this one, which, I am told, has been accepted as "legal" at least once, at one of the more important races. On the first three cars, yet! Actually even the presently prevailing practice of fly-cutting the cylinder heads to achieve the minimum legal combustion chamber volume has never been legalized. It is accepted, however, on the theory that it leaves the head "stock," with the volume that VW intended it to have in the first place. It's called "blueprinting." However, this was carried somewhat farther. Instead of cutting off the entire flat surface in the heads, a groove only wide enough to accept the end of the cylinder was cut. It was argued—successfully—that the area above the top of the cylinder (to the bottom of the groove) was the "combustion chamber," and was of legal volume, that the "headspace"—distance from the top of the piston to the top of the cylinder—exceeded the 0.039" minimum, and that nothing in the rule said that the uncut center portion of the original "combustion chamber" couldn't protrude into the headspace (which could reduce the overall volume by as much as 3cc).

And speaking of heads, the rule was originally interpreted to mean that any portion of the intake port which measured less than 29mm could be enlarged to that dimension, but that any area larger than that could not be touched. Valve seats were not considered "ports." Then, due to lack of official definition, and to who-can-shout-louder arguments, valve seats, too were "legally" enlarged. Now, I am told, the entire intake port is being hogged out to the point where a strong light will

show through the walls, to form a "plenum chamber." All strictly "legal," of course, since it has been argued past a teardown somewhere.

Or how about manifolds? It's a simple matter to remove the heat riser tubes by melting a couple of narrow strips in the aluminum casting in the center with an acetylene torch, with practically no heat being transmitted to the manifold. However one engine builder, at least, prefers to throw the entire assembly on a forge fire, heating the whole thing red hot while incidentally melting off the aluminum. When it is removed an oxide scale is formed, of course, inside and out, and since a flake of it might come adrift and scratch a cylinder, it has to be removed—by sandblasting. Of course this reduces the wall thickness somewhat—inside and out—resulting in a slightly larger inside diameter, but it does make a nice clean manifold, and what tech inspector ever checks a manifold, or would recognize an oversize one if he met it face to face? They're apparently "legal," since they've passed tech inspections.

Are these some of the "changes in Formula Vee since Col. Smith built his first Form-car" which you suggest I "should look into?" If you had something else in mind, I'd appreciate a hint, at least. Please understand and believe—I'm not accusing you or anyone else of any of these practices. However, in view of your last remark, I can only assume that you are aware of them, at least, and I'd appreciate your specific comments on them.

If you've followed these pages at all, you know that I, too, am concerned with what the beginners will say. The major objective has been to help them catch up with the seven years of "changes in Formula Vee" so that they won't say that they have to cheat in order to go fast. So, for the good of the sport and the Class, and for the benefit of the beginners (and a lot of us old-timers), I'll ask you—"Just how do you get 5800 rpm on a flat straight out of a Vee engine—legally? What does make the NE Vees so fast?"

#### UNCLASSIFIED ADS

FOR SALE: Beach Mk5B. Just add your VW components. Z-bar, heavy-duty roll bar, tonneau cover, 4 good Goodyears and 1 spare. Blue metalflake, never pranged or scratched. \$550. Custom trailer, \$350. Vince Chimera, 233 Thomas Ave., Rochester, N.Y. (716) 342-6296.

FOR SALE: '69 Zink, updated to '70 specs. More extras and spares than can be listed. New Lynx/PEP engine. \$2100. Don Bush, 972 Anita Ave., Los Altos, Cal. 94022 (415) 948-0245.

FOR SALE: Autodynamics MkIV, less VW components (complete kit). Stiffened frame, lengthened for 6-ft.-plus driver. Heavy roll bar with lateral bracing. Dan Kaljian, P.O. Box 402, Marblehead, Mass. 01945 (617) 631-4656.

FOR SALE: '68 Autodynamics Mk5. All chrome suspension, Z-bar, suspended pedals, hyd. clutch, 12 mounted tires, many spares. With complete driving outfit, \$1700. Bernard Sweeney, 530 E. Hector St., Conshohocken, Pa. 19428 (215) 828-3521.

WANTED: Late model Formula Vee, with trailer. Please give full info in first letter. Howard H. Pryor, Box 518, Brewster, Wash. 98812.

WANTED: Used Vee. Will consider one without engine. Please include details and price in your reply. All replies answered. Dave Sullivan, 218 Fawn Meadows Drive, Ballwin, Mo. 63011 (314) 527-6831.

#### CAUTION!

No matter what you're using for a VW manual, it is no doubt a reprint of one of the official Volkswagen books. It no doubt—in the section on installing connecting rods on the crank—tells you to torque the cap bolts to approximately 35 foot pounds. And you've probably been doing it, with no problems. However—in their official little booklet of specifications called "Without Guesswork," which is revised each year, Volkswagen has changed those torque values, for the past two years, to 22 to 25 foot pounds!

Since we had a rod let go in Petunia, evidently due to the failure of one of the bolts, and another one broke before reaching the 35 ft. lb. mark, it seems fairly obvious that the newer value is justified. Evidently 35 is right on the border line of disaster.

#### SNEAKER

Have you ever wondered just how much oil actually is flung outward into the valve cover in a hard turn? Well, probably entrapped air builds up enough pressure to prevent it filling completely, but it tries. At our last race of the season last Fall, which was held in a spirit of fun and games on the quarter-mile stocker oval at Yakima, Petunia started vomiting oil on every turn during practice. The engine room was so doused in the stuff that we couldn't pin-point the sources, but a new valve cover gasket was obviously indicated, for a starter. That didn't do the job, so we removed the fan housing and checked the oil cooler for leaks. It was the only dry spot on the engine. For some reason (not typical of our season's run of luck) we weren't black-flagged, so we poured in a couple of extra quarts of oil and went racing regardless. After it was over we found that after six years of racing, one of the studs holding the intake manifold in place had vibrated completely out. The threaded hole extends through the casting and into the valve chamber, and in the corners was providing the exit for the oil—lots of it! So, if you notice the stud turning when you remove the manifold, or if one of them sticks up higher than the others, better check it out. Use a drop of "Loctite," or (strictly as an emergency measure, of course) take the stud out completely, carefully distort the last two or three threads which screw into the head with a punch, and screw it back into the hole. The distorted threads will jam in the aluminum and (probably) will prevent a recurrence.

#### OPEN LETTER TO SCCA OFFICIALS

Dear Sirs: At any typical race, if a driver is injured there are doctors and ambulances in attendance and if necessary he can be rushed immediately to a hospital. If he is, however, there seems to be a need to keep the news from the public. No official, sub-chief, or friend of the phone girl even tells his crew. Keeping the info a secret from the crew is cruel and unfeeling, but beyond that, a relative may be needed at the hospital to sign a release for surgery, etc. I therefore urge a change in policy—even a change in the GCR, if necessary—in order to correct this situation.

Harriet Gittings,  
Executive Secy., FVI  
Fremont, Cal.

INTRODUCING...

Super Vee made its long-awaited public debut on the fourth-of-July weekend in two races at opposite ends of the country.

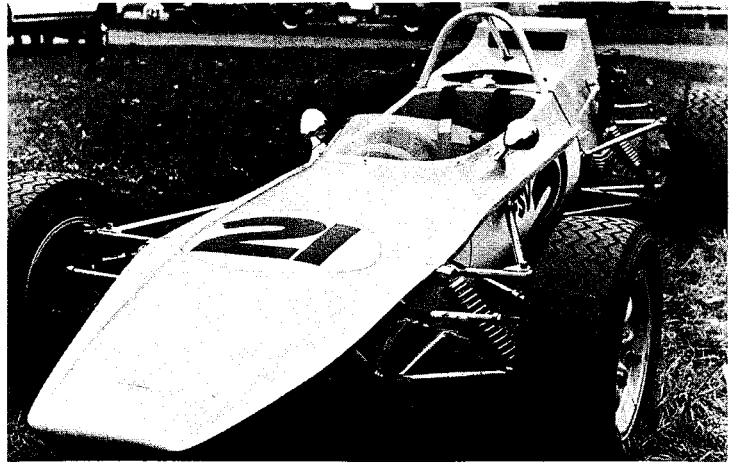
At Lime Rock, Conn., on the Fourth, Vee and SV builder John Zeitler of Stamford, Conn., put on quite a show in a field with two other SVs and a swarm of Formula Fords. Only a miscalculation on his part deprived him of a second-place finish. As Zeitler explained to Joe Hoppen after the race, he knew he was unable to catch Formula Ford-driving Bill Scott, but thought he was far enough ahead of the rest of the pack to coast to a second-place finish and ease the strain on his brand-new engine. Unfortunately, Zeitler wasn't quite that far ahead and a couple of FFs overtook him in the last lap.

Even so, Zeitler did the near-impossible, finishing ahead of about 30 Formula Fords. His surprisingly strong showing with an untried car accounted for nearly all the track announcer's comments during the half-hour race. After the finish, he received an award for his performance.

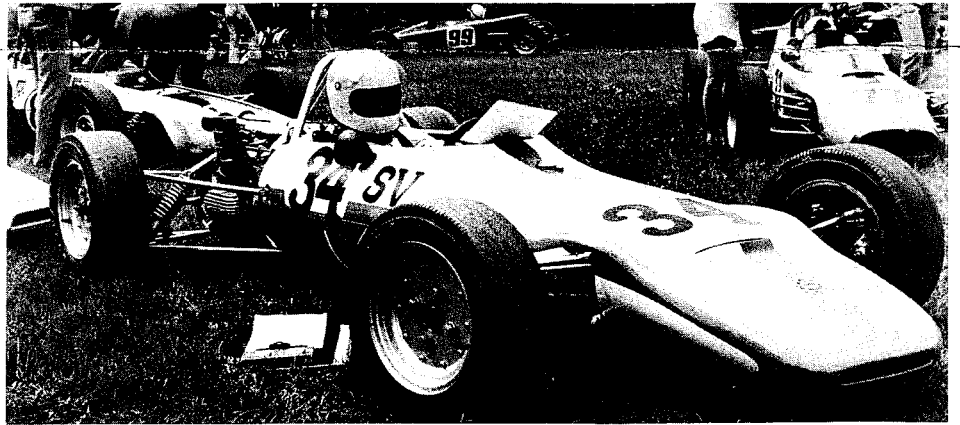
The second SV was a Zink driven by Harry Ingle, one of the U.S. team members to race at the Nurburgring on August 2. Ingle predicted in advance of the race that his new car still needs some work before it can take the top Fords, but said he has no doubt about the ultimate outcome.

The third SV was a home-made "special" driven by Jay-B Swank of Rochester, N.Y., which also finished.

On July 5th the second race with Super Vees took place at Riverside, Calif. The race included two SVs competing in the Formula SCCA event. Tim Sharp of San Diego, driving a Caldwell, placed seventh overall in the race, taking the class win; Don Zacharie of San Jose failed to finish.



At Super Vee's debut July 4th at Lime Rock, Conn., were John Zeitler's Zeitler (right) in which he stole the show, and Harry Ingle in his Zink (below).



SUPER VEE

It looks as though Super Vee is on the road to being the truly International class that it was hoped Formula Vee would eventually become. Although it is not accepted yet in Europe, Macon Race Cars, of Middlesex, England, is already building them. They'll be sold here, however, before they will in Europe. Fred Opert Racing will be the U.S. distributor.

The advance publicity says it will "drive through a Hewland Mk8 gearbox with a 9:31 ring and pinion." However, I am informed

that that was a typographical error—they'll use VW boxes and gears, just like everyone else.

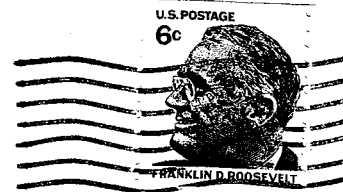
Winkelman, too, is bundling a Super Vee for export to the colonies. The first one is expected here by the time you read this.

There are fourteen other European builders working on SV prototypes, principally for the European market. Super Vee is expected to be adopted in Europe for the '71 season.

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