



VEE LINE

NUMBER 36

SEPTEMBER 1967

DIRECTOR'S CORNER

Well, here we go again! It's ballot time! Last year I predicted we'd have 500 ballots to present to SCCA this year — and we just might make it. It would be a miracle, but we have about 535 members as this is written, and if everyone else sends in his ballot — and if YOU send in YOURS — we'll have 535. OK?

To be counted they will have to be received *here* by Oct. 12, as the Car Classification Committee meets to consider the 1968 rules on Oct. 21 and 22. It will take that long to tabulate them and get the results to the members of the Committee. SO — if you are going to vote (you are, aren't you?) please do it right away — today — NOW — while you're thinking about it!

A different form is being used for the ballot this year. In the past, specific rules have been proposed, resulting in some confusion, I'm afraid. ("Yes, no modification should be allowed.") SCCA has never adopted any of them word for word anyhow, so this year we'll give them only opinions and let them word them to suit themselves.

Voting, as defined in our Constitution, refers to matters affecting the organization itself — officers, amendments, etc., and is reserved to Active Members only. As in the past, however (unless there are objections), Associate Members, too, are invited to vote on the rules proposals. After all, most, if not all of them, intend to have cars someday so they, also, have a vital interest in the future of Formula Vee.

Observance of the rules seems to have changed somewhat in the past year. There seems to be greater *awareness* of the rules — fewer obvious violations due to ignorance — but, on the other hand, a greater tendency to *bend* them. This refers, of course, to the use of unusual components, modification and other practices defended under some far-out interpretation of the rule. Surprisingly, in many of these instances enough doubt and confusion has been raised to either ward off a protest, or postpone a definite decision if a protest is made.

It is certainly to be hoped that SCCA will take a firm stand on these points this year. The recent hassle over the body deviations could have been forestalled a couple of years ago, had those responsible not swept the problem under the rug, but that same situation *still* exists in relation to "camber control devices." Are transverse leaf springs legal, or are they not? While SCCA has been ducking a direct answer to the question for two years, progressive deviation from the spirit of the rule (and the letter) has led to the point where cars are now seen with leaf springs which have no camber controlling function whatsoever — except in the sense that legal coil springs also "control camber" by supporting the car.

We're reminded every now and then that the rules are "permissive." ("If they don't say you can — you can't!") This sounds reasonable — but it requires agreement by everyone concerned as to whether or not they say you can. The Vee rules, as they now stand, need little if any changing, but they'd still benefit by a good bit of mending. Let's hope they get it this year!

Very few of the SCCA officials are Vee (or even VW) owners, so some reluctance to come to grips with some of these technical Vee problems is understandable. However, it would appear that in case of doubt it would be only logical to call on the collective knowledge and experience of those who *are* familiar with the subject, referring, of course, to the membership of FVI. It's impossible to please everyone, but with the information available from our ballots, pleasing a majority in the Formula Vee class, at least, should be a cinch!

During 1966 slightly more than 1300 inquiries about Formula Vee were answered by this organization. In the first eight months of 1967, slightly more than 1300 inquiries about Formula Vee were answered by this organization.

BE A PART OF FORMULA VEE — VOTE!

HAPPY ANNIVERSARY!

The date isn't exact, but some day this month marks the third anniversary of FVI. It's older than that, really — the organization was really started in early 1963, as the "Formula Vee Automobile Racing Association," but suffered a relapse soon after its inception. It was revived again in 1964. The first "Bulletin" was published in October. Membership, so far, has just about doubled each year.

PROBLEMS

Glen Marcus, of Naples, Florida, sends a newspaper picture of himself and Vee, beside a '55 Ford and its driver. Seems he raced the Ford at the local stock-car track. He notes, "Some guys'll do anything for a race! I lost the 5-lapper by a little bit, but. . . ."

"I'd like to pick the brains of anyone who cares to listen to our two main problems:

1. Under *hard* braking an oscillation is set up in the front end that threatens to shake it right off the car. Making hard brake tests on a long straight, and carefully watching the front wheels, I'd swear the inside edges of the front wheels were raising fractionally and trying to go to *positive* camber. We've visually inspected the drums (appear OK) torqued the wheel studs, trued up and balanced the front wheels. Any ideas?

2. How (besides more negative rear camber) can I promote some understeer? The rear of the car is very much like the other cars on the course — keeps trying to pass me!"

You didn't mention, Glen, but I assume you have also checked all your front-end joints (king pins, tie-rods, link-pins, etc.) and that you have shocks which are working. There is no definite test for shocks, as far as I know, but they should at least be a lot harder to stretch out than to compress if they are to do any good.

The frequency of the vibration would give some clues, too. If it's a one-per-revolution vibration, which continues even after slowing down as long as the brakes are applied, it could be your brake drums, even though they look OK. With a wheel jacked up, and someone applying the brakes slightly, turn the wheel over by hand and see if it drags more at one spot than in others. With the wheel bolted directly to the drum, some distortion is possible when the wheel is mounted. Try tightening the wheel bolts in about three stages, working around the wheel and skipping every other bolt each time (1-3-5-2-4-1, etc.) Start at the same point every time you change wheels (like at the brake adjusting hole) and rotate in the same direction each time, and if you live long enough, and don't bend the wheels and drum, you might eventually get it worn to a perfect circle. In actual practice, however, you'll find *some* out-of-roundness, regardless. You can feel it when you adjust the brakes. Keeping it at a minimum is really all you can hope for. Oh, and just for experimental purposes, you might try

(Continued on Page 4)

BREAKTHROUGH!

At last a cure for that dread malady "Carburetoritus" has been discovered! *Two* cures, in fact! This announcement has been made before; but this time — under supervised laboratory conditions — tests on two volunteer patients, made only minutes apart, proved conclusively that a Vee suffering from this malignant disease *can* be cured.

The first cure was originally announced in the #33 VeeLine by that eminent Australian M.D. (Motor Doctor) Aubrey Revell. It involved a floatectomy — removing the carburetor float and replacing it with another Solex float utilizing a separate arm. FVI's Research Division, before endorsing this remedy, obtained the specified parts and tested them at the Pacific Raceways laboratory on the week-end of Aug. 26-27.

The Chief of the Carburetor Section reported: "The 'Australian' remedy does work. The brass float, while of somewhat greater displacement, is also considerably heavier. It therefore floats lower in the fuel, requiring a higher fuel level in the bowl (by approximately 1/2") before enough buoyancy is obtained to actuate the needle valve. This higher fuel level results in a richer mixture at all speeds, which must be compensated by jet adjustments for best performance. No adverse effects were noted in the operating range of rpm's, and every symptom of 'cut-out' in the Indy Turn, of which the patient had complained constantly during the past year, completely disappeared. The only side effect noted was a tendency toward overrich idling at speeds above 1000 rpm, due to the fuel level being so high that fuel was drawn through the main jet as well as through the idling system in that speed range."

During the preliminary preparations for the above test, a different, though somewhat similar approach to the problem suggested itself. In the end it proved to have three advantages over the Australian system: (1) no retuning of the carburetor is required, (2) no expense is involved and (3) there is no question as to the legality of the parts. (Some purists, it is admitted, might criticize this approach on the basis that it does involve a slight modification of the standard parts.)

Dr. Cheesman's report continues: "Preparation for the second test involved only a very simple operation on the existing float assembly. The float arm was amputated from the float by excising the plastic 'rivet' heads with a sterile jackknife. A small growth on the bottom of the float was similarly removed to provide a smooth, rounded surface. The amputated arm was straightened at the wrist and elbow bends with a pair of pliers. The float was then reinserted into the carburetor body cavity — but in an upsidedown position, and the arm was replaced in its customary position, laying loosely on the top (the bottom) of the float.

"The results were dramatic! Again, the patient evidenced a complete cure — and with none of the side effects noted in the first experiment. It was not even necessary to alter the diet, as the patient's fuel level was raised only about 1/8".

"A few minutes after these results had been announced, the identical operation was performed on another patient suffering from the same illness. Fifteen minutes later the grateful patient returned to announce another complete recovery.

"In my opinion it is safe, on the basis of this exhaustive research program, to announce the results of both of these tests to the public. It should be noted, however, that while they have proved effective against the PCI virus, no research has been attempted in relation to the PICT strain."

Ingredients for the second test are readily available, but for those fellow researchers who may wish to confirm the results of the first, the following prescription is offered:

#51638/1 Float	\$2.35
#52180 Arm	.30

— to be applied as indicated

These ingredients are available, post-paid, from: Arnolt Corp., Warsaw, Indiana.

GOOD POINT!

Stan Link, from the USS Fox, somewhere in the Pacific, writes —

"...In the paragraph concerning how not to have a fire due to a sticking float causing gasoline to squirt out of the 'little slanted pipe in the throat of the carb' (the equalization tube), you suggest a piece of flexible tubing overboard. Sounds good, except for the fact that the position of the tube end could lean-out or excessively richen the intake mixture, depending on its relation to the direction of the air stream. If facing forward, a positive pressure would be built up in the carburetor bowl; if aft, or at right angles to the airstream, a negative pressure would result. Even if not in the actual airstream, the carb would function differently due to the end of the equalization tube not being in the intake air flow as it was designed to be.

"It was put there for a reason — to ensure that the carb meters the proper air-fuel mixture, and so that the float can function properly under varying throttle conditions with respect to air flow. Probably the best thing to do would be to leave redesigning to the manufacturer and to make sure that the float functions as intended, without sticking. It may help you to know that the new synthetic tipped float needles are a sure cure for sticking. Most high quality rebuild kits come with them."

Good thinking, Stan! I just made a simple manometer out of a piece of plastic tubing with water in a U-shaped loop, and tried it out the window of the Chev at 60 mph, and it is possible to get as much as a two-inch differential with the tube end facing forward, about half an inch (negative) facing aft, and about an inch with it at right angles to the wind. This should have very little, if any, effect on the float action or fuel level — the float would still actuate the valve at the same point, to maintain the same level; but it could very well have a tendency to "push" fuel out the main jet easier, or hold it back, depending on whether the pressure

differential was positive or negative. Actually, the function of the equalizing tube isn't quite as sophisticated as Stan suggests, though the general effect is the same. It's principal function is to prevent a clogged air cleaner from acting as a "choke" by exerting the same "vacuum" on the fuel in the bowl as is effected at the jet. Note that the tube is above the choke butterfly. If it were below it, choking would be impossible.

As to whether or not the original design is the ultimate for racing, there have been several comments that the addition of a plastic tube cured cutting out. However, this referred to only a short length, out of the carburetor air stream, and certainly wouldn't be of any benefit as a fire prevention measure.

This equalization tube *should* be considered a potential fire hazard. We, too, had a sticking float which squirted gas out of the tube, but it was while we were starting the engine, with the lid off, so it was seen in time to prevent a fire. Filing off the projections on the back of the float hinge has apparently prevented a recurrence, but it's obviously something that can happen.

If turning the float upside down — as described on page 2 — turns out to be the answer to cutting out (I'd certainly appreciate reports), making the plastic tube unnecessary, perhaps an extension (air horn, velocity stack, baby-food can with the end cut out, or what have you) tightly clamped to the carburetor air intake would eliminate the danger from this source. Any overflow would be directed into the carburetor instead of into the engine room, giving ample warning, and perhaps stopping the engine as well.

This, of course, would be in violation of the present rule *against* attaching air ducting to the engine components, so read the ballot carefully before you vote.

Incidentally, if you're considering a "ram tube" — an air duct to the carburetor pointed into the outside air stream, you could get an increase in pressure equal to a difference of perhaps 1000 ft. of altitude. The normal atmospheric pressure can change in a few hours by a much greater amount.

GOOD IDEA!

"Dear Don — Concerning this rule stretching — a set of homologation papers for a 1200 VW 'C Sedan' from ACCUS-FIA would settle a lot of questions as to what is and what isn't standard. They are very specific about the engine. The papers are in German, although I think the format is available in English.

I am enclosing a check for my next year's membership. Let's keep 'em stock (the cars — not the memberships)."

Bill Gilbert, Corvallis, Ore.

That's a good idea to pass along to your Stewards! I have a set for the 1300, sent to me from Europe, and as Bill says, they're in German. I can read the pictures, though, and see that the angled manifold is typical for the 1300, and the straight one for the 1200 engine. An English translation would be even more enlightening.

VOTE, OR FOREVER HOLD YOUR PEACE

HEY! HOW'D THAT HAPPEN?

(This discourse on "handling" may cover a lot of territory, and there may be a lot in it that you won't agree with, but I hope it will be of some help to some of you, at least. Comments and arguments will be most welcome.)

A number of questions have been received on how to correct or change "understeering" or "oversteering" tendencies in Vees. Usually the problem is "oversteer," which is a polite name for "spinning out." The writers are apparently under the impression that there is some magic formula - some mysterious secret for setting up the suspension, or some combination of tire type and air pressure - which, if they could find it, would solve their problem. There isn't. There are ways to *affect* these tendencies, to some extent, but basically, they are *not* of a mechanical nature.

To put first things first, just what do we mean by "oversteer" and "understeer"? Well, years ago, in Europe, especially, steering was set up for the highly crowned roads. The car, instead of pulling to the low side of the road, would climb to the high center of the road, where it tended to stay by itself. (It took a little guidance when necessary to pull out to pass another car, of course.) This tendency also made negotiating a curve very easy. In fact, after getting the car started around a corner, one had to exert effort to straighten it out again, and even to keep it from turning shorter. A car which was difficult to handle in a corner for that cause was said to have "oversteer."

Today's cars, of course, which fight turning a corner and straighten out by themselves if you let loose of the wheel, have "understeer."

That's not what you meant? Well, how about this? When the car leans in a turn, and peculiarities in the suspension (like a curved leaf spring on the rear axle straightening out) shifts the rear axle to the rear on the outside, and pulls it ahead on the inside of the curve, this shift adds to the turning effect. This requires straightening the front wheels a trifle to compensate, which reduces the lean, which reduces the rear-end steering, which straightens the car out some more, which requires a little more turning of the front wheels, which causes the car to lean. . . . Soft tires in the rear, which allow the rear wheels to swing out in a corner as they roll under, may have somewhat the same effect - "oversteer."

You've probably all seen the classic charts and graphs relating to steering and front-end geometry. Basically they prove that the "slip-angle" of the front wheels increases as tire pressure is lowered, and is decreased with an increase in pressure. It takes a little study before you realize that "slip-angle" doesn't refer to slippage at all, but to the fact that in a turn the wheel doesn't pick up the "contact patch" off the pavement from the same point where it laid it down. It doesn't slip, exactly (except at the rear of the patch, as the weight is taken off), but the tire rubber distorts - the rest of the tire changes direction a little, while the portion on the pavement stays pointed the same way. The softer the tire, the bigger the patch, the better grip it has on the pavement, and the more deviation there is between the direction the tire is pointing and the direction it's actually travelling. That's "understeer."

That doesn't sound like what you had in mind, either? OK - I know what you're talking about. Those points above were brought up for two reasons: First, to impress you with the *very* scientific background of this treatise, and second, to dispose of the "slip-angle theory."

Everything I've ever read on the subject of handling is based on scientific theory, sometimes borne out by laboratory experiments, but always based on perfect conditions, and on the premise that the tire is rolling in a straight line - or a perfect arc - in uniform and constant contact with a perfectly smooth, level surface. The above theory regarding "slip-angle" is undoubtedly absolutely correct as far as it goes; but when "slip-angle" changes to "slide-angle," that type of theory no longer applies. There's no question, as far as I'm concerned, that my family sedan acts precisely according to theory every time my wife takes a corner downtown with it; but that's not what we're talking about either - is it?

OK, so we're talking about "the rear end oversteered around the front end three times before I got it straightened out!" Right? Well, that's what we'll talk about next month, if there's room. Will we learn how to set up a car so it *can't* spin? I can hardly wait to find out - can you?

IDEAS EXCHANGE

From Ted Schroeder, of Birmingham, Mich. - ". . . After half a season in my Lynx, 2 3rds, 3 2nds, 1 DNF. (Offset tie-rods ain't the plan.)

"Non-VW spindles bend easily - magnafluxing pays.

"Plastic tube dangling over side of carb has cured my cutting out.

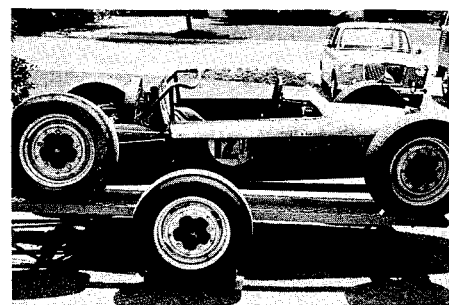
"Concerning valve guides - I would interpret 'any valve guides' to include cut-down guides. Mine aren't, but I would if I thought I could!"

Lynx uses long bolts and spacers between the spindle steering arm and tie-rod ends to lower the tie rods below the driver's feet. Ted, have you tried reaming the steering arm holes to 7/16, using a spacer machined from a solid bar instead of a length of tubing, and going to 7/16 Heim joints instead of the 3/8" ones?

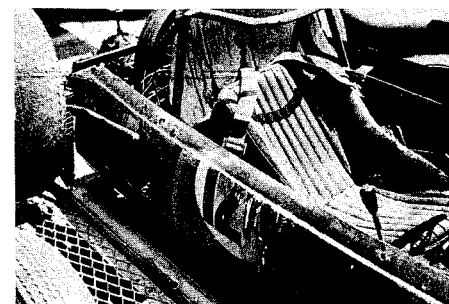
Try the inverted float, and let me know, will you? Might be even better than the tube, without the hazard of fire.

You didn't read Sec. 4.10 - you just looked at the pictures. The fine print says, "These parts must be normal replacement parts, etc." (Not underlined in the GCR - yet.) Cut off VW guides or special guides made for ported heads would hardly be *normal* replacement parts, would they?

COULD THIS BE YOUR CAR?



This is the car mentioned last month as being involved in the accident at Riverside. The car flipped and slid along a guard rail, backward, on its side. The driver was not physically injured, but suffered severe burns.



Note the size of the tubing, and the complete absence of any lateral bracing. Imagine where the roll bar would have gone if the impact had been sideways. As was reported last month, the fire was apparently caused by the flexible fuel line being pulled loose at the fuel pump by the impact of the coil, which was torn off the fan housing. The metal stub to which the flexible line was clamped was not flared on the end.

Bob Sidlow, who furnished the photos, says, "I used to be somewhat casual in my approach to safety, but being close to something like this wakes you up. I have since made safety improvements in my car, and intend to do more over the winter." Does it wake you up, too?

This isn't a popular subject, and I promise not to make a monthly feature of it, but if these pictures are effective in saving one life - or even one hand - in the next ten years, they're justified.

UNCLASSIFIED ADS

FOR SALE: Formcar, good race record. Needs only caps and cleanup to go racing. Complete with trailer and spares, \$1000, or will consider swaps. Fritz Dueming, Walnut Creek, Cal. 934-5738.

WANTED: More used Vees to list in this column. Free listing - member or not.

The VEE LINE of
 Formula Vee International
 Don Cheesman, Director
 Box 291
 Ephrata, Washington 98823

SO THERE!

During a phone conversation with Don Wester (no, he didn't call me - I called him to find out when the Car Classification Committee was going to meet), the subject of those mysterious 1200cc heads with the oversize slanted manifold came up. You remember - one of the California drivers is currently terrorizing the opposition using that type of head, which he has convinced a number of people are legal because the VW parts book says they are for the 40HP engine.

Well, don't dash out and buy a pair of 113 101 353 B heads. They're for the 40HP engine, all right - the 40 brake horsepower engine, which is the 50 SAE horsepower engine, which is the 1300cc engine. "Our" engine is the 40 SAE horsepower (also called 41.5 SAE HP in some VW publications) or 34 brake horsepower. The so-called "late '65 heads" have the same number, but without the final letter "B." They have the standard mounting for the standard manifold. The 1300 heads have a larger manifold, entering the heads at an angle, rather than vertically. (For some further dope on the '65 heads, see Vee Line #31.)

I've been wondering for some time why no one had been able to shoot them down, but it wasn't till Don mentioned that he had seen them himself, listed in the VW parts book for the 40HP engine, that I had sense enough to look it up myself. Sorry about that!

ROOKIE OF THE YEAR

The "Castrol Rookie of the Year Award" is made annually to some newcomer in SCCA racing. It must be earned during the same year in which he obtains his National License. For the past three years now, it has gone to a Formula Vee Driver - Ray Caldwell in 1964, Kurt Reinold in 1965, and in 1966 it was our President, Harvey Templeton. Are there any potential candidates in our ranks for 1967?

IF YOU DON'T VOTE BY OCT. 12, DON'T VOTE

PROBLEMS
(Continued from Page 1)

different wheels in front, like the rear ones. If the front wheels are bent even slightly they could cause out-of-round drums.

I'm really not familiar with your make of car, but as I recall, the lower frame rails are quite close together, which puts the mounting points on the front axle tubes some distance from the wheels. It could be that there is a tendency for the front "axle" assembly to "wind up" - and unwind - due to slight variations in the brake drums. Perhaps a brace rod, from a foot or so back on the frame to a more outboard location on the lower torsion bar tube would be helpful.

How much caster are you using? If your steering feels rather uncertain (no "feel" at all) at high speed on a straight, it could be that more caster would help. It tends to keep the wheels pointed straight ahead, regardless of conditions, like bumps or braking. It also makes steering in the corners a bit harder, but the extra stability is worth a little hardship. About 5 degrees (the upper tube 3/8" to 1/2" behind the lower) seems to be about right. It also makes the front wheels lean into the corner to some extent.

Now as to your second question - well, I'm glad you asked. It's been asked several times before, and I'm sure others have been aware of the problem, too, from time to time. So I've been doing a bit of research and observation and experimenting and note-jotting, and I'm going to go into the subject in some detail - too much, according to John. He's interested in facts - not theory. However, I'm not going to pass up a chance like this to show off what I've learned. It may go on and on, like Peyton Place, but by the beginning of next season, at least, I hope you will have picked up something you can use. You'll find the first chapter of this exciting serial is on page 3. The following ones will turn up later sometime. OK?

SO-CALS, NOTE

From the Los Angeles Chapter of the Formula Racing Association:

"The Volkswagen distributor in the Southwest, Volkswagen Pacific, Inc., has graciously provided cash prizes of \$150, \$100, and \$50 for the first three places in this area's Regional and National races. The L.A. Chapter of FRA is handling the transmission of official results to Volkswagen Pacific. VW would like to have an 8 x 10 photo and a short biography *on hand*, so publicity can be gotten out on Monday following the race.

Even if you don't think you will be in the top three, DNF's or luck could move you up there. \$50 to \$150 should be worth a photo and biography. Send to Terry Farrell, 11509 Fir St., #C, Lynwood, Cal. Henceforth, FRA may not turn in the winners names without them."

This offer is good in Southern California, Southern Nevada, and Arizona. North of there, the same offer is in effect, donated by the Reynold C. Johnson Co. In the Northwest, some interest was expressed last Spring by Riviera Motors, the Northwest distributor, but nothing definite has been announced yet, possibly because, with two racing organizations, there are a heck of a lot of Vee races in a season. Any of the rest of you getting in on this type of bonanza in your territory?

GRAND PRIX

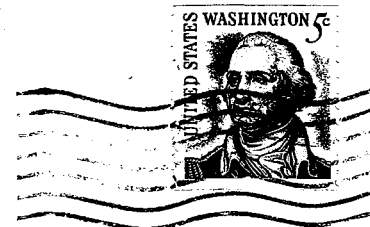
Have you sent in your entry yet for the Second Grand Prix for Formula Vee? That's the annual four-hour enduro held at the Steel Cities International Raceways, in Ohio. If you're not a National driver, you can still get in on a two-hour preliminary event. Write to: R. E. McCurdy, The Daily News, McKeesport, Pa.

DON'T PUT OFF TILL TOMORROW
THE VOTING YOU SHOULD DO TODAY



Formula Vee
International

BOX 291
EPHRATA,
WASH. 98823



Warren A. Roberts
1208 Swab Drive
Bartlesville, Okla. 74003

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FIRST CLASS