

# MEASUREMENT NEWS



#11  
~~#10~~ - May 1985

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Measurement News (MN) is distributed to all members of the Road Running Technical Committee of TAC, all regional certifiers, and all final signatories. Also some miscellaneous others.

MN is supposed to serve the RRTC as a way for us to talk with one another, so that we all get some idea of what's going on. It also serves to provide guidance from the RRTC Vice-Chairmen to the regional certifiers and final signatories.

All opinions and grievances are solicited. They will be aired here. All will have a chance to discuss what we are doing. Write if you've got an opinion on something, or a new measurement technique you'd like to share.

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## WORLD RECORD 5K

Bob Pevril reported that a high school senior ran a 12:01 on a 5k course that I recently certified. I almost choked on my beer. Then I noticed that the letter was dated April 1. Thanks, Bob - I needed that.

## PARALLEL CALIBRATION COURSES - PART II

Bob Baumel sent in another way to lay out an offset calibration course. I think it's easier and better than the way I presented last month. You'll find it elsewhere in this issue.

## SALLY NICOLL'S CERTIFICATE

They have caught on like wildfire in the East. People like them - they are attractive! Besides - did you ever notice - the word "Officially" is misspelled on the old certificate? Someone pointed this out to me - I don't remember who - but I had not noticed it. The italicized print in the old cert form kept it from being noticed until now. My apologies to the pointer-outer. I know I have your letter in my files somewhere but not at hand. Thanks for pointing this out. We are already criticized for being "egotistical jerks" (this is being rectified at present) in a recent running club newsletter, and our egos will suffer more if we are seen as being poor spellers on our official documents.

#### THE MEASUREMENT BOOK

I just received a bunch of copies of the new Measurement Book from Electric City Printing. Beautiful! I think they will finally do the job of getting all of us doing things more or less the same way, and a good way at that. You will note that the cover shows a portion of the beautiful Maine Coast Marathon. See all those s-bends as the course follows the edge of the Atlantic Ocean? Like to measure that thing in heavy traffic? Greg Nelson got the job, and here's what he said:

I have enclosed the materials for course certification of the Maine Coast Marathon from Kennebunk to Biddeford, Maine. This is a beautiful course and an excellent marathon which I have run twice myself. However, it sure was hell to measure, as it was the first marathon I have measured and because of the winding coastal roads, the most difficult course also. I have never "cut so many corners" in my life. I would fear for my life in summer when the tourists are here. It was bad enough this time.

This is also the first time I have measured a course that has been done by someone else and now I can better appreciate your worries about what to do about the differences in measurers. I added over 800 feet to the old course of which only 150 feet would be for the new standard. The rest undoubtedly came because of my "corner cutting".

#### BOOK DISTRIBUTION

The copies I got won't last forever, so I called Allan Steinfeld to ask him what to do when I need more, and what to tell measurers who ask. Here's the dope:

1) The copies you got are yours to do with as you wish. They are your property.

2) Distribution of future copies will be done by TAC. (Marty Weiss). To obtain copies, send four dollars (\$4.00) for each copy desired to:

TAC-USA Order Dept.  
P.O. Box 120  
Indianapolis, IN 46206

The \$4.00 includes postage. No books on consignment, no discounts for large quantities. Cash up front. Marty tells me that orders will be filled within two days of receipt.

The complete title of the book is:

"Road Race Course Measurement and Certification Procedures"

I am supplying Marty with up-to-date copies of the RRTC list, and one copy of the latest list may go out with each book. To be sure, if someone asks you for info on the book, send them a copy of the list of regional certifiers with book ordering info.

If you want to distribute the books yourself, I'd suggest buying a bunch and having them ready so they'll be there when you need them. That's what I am going to do.

#### LATE FLASH

Talked with Jennifer and she said that it was agreed at RRTC meeting that the first 2000 copies were to be distributed free. TAC bought an extra thousand copies. So - refer people to TAC for copies if you wish, while meantime trying to pry more free copies out of Allan. I am going to refer people to TAC, because it gets distribution problems off my back, and four bucks won't break anybody.

#### KEN YOUNG JOINS THE FOLD

Last month the planets aligned! Paul Christensen, your Western Veep, was in Tucson working with Ken on the Finish Line Book. I was in Phoenix visiting my Dad. We all got together in Phoenix to do validation rides of the Continental Homes 10k and the Runners' Den 10k.

Before we rode it was decided that my ride would be "official" on Continental Homes, and Paul's would govern on Runners' Den. Ken wanted to ride to see how he measured up against me and Paul.

I rode Continental Homes about 5 meters tighter than Ken and Paul, who were in close agreement.

Paul and Ken rode Runners' Den about 5 meters tighter than me, with Paul having a slight edge over Ken.

Ken and Paul decided to take another (unofficial) shot at Runners' Den, to see if they could improve their rides. Ken found 4 more meters, while Paul got the same as on his first ride.

Ken rode as well as me and Paul, in short. I think this shows that it is attitude and knowledge that make a good measurer, not bike-riding skill. One can get only so good on a bike. Riding a bike is not generally considered to be a difficult thing to do. The skill is easily mastered. It's what one does with that skill that counts.

Does this mean that Ken is now a "validation-quality" measurer? Suggestions have been made that we ought to have some sort of formal procedure for determining measurement qualifications. Perhaps this is a good idea.

But I need no more than I have already seen to convince me that any course Ken measures will be as good as any course around, measured by anybody.

In course layout Ken lacks experience. This, to me, means that he is likely to screw up and stumble his way to his first few layouts of tricky courses, just as we all did. But nobody doubts Ken's attitude, and I have all I need to convince me that he would not quit until he had it right.

#### NOTE ON VALIDATIONS

When validating, be sure to record taped distances to landmarks for the points where you start and finish your ride. This may be useful later. We didn't do this. We should have. If the course you ride is exactly the same as the map shows, just note that. It's enough. We are stumbling our way to competence in this area.

#### PROLIFERATION OF CERTIFIERS

Various TAC associations have been getting their own "association certifiers" into the list of reviewers. I am not sure how I view this. In my own three-state area I can manage to do all the reviewing and certifying without help, although I have a number of "associations" in my area. I think that the association people can be of help in becoming good measurers, but that they should not be sent courses by other people until they have demonstrated competence at the reviewing process. This only fragments and delays the certification process.

Although Texas is not in the East, I view it as a good example of this. There are now three people listed in NRDC News for Texas. My view, and I'm going to emphasize this in the East, is that one person should handle one or more states as a reviewer. If the workload of reviewing is too crushing, then more may be needed, but until the need is demonstrated I hope to keep the number of reviewers to a minimum.

I am constantly on the lookout for people in my area who look like they might be good reviewers. I will gladly pass on some of the work. But the person I pass it on to must be willing and able. Both characteristics are absolutely essential. An able person who sits on courses is a disaster. And a well-meaning person who just doesn't understand what to do is no help either. In the West it has been demonstrated that the final certifier does not need to live in the area he serves. So I will strive to find the talent and ask the capable people to help where support is weak.

Are there some opinions out there on this?

#### LONDON AND ROTTERDAM

Not surprisingly, I have heard from several RRTC folks who would like to make the sacrifice of their time (if expenses are paid) to validate London/Rotterdam. I also stand ready to inconvenience myself in this effort.

Bob Letson suggests that it be made the occasion of an international festival of measurement, with lots of US and foreign guys in attendance. I think that's a fine idea. All we need now is funding.

Allan Steinfeld reports that London will probably be checked by one of the AIMS measurers, of whom he knows some good ones. They use our basic procedures. The validator won't be an Englishman - AIMS marathons are checked by people from some other country. Keeps the system honest. Rotterdam, he says, is under the jurisdiction of some Dutch running group, and it is unclear at this time whether it will be checked at all. I'd like to see it checked - Lopes' run, if the course is right, would certainly be a fine record.

## ACCURACY OF BICYCLE MEASUREMENTS

Suppose you have to measure six 10k courses, and each one is a straight-line course. You have 13 top riders available, and calibration courses enough so that each measurement can be done within a two-hour period. How accurate can you be? We got a hint on the Olympic Marathon measurement.

On that measurement we successively passed over 8 EDM-measured calibration courses. The first and last were 1 km. The rest varied from 379 m to 1 km. We took 4 rides on Cal 0 (the first one) and 2 rides on Cal 7 (the last one). On all the others we got one ride each as we measured the marathon course.

Because we know the lengths of the intermediate calibration courses with high accuracy (each is accurate to  $\pm .006$  m), we can use the data to check the accuracy of our bike methods as applied by "experts".

Because I got confused by all the different lengths involved, I scaled up the data as if each calibration course was 10000 meters long. Each course is "measured" using the constant obtained on the cal course immediately before and after it.

Results are diagrammed. Look and think. What can be learned?

- 1) The average measurement, of all 78 rides, was 9999.9 meters. Very good agreement with the "true" value.
- 2) There was considerable measurement spread on some of the courses. With 13 riders on each, and some mistakes on Cal 6 involving overshoot, a wide span is to be expected.
- 3) If we were checking courses that had been EDM'd at 10010 meters, we would have overwhelmingly found them to be OK. Only 1 out of 78 "good" courses would have flunked. This speaks well for our present method of course layout.
- 4) If we had been validating, we would have found a lot of 10001 meter courses to be short - erroneously.
- 5) Numbers alone do not assure accuracy. Even with 13 top riders on the job, we missed some of those 10k's by as much as 5 meters.
- 6) For  $\sqrt{\quad} / 10 \text{ km}$  you statisticians, our standard deviation was about 4 meters/kilometer. In every case, the span of "(average)  $\pm$  two S.D.'s" included the "true" value of 10000 m.

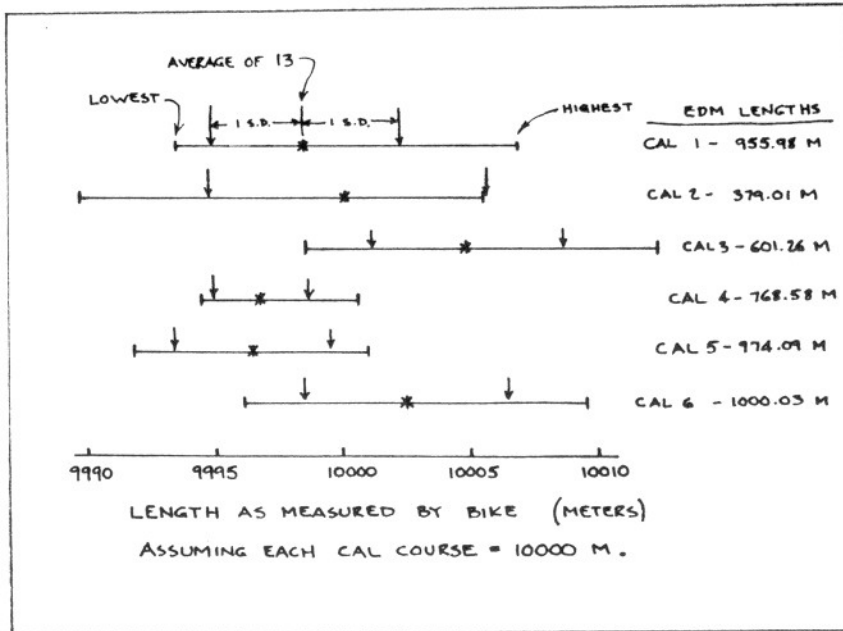
We were fortunate that the Olympic ride threw everything in the book at us. Rain, clouds, temperature variation, delays, sunshine - we had it all. Thus our data represents fairly real conditions. Not ideal conditions. We all believe that we can be near-perfect if conditions permit. Maybe so. Maybe no. This data is the only comparison of bike-measuring with accurately-measured distances that I know of, and it tells us to be humble.

If you think you can do better, try it. Go to your cal course when it's shady and cool, and take a few rides. Go mow the grass and come back and take a few more rides when it's hotter. Take a nap and come back after a rain shower has cooled the pavement, but the sun is out. See how well you do.

Granted - the procedure I've outlined is not conducive to greatest accuracy. But you won't always have optimum conditions. Sometimes you have to measure come hell or high water. If you've flown to Rotterdam to measure their course, and it starts to rain, are you going to wait until it stops? Maybe, if you have the time. Maybe not - all the arrangements may be made and you'll just have to go out and take your best shot. Your plane won't wait for you.

From what I see, I conclude that if I do my best I will have pretty good certainty that my measurement will be within 5 meters of the correct value on a 10k measurement. I will readily agree that it might be 6 or 8 meters - it almost certainly is not less than 5.

Can we do better? Not with bicycles. Maybe solid tires will help, but they may only reduce the error, not totally eliminate it. Error is something we have to live with - it's part of the game. Note I'm not talking about "mistakes". They can be avoided, while error is an inherent part of every measurement, no matter how accurate. There is no such thing as being "right on the money".



GETTING KILLED BEFORE RECALIBRATION IS POOR PRACTICE!

Duluth is the termination point for two long races, Grandma's Marathon and the Edmund Fitzgerald 50 and 100 k road races. All the races are point-to-point and all start at points on the shore of Lake Superior NE of Duluth. The route is beautiful. The road is a two-lane highway without a median divider. It has many small hills, although it does follow the edge of the lake. It has many twists and turns. Cars travel on this road (US 61) at 55 MPH.

The photograph across (from Ultrarunning Magazine) shows Frank Bozanich on the road in the Edmund Fitzgerald. I'm using the picture to illustrate the difficulty of selecting the measured route for a course like this.

Runners in the Edmund Fitzgerald are told to stay to one side or the other, I presume. Probably asked to run against traffic. Since there are so few runners in a 100k this makes sense. In the Grandma's race there are thousands, and it must be assumed that they will fill the road for at least several miles of the course.

Why did I bring this up? Well, suppose somebody asked you to do a 62 mile bike ride (or 124 if you survive to do the second ride) on that road. Would you try to measure the SPR? Would you try for right-side-only? Or would you settle for measuring within a couple of feet on the legal riding side? You would be very unlikely to get the sort of police protection you would need, since to measure the SPR you would be all over the road with cars that can't see you coming at you at 55 MPH around blind curves and over hilltops. Use your imagination and fill in the horrors.

There are three clearly-defined routes that can be taken:

- 1) Shortest possible route
- 2) SPR staying to one side of centerline
- 3) One foot from one edge.

Most runners in a race this long will not attempt to run the SPR out on the highway. The curves are too sweeping for them to gain enough to make the safety risk worthwhile. But it is possible for them to do so.

How would you measure a course like this if you had the job?

How should certification of such a course be viewed?

Scott Schneider



Bozanich refueling at about 25 miles.



## 100 MILE COURSE 7 MILES SHORT!

I saw the article below in Ultrarunning Magazine. Tom called and explained that LaPlant used something like a Cateye to do his measuring. Other measuring is going on to see better just what the length of the course really is. Because the Western States finishers who do it in under 24 hours get a belt-buckle that says "100 miles" they want the course to be 100 miles. The addition of 7 more miles is going to cripple the aspirations of those folks who were close but didn't make it. After 93 miles the last 7 miles can well take two more hours. Ouch.

## Western States is Growing

If you enjoy running Western States you'll be happy to know that you'll get to enjoy seven more miles of it this year. On the other hand, if you're struggling to get in under the 24 or 30 hour marks, it's going to be a lot harder.

What's happened is that Pierre LaPlant spent ten days on the trail last fall measuring the course. He went over each section in both directions with calibrated odometers on both wheels of his mountain bike. The course checked out at about 93 miles.

Just to be sure, he had his method checked out by Tom Knight (who measured the Olympic marathon courses); Knight was impressed by the accuracy.

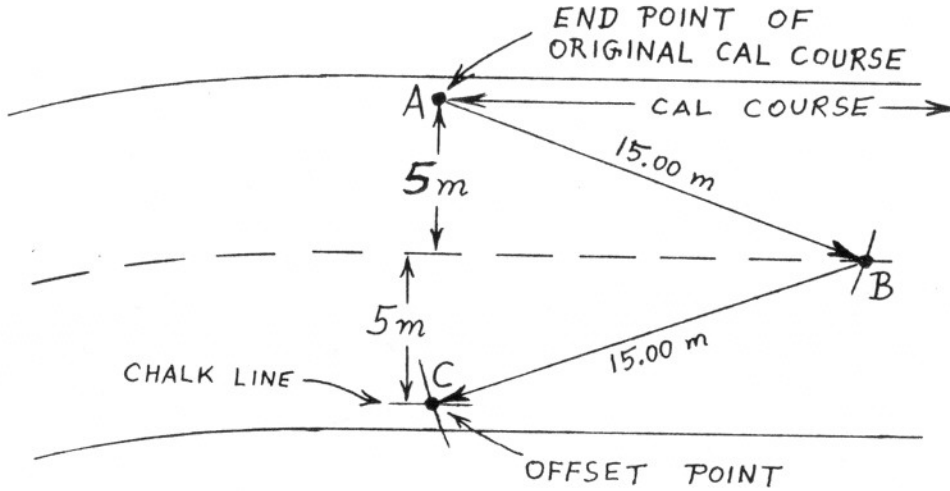
So seven miles will be added, part around Foresthill and part between Auburn Lakes and Highway 49. And a lot of old-timers at the race will be running their first hundred.

Later - Tom sent me LaPlant's measurements, and he did do a very nice job of approaching the problem, even if he didn't use our methods. The latest issue of Ultrarunning has a reply from the race director to the effect that they can't accept LaPlant's measurement, but are going to do another of their own. I'll bet they don't find much difference from LaPlant's values.

VARIANT OF SWING OFFSET METHOD  
FOR LAYING OUT PARALLEL CALIBRATION COURSES

The "Swing Offset" method presented by Pete Riegel on page 5 of March 85 Measurement News looks very useful. But there are cases where it wouldn't work. For example, in the diagram below, point "A" is the left-hand endpoint of a calibration course that extends off the paper to the right. We'd like to construct a parallel cal course whose left-hand endpoint is point "C". But Pete's method won't work because the road is curved to the left of point "A". You'd have similar problems if the road narrows or widens to the left of point "A" (e.g., if there's an intersection), or if the road is uncurbed and the edges don't form good straight lines.

The following variant of the method uses the CENTER-LINE instead of the road edges to guide you, and doesn't require the road to continue in a straight line past the ends of the calibration course. The accuracy ought to be similar to Pete's method.



Procedure:

- 1) Measure distance from point "A" to exact center-line of road (e.g. center of painted line). In this case, it is 5 meters. Since the "offset" point "C" that we will eventually construct will have to be this same distance from the center-line (but on the other edge of the road), draw a chalk line on the road, parallel to center-line, and 5 m from center-line, and long enough to include the ultimate position of point "C".
- 2) From point "A", do a swing measurement to a point "B" on the center-line. In this case, the swing measurement is 15 meters. *(at least 3 times dist from "A" to the center-line.)*
- 3) From point "B", do a second swing measurement, of exactly the same length (15 m) to determine the offset point "C" along the chalk line already drawn in step 1.

Bob Baunel

#### PROPER MEASUREMENT PATH

I talked with Ken Young shortly before going to Phoenix to visit my Dad and also do a validation of the Continental Homes 10k. He said that the roads were paved but that curbs were easy to hop on the turns. If this is so, what is the measured route? What route should a validator ride? Should I stay on the pavement throughout? If I decide to cut the corners over the curb, what tells me the exact line to ride? Judgement? If I ride like that, using only my own imagination for where the runners would run, how can anybody ever duplicate my ride or know where I went?

My inclination is to stay on the pavement as though the curbs were walls, and to make mathematical adjustments for any corner-cutting that the runners might do. This is what Tom Knight and David Katz did on the NY Marathon validation ride. They rode a tight SPR that was clearly-defined and reproducible, and Tom made mathematical calculations of the effect of riding other, longer, less well-defined routes.

Suppose the Continental Homes paved route comes out to 10006 (Note: Continental Homes came out to 10000.7 meters.), but it is found that runners did some corner-cutting back in the pack? Should the course lose its certification? The legal course isn't short. People who stayed on the pavement ran 10k.

Mild course-cutting is extremely common in large marathons, especially back in the pack. The most common reason for this is, I believe, a desire to get away from the crowding. So runners wind up on the sidewalk. Not many, but some. Few do this with the conscious desire to shortcut the course, I believe. They are just looking for better running room. Should the conduct of these few people (who I've never heard of being disqualified) be used to govern the length of the course that the 95 percent run? Fast runners rarely do this, I believe.

A popular fast lady in her fifties commonly runs on the sidewalk, I am told. This drives race organizers crazy, since she is a national-class age-group runner, and very popular. It's just that she doesn't see very well and wants to stay clear of traffic. Should the race course run by thousands be measured on the sidewalk to pick up the few meters that she might save in the course of her run? These are real-life measuring questions that are, I believe, inadequately covered by our rules.

I think that courses should be measured along a reasonable legal route and that if some mild shortcutting occurs back in the pack that it should be a problem for the records committee. SPR, staying on pavement and between curbs, should be the measured route. Otherwise we will force the overwhelming majority, who do not course-cut, to run substantial extra distance because of the few who shortcut.

Blatant shortcutting does get caught and penalized, but mild cutting doesn't, especially if it's inadvertent.

I would like to see some other opinions on this subject.

## CONCRETE VS ASPHALT

Bob Thurston says "I have 2 nearby cal courses now, one concrete, one asphalt. There is a difference - concrete 1/2 mile seems to give more counts. How many more may turn out to depend on whether sun is shining, causing a greater heat buildup on asphalt than concrete. (But will that differential even out later in day?)

I suspect 2 main variables:

- 1) Temperature of surface
- 2) Roughness of surface

Both are pretty hard to measure or evaluate. More later. I think this subject (effect of surface on calibration) cries out for more evidence."

Ed: Does anybody else have any dope on this? Anybody want to do some experiments?

## JAPANESE NYLON-COATED STEEL TAPES

Two new brands (maybe more) of steel tapes are on the market. The two I know of are Keson and Lietz. These tapes use a very skinny steel ribbon coated with tough nylon. They are light and highly flexible, and a joy to use. But WATCH OUT!

The proper tension to use with these tapes is only 4.4 pounds! And because they have a thin steel ribbon, they will stretch more than an American tape when pulled with ten or twenty pounds. This won't materially hurt a calibration course layout, since it will come out a tad long, but if you are measuring a track you'll find the track short when it isn't. This actually happened to Wayne Nicoll. He was all ready to declare the track short when a check revealed the tape tension on his 200 foot Keson tape was 4.4 pounds, not the 20 pounds he'd used. Correction for the proper tension regained the necessary few centimeters to put the track over 400 meters.

I have a Lietz tape, and it is exactly as long as my Lufkin American tape, when the Lufkin is pulled with 10 pounds and the Lietz is pulled at 4-5 pounds. The Lufkin checked out at about 0.01 foot longer than a local surveyor's tape that had been calibrated by the Bureau of Standards.

Standard American Surveyors' tapes and hardware store tapes use 10 pounds tension for 100 feet or less, and 20 pounds for lengths over 100 feet.

But specialized tapes sometimes come with their own instructions for use.

The message is - know your tools.

## PROPER USE OF VALIDATION MEASUREMENTS

Members of the Road Running Technical Committee have been conducting an ongoing dialogue with Ken Young and Bob Hersh concerning the methods that should be used in measuring courses when records are set. We have also expressed concern that the present methods of using those measurements may not best represent the interests of TAC, the runners, and the public.

To date, the only response we have obtained from the Records Committee has been from Ken Young. (Last MN)

I will now express views that, while being my own, nevertheless represent the concerns of at least a substantial portion of the members of the RRTC and the Regional Certifiers who do the actual work of measurement for TAC:

1) It is generally accepted that a course, or track, cannot be "short" - that is, it cannot be less than its nominal distance. A 10 km road race should not be less than 10000 meters in length. A 400 meter track must have a length, as measured 30 cm from the curb, of no less than 400 meters. Ken considers this to be a fundamental axiom of records-keeping, and I do not disagree with it in principle.

2) I have reviewed the Track Construction Manual published by the U. S. Tennis Court and Track Builders Association. In it they recognize the requirement that tracks not be short, and they suggest the addition of a small (1.2 cm) added length to tracks, during the layout procedure, to prevent this.

This 1.2 cm, while a step in the right direction, does not recognize the reality of the construction process. It is only 1/33000 oversize, and contractors' measurements cannot be relied upon to be accurate to much better than 1/5000. An allowance of 8 cm would be more realistic, if protection from shortness is the goal.

3) A sampling of existing tracks that have actually been measured by members of RRTC shows a substantial number of them to be marginally short, if the measurement is considered to exactly represent "true length".

4) It is a fundamental principle of surveying that no measurement is exact. Every measurement, no matter how carefully done, contains an element of error.

In recent years the concept of "validation measurement" has arisen. This came about principally because it was recognized that road courses, even TAC certified ones, were sometimes shorter than the nominal distance. The validation concept is now spreading to tracks. Some have been remeasured, and the remeasurements have, in some cases, shown a very marginal shortness. However, a marginally short measurement does not conclusively demonstrate shortness.

If two measurements of a 400 meter track differ by 2 cm, the only thing that can be said with certainty is that the measurements show no significant difference. When the difference gets larger, or the number of measurements increases, certainty as to difference grows.

As for a 400 meter track, with competently-performed measurements and an assumed maximum error of 1/5000:

A single measurement of 399.92 or less indicates the track is shorter than 400 meters.

A single measurement of 400.08 or more indicates the track is longer than 400 meters.

A single measurement between 399.92 and 400.08 shows no significant difference between the track length and 400 meters.

We would all be more comfortable if measurements were exact. It would make things nice and neat, because decision-making would be clear-cut. But we must live in the real world.

What We Do Now - we measure the course. If the measurement yields a number very slightly less than the nominal distance, we say that the course is short, although there is a 50-50 chance that it is not short. This is not a decisive or fair way to evaluate athletes' performances. We should be asking for a decisive answer to the question of shortness, one way or the other.

What We Should Do - As I see it, we have three choices:

- 1) Retain the status quo - continue as we are doing.
- 2) Require proof (high probability) that the course is not short.
- 3) Require proof that the course is short.

Does anyone out there believe that a 10000 meter world record should be shot down if a validator finds the road course to be one meter short? Or if the track measures 399.99 meters? Is this what we consider as good for the sport?

There is no room for sloppiness in measurement or records-keeping. But a recognition of the realities of measurement would be a refreshing thing to see in the application of our measurements to athletes' efforts. What we do now (option (1) above) is wishy-washy. It makes poor measurement sense.

Any ideas on how to get things right?

While we're on the subject - If a course is clearly defined, such as a curbed track, or a paved road, should the legal course be decertified if some runners shortcut it? If the route is unambiguous, yet a few choose to shortcut it, should this invalidate the efforts of everybody else in the race? I can see shooting down a record if the athlete in question shortcut, but to kill a fine effort because some back-of-the-packers did it is a gross injustice. A validation measurement should concern itself with the route that is generally understood to be legal and clearcut, not with the shortest route that a dedicated cheater might choose to run. If cones are omitted, fine. Measure the whole road there. But measuring over curbs and getting way off the pavement on every turn is no way to measure any course. Too much is left to judgement, and no two validators would ever agree on just what the length of such a course really is.

The measuring line should be on the pavement, unless it is generally accepted that the main mass of runners will run otherwise.

If we choose to measure into the dirt and up on curbs at every turn, we lose the ability to have somebody else check the work. How in the world is the next measurer to decide just how far into the dirt the ride should go? It's not hard to get runners to understand that the course was measured on the pavement and to tell them that's the certified course. They can understand that.

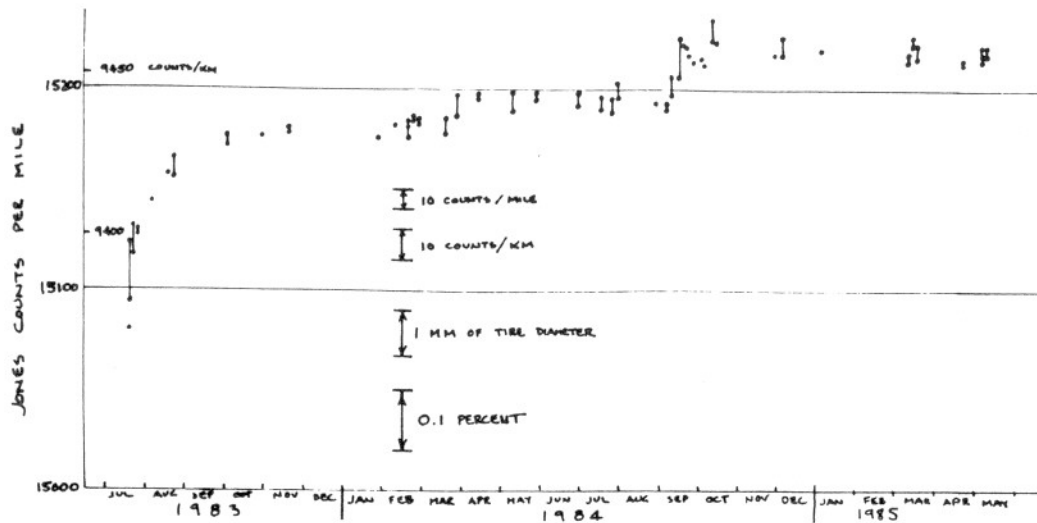
Turns are the places where most of the measurement discrepancy is made or lost. We need to have some unified approach to riding them if our measurements are to agree. The pavement or curb forms a measuring line that is the same for all riders, now or later.

If the race director forgets to cone a corner, this may justify throwing out records, but it doesn't justify decertifying the course. The legal course may still be OK, and it doesn't make sense to give the main mass of runners the impression that the course is in some way deficient because some short-cutting turkeys decided to hop the curbs.

(14)

Let's hear the arguments.

PERFORMANCE OF PETE BEGEL'S FRONT  
WHEEL USING "ELIMINATOR" TUBES



ELIMINATOR TUBE UPDATE

Here's a copy of all the calibrations I've done with my Eliminator tubes since I got them. After an initial period of breakin they have settled down to a pretty constant size. I did 6 hours and 40 miles of marathon measuring last weekend, including three calibration runs at 60F, 70F and 80F and my constant varied only 5 counts per mile. That's pretty good, I think. At least it's better than I used to do with pneumatics.

The curve has a couple of bumps. In March 1984 I measured a marathon course with lots of bumpy road. Next time I calibrated I found the tire had mashed some, permanently. In September 1984 I calibrated dry, and then rode through some deep puddles while measuring, and recalibrated on a damp road. I think water got into the tube and lubricated it, allowing it to once again mash down.

In any case, the absolute worst I ever had was on that dry-wet-wet measurement, in which the calibration variation was 18 counts per mile. Normally my variation is 8 counts per mile, and frequently less. Unfortunately, it is the postcal reading that gives the larger constant, so I add on 6 or 8 counts per mile to allow for this when I lay out the courses.

Bob Baume suspected that there might be some strange factor at work affecting the accuracy of Eliminators on turns. I have found no such effect myself. I have ridden on several occasions with good riders using pneumatics. Sometimes they beat me - sometimes I beat them. But it is always very close, and I can't see any difference except that the calibration variation using Eliminators is usually much less than with pneumatics.

My bike is always ready to roll at a moment's notice. No flats in 2 years, nor any tire maintenance. I love it. But the ride is hard, so I use foam handlebar grips.

## VALIDATION INJUSTICE - WHAT TO DO

What should you do when called on to do a validation? I have made no secret of the fact that I view the shooting down of a 10k by 2 meters as poor application of good measurement. I concur with Letson's "short - accurate - long" concept, and feel that any course (or track) should be accepted at its nominal value unless a competent check shows that the true distance is different from the advertised distance.

Some people, feeling this way, are inclined to take a lenient line when they ride. I do not. I ride as tight as I can. Then I worry (until recal is done) that the course will be short by a couple of meters.

What I'm going to do - On the day that I validate a 10k course at 9995 - 9999, or a track at 399.92 - 399.99, I will go ahead and report the numbers as I get them. But - I will also write a letter to the race director stating that, in my opinion, the measurement does not show a statistically significant difference from the advertised course length, and cannot therefore be regarded as assurance of shortness. I will urge them complain vociferously to the Records Committee and Ken, and to enlist the aid of the media. Only when the effect of our unjust validation policies is seen may something be done - and I don't have the power to raise enough hell by myself. I have tried, but nothing seems to be happening.

It will be interesting to see what happens if London or Rotterdam should come out to 42193. If either does, I expect that there will be fudging to make it come out right. This is not the way to do it. Better to measure honestly, and apply the results with justice. Must we wait until it happens?

There is no difference between two tracks that measure 399.95 and 400.05. Both are "measured with reasonable accuracy", and there is no reason why we should be pressed into a hair-splitting game which forces us to claim accuracy that does not exist.

All runners, on tracks and roads, will run a route that is somewhat longer than 30 cm from curb, or SPR. No two 10k performances are set on exactly the same length course - but we accept both as being 10k. An adoption of "reasonable accuracy" removes much of the element of randomly-applied injustice.

I only wish this could happen before some spectacular marathon record is shot down by a validation that's 3 meters short. It sure would cause a lot of fuss. Meanwhile, you know what I will do. This may mean that I will not be called on to do any more validations. I remain willing to do an honest validation job, but reserve my "right" to publicly disagree with anybody's policies.

Have I an obligation to keep my opinion to myself?



## MEASURING WHEELS

Al Phillips sent in a beautiful walking-wheel measurement of a 1k walking loop he laid out in a park in Dearborn, MI. The loop is full of twists and turns, yet Al got disagreement of only 12 cm in two measurements of the course. He used a dowel taped to the wheel frame to eyeball 8 inches from the path edge. He wheeled the SPR between curves. His calibration change was only 13 cm in 1 km, even though the temperature varied from 28F to 45 F. This would be about 1 count change in 1 km.

Al felt that because of all the twists and turns in the course that the measuring wheel was superior to a bike in this case. He had a helper with a broom, and carried his own sawed-off broom too, to get rid of stray pebbles.

He feels that our present stance against the use of measuring wheels is unduly restrictive. I agreed with him, and said that I'd not give him trouble over any courses he chose to wheel. We have to keep open minds on measurement methods. I think we're wise to emphasize the bike, but when someone demonstrates the use of another technique, we should not reject the measurement out of hand.

It is true that novice measurers can find weird and wonderful ways to misuse a measuring wheel. Just as they can with bikes. As measurers and reviewers we should try to do our best to determine who knew what he was doing and who didn't. In my experience with wheeled-course submissions I have seen that measurers screw up in the following ways:

- 1) They read the wheel only to the nearest foot, rather than looking at the side to find the 1/10ths that are there on many models.
- 2) They jog. One guy hired a high-schooler to jog the course with a wheel, for pay. I made him do it over. I can just imagine the high degree of professional dedication that the kid brought to the job. The numbers were ridiculous.
- 3) They get "true" feet and "indicated" feet mixed up.

I am not ready to abandon the wheel. Used properly it is a good tool. I will continue to emphasize the bike but to accept wheel measurements that I believe to be OK.

## WORLD'S MOST ACCURATELY-MEASURED COURSE

Bob Vernon is a professional surveyor in Marietta, OH. He's also a runner and race director. He called me and asked if it was OK if he measured his course using steel-tape tangents (5 ft) on the curves and EDM on the straightaways. I said that if he stuck to the SPR such a procedure would be fine.

He did a beautiful job, and his map clearly shows the loving care that went into the work. He says that there were about 45 field hours involved and another 25 in the office. It would have cost about \$2600 if not done as a volunteer labor of love.

The course is the "Shamrock Classic" 5 mile, in Devola, OH (OH 85038 PR) and if anybody knows of another completely-surveyed course, along the SPR, let me know. As far as I know this course, which few top runners will ever run, is the most accurate course ever measured, excluding those EDM'd big-city straight-line miles. This one is real, even including 1.3 miles of dirt road.

#### CURVED CALIBRATION COURSES

I have had two curved calibration courses come at me lately. One in New Hampshire, and one in Louisville, KY. My initial reaction was to say "you can't use those any more". Then I found that both courses were competently measured along the inside of the curve.

Both regions are short on straight roads, and my view was that since the courses were laid out in a way that makes it virtually impossible to shortcut them, unless one completely leaves the road, they were OK for course measurement, and that's what I told the measurers.

#### AGREEMENT OF INTERMEDIATE POINTS

Bill Hughes inquired whether it was necessary for each individual measured interval to measure within 0.08 percent, as well as the overall distance. I told him it wasn't required, but that it was something to watch for. Often a great agreement between measurements comes about because of compensating errors in the intermediate miles.

Consider the following measurements of a 5k:

<u>Interval</u>	<u>#1</u>	<u>#2</u>	
km 1	1000	998	
km 2	1000	1002	
km 3	1000	997	
km 4	1000	1002	
km 5	1000	997	
TOTAL	5000 m	4996 m	(agreement of 4/5000 = 0.08 %)

We see that agreement is within 0.08 percent and we should add 9 meters to the course. But are we safe? If we add up the sum of all the shorter segments we get 4992 meters. After adding 9 meters we still have only 5001 meters. The course is awfully vulnerable to being shot down at validation.

I guess it's a matter for individual judgement. I think that insisting on agreement in every case within 0.08 percent, for each measured segment, is too picky. Use your own judgement but beware of the pitfalls!

#### POTHOLES!

A measurer (Bill Glauz of Kansas City, MO) did some calculation to see what swerving to miss a pothole does to accuracy. I won't go into the numbers here, but if the pothole is seen well in advance, and the swerve is a gradual one, there is little effect. If, on the other hand, you wait until the last second to swerve, expect the effect to be more noticeable. So watch your path, and try to keep sharp swerves to a minimum.