

# MEASUREMENT NEWS



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July

1992

Issue #54

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## WHY ARE THESE PEOPLE SMILING?

They have just finished their second ride of the course, at the recent Ohio Measurement Seminar. They rode the same course used by some of the nation's top measurers in the 1990 IAAF International Measurement Seminar. On their second ride, each student was asked to lay out where they thought the 1 mile split should be, and mark the spot. Later we had each measurer stand on his spot and took this photo. Direction of running is left to right. Pete Riegel, second from right, is standing at the average location determined by the 1990 experts. See the article inside.

Photo: Mike Wickiser

## MEASUREMENT NEWS

#54 - July 1992

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### A BANDIT VALIDATION

In April, just after the Carlsbad 5000 was held, I got a letter from Tom Knight, enclosing a pre-race measurement of the course by Ron Grayson, who obtained a length of 4997 meters for the course. Tom says Ron is a competent measurer, and his paperwork and subsequent conversation bore this out. He has helped with California measurement for over a decade.

I looked through the file to refresh my memory about its original certification, since I was the certifier. It was a hurry-up deal - I got a Federal Express 3 days before the race, and saw the paperwork was not the greatest, and the map was lame. I decided the measurement was barely good enough, but the map was awful, so I beat on them for a couple of iterations until I got a map that was able to limp by.

Wayne's original validation of the course got 5003.3 meters, and another rider with him got the same. Why should Grayson and Nicoll differ by so much? One answer is that they may not have measured the same thing. The course has two curbed turns, and the main part has a slight s-bend in it, but the place where things differ each year are on the four turning cones that are set in place, two at each end of the main loop. These four cones basically define the main part of the course.

They are documented on the map as being in line with certain objects, and certain distances are specified. Did the measurer actually line up the points accurately after he measured, or did he eyeball? Does the race administration put down the cones in the exact same place each year? I don't know.

A course like this can be a royal pain for the records-keeping process. It is doubtful whether any documentation is likely to show the locations of the cones close enough to really pin them down. Will the cones be the same for the validator as they were for the racers? How to treat the course in future? Fully-defined courses with curbs all around are what I like, but that's not what we've got here.

How should such measurements be treated? 4997 is 50 cm shorter than we would normally accept on a post-race validation. Grayson said "My guess is that my tangents and way I went around the cones could account for about 3 m over the course." He feels he rode very tight.

Although it may create an administrative problem occasionally, it is refreshing to see someone who cares enough to check things out. Let the light shine.

If the measurement had been conducted officially by an appointed validator, before the race, 8 meters would have been added before they started. If it had been done later, the course would have failed by a tiny amount. Grayson, however, was not an appointed validator, and, although seemingly competent, carries no "official" weight. Interesting problem. Any solutions?



### OHIO COURSE MEASUREMENT SEMINAR

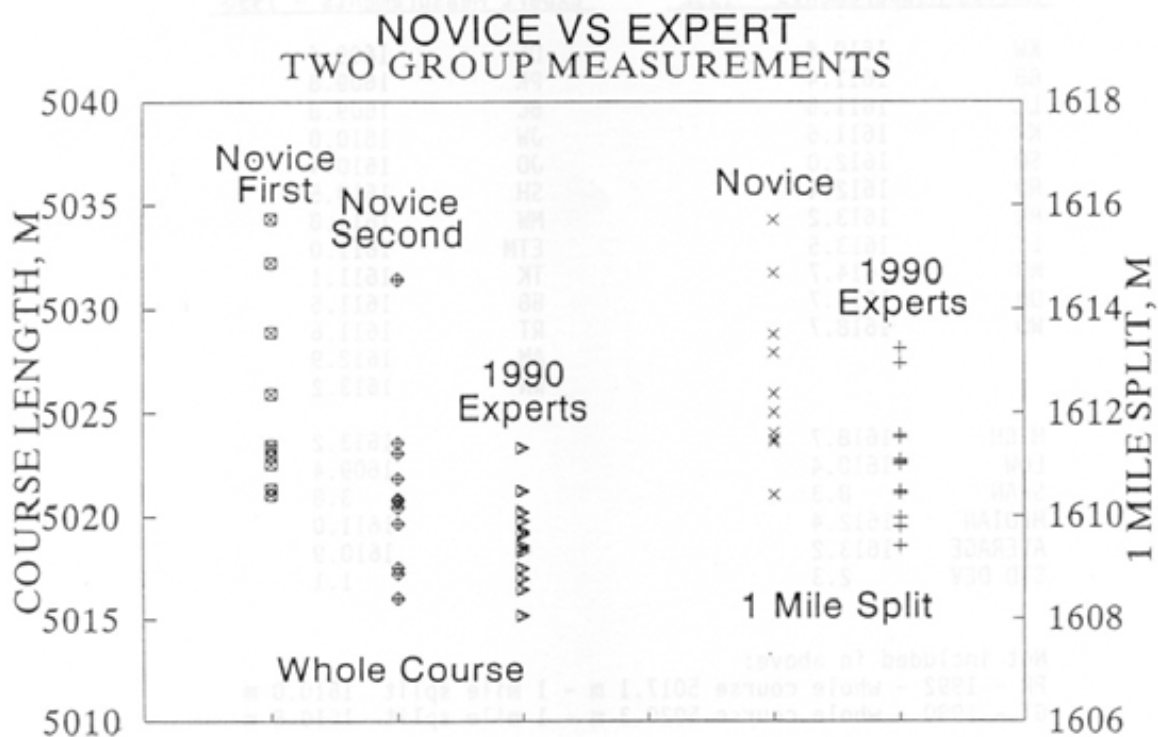
A seminar for novice measurers was held at West Jefferson, Ohio, on May 17. Eleven people came, and were run through the process of measuring a 5 km race course. The course used was the same one as was used in the 1990 IAAF measurement seminar.

The novices were all over the road on their first rides, but Pete Riegel and Mike Wickiser hollered at them a lot when they got off line. Calculations showed they had not done a superb job on their first rides. After lunch, they were each sent out for a second ride, having been pumped up as to the importance of riding a tight SPR.

Every one of them improved their ride. The graph below shows how they did compared to the group of experts that measured the same course. Pete Riegel's data is not included in the novice group, since he is not a novice. George Tillson's data is not included in the 1990 data, although he rode there then, since, at that time, he was not an expert. Mike did not measure during the seminar, but Karen Wickiser "won" the day with the shortest measurement.

The novices still have a way to go. Their variability (standard deviation and measurement span) is still twice that of the experts, and their median course measurement was a meter off the expert value. Still, of the eleven second rides, only one would be found short. This is encouraging, especially on a course as twisting as this one.

Time did not permit layout of all splits, but all were asked to put down their own idea of where 1 mile was, and they were photographed standing on their marks. Opinions differed, as you can see from this month's cover.



Measurement of the Entire IAAF Test Course

<u>Novice Measurements - 1992</u>			<u>Expert Measurements - 1990</u>	
MEASURER	FIRST	SECOND	MEASURER	FIRST
KW	5021.0	5016.0	DL	5015.2
RO	5021.3	5017.2	JW	5016.4
GB	5022.9	5017.5	BC	5017.0
SD	5032.2	5019.6	SH	5017.5
RH	5023.2	5020.4	PR	5018.3
ES	5025.9	5020.7	JD	5018.5
LK	5023.4	5020.8	TK	5019.1
KR	5022.5	5021.8	ETM	5019.1
DB	5043.0	5023.0	RT	5019.2
MB	5028.9	5023.5	MW	5019.8
WO	5034.3	5031.4	BB	5020.2
			AM	5021.2
			WN	5023.3
HIGH	5043.0	5031.4		5023.3
LOW	5021.0	5016.0		5015.2
SPAN	22.0	15.4		8.1
MEDIAN	5025.9	5020.7		5019.1
AVERAGE	5027.2	5021.1		5018.8
STD DEV	6.6	4.0		2.0

Measurement of the 1 Mile Split

<u>Novice Measurements - 1992</u>		<u>Expert Measurements - 1990</u>	
KW	1610.4	DL	1609.4
GB	1611.4	PR	1609.8
LK	1611.5	BC	1609.8
KR	1611.6	JW	1610.0
SD	1612.0	JD	1610.4
RO	1612.4	SH	1610.5
RH	1613.2	MW	1611.0
ES	1613.5	ETM	1611.0
MB	1614.7	TK	1611.1
DB	1615.7	BB	1611.5
WO	1618.7	RT	1611.6
		AM	1612.9
		WN	1613.2
HIGH	1618.7		1613.2
LOW	1610.4		1609.4
SPAN	8.3		3.8
MEDIAN	1612.4		1611.0
AVERAGE	1613.2		1610.9
STD DEV	2.3		1.1

Not included in above:

PR - 1992 - whole course 5017.1 m - 1 mile split 1610.0 m  
GT - 1990 - whole course 5020.3 m - 1 mile split 1610.8 m



# Race takes measure of Bernie Conway

The St. Thomas teacher has made a science of ensuring that marathon routes are accurate, a centimetre at a time.

**I**T MAY TAKE Bernie Conway 10½ hours to complete a marathon but you have to keep in mind he covers the course at least six times.

Centimetre by exacting centimetre.

The St. Thomas high school teacher is the guy who measures marathon courses and after a 60-year absence of the event, the former London Free Press Marathon will go off as the Forest City Marathon May 10 on Conway's course. Faster than his first tour, of course.

You don't pace marathons off. You don't just go through them with a tape measure. You have to put down splits and markers, measured by tape accurately through the 42.0195-kilometre course. Then you have to go through it by bicycle a few times.

"We have what's termed a Jones counter on the bike," said Conway, suited to his specialty as a chemistry and physics teacher at Parkside Secondary School. "The counter clicks every 10 centimetres and it's a very accurate calibration. It's best to measure at 20 degrees

centigrade. Any cooler and the course might measure shorter and any warmer and it could measure longer (due to the effect of temperature on equipment)."

Organizers would dearly love to have the original trophy for

the resumption of the event, which is expected to attract in excess of 200 runners. A Finn named David Komanen won it in 1931, 1933 and 1934, missing the '32 run because he was a member of the Finnish Olympic team. As three-time winner, he took the trophy for good.

The organizers have tried to track it down but the trail runs cold in Northern Ontario, where it was last seen.

The Forest City event, a pledge-driven fund-raiser for the Thames Valley Children's Centre, takes off from J.W. Little Stadium, heads down to Springbank Park and makes the turnaround at the Forks of the Thames. The final course is a revision of the initial one, ruled out by city hall because the part that went across the King Street footbridge was deemed unsafe.

"There's been plenty of interest among runners," said the or-

ganizing committee's Harry Littleton. "We're situated right in the middle of some pretty good marathons in Detroit, Port Huron and Toronto and we have five or six really good bets right here in town."

Conway, the only International Amateur Athletic Federation measurer in Canada, has a job not unlike that of a hangman or census-taker. That is, his work isn't regular.

He's been invited to help measure the courses for the U.S. Olympic trials in June and the 1996 Atlanta Olympic Games. You can't say he doesn't do enough research, since he runs about 35 marathons a year himself and, at 50, still comes home in under three hours.

**SHORTEST ROUTE:** "In measuring, you follow the shortest possible route," he says. "The SPR, as we call it, is on the inside of S-shaped curves, within 30 centimetres of the curb. Having measured about 50 courses now, I find I run them a lot tighter. Why run a longer route?"

If he had his druthers, Conway is like all marathoners in that he'd love never to have to run another course that includes roadways. If the Forest City Marathon grows in stature, he might get his wish one day.

After all, when Pheidippides legged it out from Marathon to Athens in 490 B.C. with news the Persians had been defeated, he didn't have to dodge a single car or truck.

Jim Kernaghan's column appears Tuesday through Saturday.



**JIM KERNAGHAN**  
The London Free Press

OOPS!



CALIBRATION COURSES

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## The reader's turn

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### Interpreting TAC Rule 66

It seems Andy Jones' 6:33-plus in the December 1991 Mardi Gras Ultradistance Classic (a combo 50/100K and 100-miler held along the Mississippi River levee in Louisiana) is being "questioned."

Oh, he ran it, all right. And his time really is three minutes faster than the current North American record. Also, it looks as if the TAC course certification (for measurement) paperwork is probably in order.

So, what's the beef?

Well, in the April issue Wayne Nicoll's column zeroed in on this and related how the Canadian runner wrote an article for *Ultrarunning* magazine telling how he'd used a heart monitor during his record-setting performance.

Though he didn't come right out and say it, Nicoll seems to take the same position as Pete Riegel (the TAC Road Running Technical Council chairman) in calling the monitor an unfair advantage. Riegel says the monitor is different from a watch because the monitor tells what's going on inside the body -- the watch tells what's going on outside. Nicoll seemed to be calling it a mechanical device and cited that too gray TAC Rule 66 that prohibits assistance to competitors.

My thoughts were that Jones had used his head -- not an unfair advantage. Jones wasn't picked up on the sly by a motorist. He rode no motorcycle nor was he on some performance-enhancing drug. He simply wore a device -- which probably became very uncomfortable late in the run when even the smallest things are terribly noticeable. Jones went to lots of trouble. He also didn't try to hide what he'd done.

Race director Chip Marz admitted his own bias in wanting the record ratified since this was his race course but feels a mechanical assist is anything enabling the runner to rely on something other than his own muscles for movement from point A to point B in a race.

He added that even with the monitor, Jones had to deal with the wind, humidity, and pain from effort just like all the others. He ran the full distance and put in the physical effort on his own.

Marz says he respects Riegel's position as a voting member of the TAC/USA Records Committee but really wants to see the mark stand. He (and I) believe Jones could probably have done what he did without the instrument, since he was already a world-class runner.

So, how far do you go? Disallow pacers in all

ultraruns? (Pacers are currently the norm in most events.) Outlaw watches? Gatorade? Running shoes that cost more than \$50?

Sure, rules are necessary, but when governed by something as vague as Rule 66, there's too much room for error and speculation. In this case, to dispute the validity and fairness of Jones' accomplishments because of a mere measuring device (and that's all a watch is, isn't it?) seems very trivial indeed.

-- LES REYNOLDS  
Houma, LA

*Wayne Nicoll replies: Les Reynolds implies that I am taking a stance against the use of heart monitors in competition. Not so. I am keeping an open mind on this.*

*While gathering more info on heart monitors, I learned the monitors are being used on a greater scale than I ever imagined for both training and racing. Ingrid Kristiansen has used a monitor in races and Greg LeMond wears one in cycling events.*

*Michael Fred, race director of the Houston Ultra 50K/150M, banned the use of heart monitors at his event, which unfortunately was canceled due to bad weather. Both Pete Riegel and I agree the matter needs to be discussed by the Long Distance Running committees at the next TAC convention. If nothing else, the "too gray Rule 66," as Les describes it, needs to be more clearly written.*

I can't help poking a little fun at Wayne Nicoll for his article, "When helping can hurt" (March). Wayne raises the subject of avoiding actions that create a situation of unfairness that might lead to disqualification of an athlete.

In short, Wayne spoke to the top three women runners in the Charlotte 10K to warn them of upcoming hazards (slow runners) on the course. Wayne then presents an elaborate explanation of how this violates the little-known TAC/USA Rule 66 (i.e., officials shouldn't talk to the contestants in the event on the course).

You're right, Wayne. My initial reaction was, "Just more of that TAC bureaucratic nonsense." Undoubtedly, while the officials were reprimanding Wayne for his minor and harmless infraction, they didn't notice the marathon winner, John Steinberg, receiving aid from the sidecar of an official looking motorcycle in the 23rd mile. Specifically, John started asking for a soda around mile 18 and someone gave him a can of Pepsi in the final miles.

Unfortunately, I didn't see this infraction because I was plodding along at the back of the pack. However, this incident was shown on TV and noted in the newspaper accounts of the event (*Running Journal* excepted).

Maybe it doesn't matter if you are more than a mile ahead of second place. John Steinberg clearly deserved to win. So maybe he would have dropped dead without an infusion of soda. Nah . . . not a chance.

But, hey, if you want to follow the rules. . . .

-- STEVE EDENS  
Johnson City, TN

See Wayne Nicoll's response on page 11.

(NEXT PAGE)



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## The rundown

By Wayne Nicoll



# Unfair Aid: More Debate *Runners should take a lesson from golfers*

It is nice to have reader reactions to my column. There is a letter to the editor in this issue from Steve Edens of Johnson City, TN. Steve informs us that he observed the following on the Charlotte Marathon race videotape. The leader of the marathon, at about the 23-mile mark, requested and accepted a can of cola from a person in a motorcycle sidecar in the lead procession and went on to win the race. The exchange was also discussed in post-race news reports.

The TAC/USA Long Distance Running (LDR) Liaison Team was in Charlotte to insure that TAC/USA rules and guidelines were followed in the two national championship events, and to demonstrate to the Charlotte race organization how road events should be officiated. We did not closely monitor the marathon event but had we been aware of this incident, we would have recommended to the marathon referee that the matter be investigated.

If the acceptance of aid from an unauthorized source did in fact take place, it would be a clear violation of TAC Rule 66. The pertinent part of paragraph six of Rule 66 is as follows: "... nor shall any competitor be allowed, without the permission of the Referee or Judges, to receive assistance or refreshment from anyone except as provided by Rule 66.7, Rule 133, and Rule 150.3." Of those additional rules, it is Rule 133 that applies. Paragraph one (b) discusses the location of the official refreshment stations.

The referee, in this case, would take whatever action he deemed appropriate, even in the absence of a protest from another runner. That action could range from a warning to both the runner and the sidecar passenger to a disqualification of the lead runner and barring of the motorcycle crew from future events.

The athlete concerned would have an opportunity to appeal the referee's decision and the appeal would be handled by the Race Jury of Appeal. Their decision could override or could support the referee's action. The jury's decision is final.

The referee's action would probably depend on how well the athletes were briefed on the official procedures for aid on the course. If TAC

guidelines were followed, the athletes would have been briefed on the location of the refreshment tables and arrangements would have been made to label, transport, and place on designated tables the special bottles of any athlete.

The special bottle arrangement is not discussed in the rule book, so I assume that is done at the prerogative of the race director. If you watched the Women's Olympic Marathon Trials at Houston, you could see the athletes' bottles were clearly marked and the competitors knew which side of the road their bottles would be on. These official tables are the only stations from which an athlete should be receiving refreshments.

It never ceases to amaze me how reluctant road runners are to accept the fact that they are part of a sport that has rules that they should follow. Steve Eden's casual attitude is typical.

Among our population of road runners are many who play golf. When they play golf, do they ignore the rules and make sarcastic remarks when a rule is enforced on a golf course? Do golfers object to the presence of officials on every hole in a major golf tournament?

Pick up a golf magazine with national circulation and invariably somewhere in the publication there will be a question/answer section about interpretation of a golfing rule. Many golfers carry a small copy of the rules.

Road running evolved as a rather laid back sport that appealed to free spirits who wanted road running to remain clean and simple, with little or no regulation. But the sport grew into a cash-producing industry, with thousands of dollars on the line and dozens of opportunities to compete in exotic lands.

We can no longer ignore the need for order and fairness in the sport. I will admit those of us involved with the governing body have not done enough to educate runners on the need for rules in the sport, but road runners are equally at fault for their general refusal to seek out and support the rules written by their road runner brethren in TAC/USA.

If the incident is true as Steve has described, in my opinion Steinberg did not deserve to win. Many years ago, while directing the Augusta Marathon (and before I was introduced to TAC/USA), I recall a lead runner who had noticeably slowed in the final miles and was in danger of being overtaken by the second runner.

He requested two cans of Pepsi, we hustled them to him, he drank one-and-a-half cans and almost immediately revived, then went on to win decisively. There is no guarantee John Steinberg would have won without the can of cola.

We have made some progress. There was a protest/appeal structure in place at the Charlotte Marathon. Had a marathoner filed a protest, it would have been acted upon immediately, unlike a similar incident at the same event several years ago, which was referred to Alvin Chriss at TAC/USA for arbitration, and which took months to resolve.

All TAC National Championships now have similar officials formats and many large races are following suit. The Men's Olympic Marathon Trials had trained officials for every critical function -- timing, judging, scoring, course integrity, rules interpretation, and the handling of protests and appeals.

One of our TAC/USA LDR goals is to pull all of the rules and guidelines together and produce a road runners' rule book. In a few years let's hope we will all run to the same sheet of music.

Pete Riegel  
3354 Kirkham Road  
Columbus, OH 43221

May 3, 1992

Dear Pete,

Enclosed is \$15 to renew my membership to Measurement News. I've also included a 3.5" disk and stamped mailer. Please send me a copy of the current course list.

Much of recent issues of MN have concerned themselves with the use of heart monitors. It doesn't strike me as a particularly significant issue, though I especially appreciate Harold Tucker's comments in the May issue, particularly in regard to what you have shown as IAAF Rule 143. (Just to name one, is a Nike Air sole a technical device?) I don't have a copy of either the TAC or IAAF rules so I have no idea as to how "technical device" is defined. While it sounds absurd, rule interpretation often comes down to drawing lines around issues such as these.

I do have a situation, though, in a somewhat different line on which I'd appreciate your opinion. Image the following: At a fairly large 5K, runner A is closing in on the finish line, believing she/he is comfortably in the lead. Because of the significant crowd noise, runner A cannot hear the approach of runner B, who is hoping to sneak past at the finish line. Caught in the excitement of the moment, the announcer says "It looks like we're going to have a battle for the finish!" Runner A, learning of the situation, ignites the afterburners and holds off the late charge by runner b.

I have never seen the TAC rule book so I have no idea how it addresses this situation. All I've seen is TAC Rule 66. Do we (a) disqualify runner A because she/he received assistance from the announcer, (b) disqualify sneaky runner B for receiving assistance from the crowd (in the form of noise), (c) both (a) and (b), or (d) neither (a) nor (b)? I suspect someone has already dealt with this issue.

Just curious.

Sincerely,



Mark Movic  
1524 41st Place  
Des Moines, IA 50311-2544

P.S. I think you put out a fine publication. I for one, however, would like to see us all use gender inclusive language in our correspondence and publications. Our discussions are meant for females as well as males.

THE ATHLETICS CONGRESS  
OF THE USA

3354 Kirkham Road  
Columbus, OH 43221

Road Running Technical Council  
Peter S. Riegel, Chairman

614-451-5617 (home)  
614-424-4009 (work)  
FAX 614-424-5263

June 5, 1992

Mark Movic - 1524 41st Place - Des Moines, IA 50311-2544

Dear Mark,

I was doing some preliminary assembly of the next MN and reread your letter of May 3, which I'll be publishing. I noticed that in my earlier reply I had got defensive about gender inclusivity, but failed to give you the opinion you solicited.

I can't imagine anyone trying to disqualify a road racer based on what the crowd shouts, or even the announcer. It would be ludicrous if someone should ever try. It's pretty common for the lead runners to receive information and encouragement, even from lead vehicles. The lead vehicle riders should know better, but the crowd certainly will not.

One could say that sort of "aid" is available to all - all you need to do is run fast enough to be in front, and you will get more care and feeding than those behind. That is a fact of road racing.

The information gained from the crowd varies considerably in quality. The spectators commonly do not know distances very well, and the smart runner will rely on official split points and its own watch if accurate information is sought. The runner who believes what the crowd says is often unwise.

With regard to Runner A being apprised by the crowd of the approach of Runner B, all I can say is that if Runner A neglected to sneak an over-the-shoulder peek as it approached the finish, it isn't much of a racer. It's a fundamental tactic of racing to know where your competitors are. If the runner wishes not to peek, because it may betray fear of being caught, that's the runner's choice. A trade of information for psychological edge. A lot more racers have been helped by a look than have suffered by one.

I suppose someone might attempt to disqualify Runner A or B on the basis of your scenario, but I would not.

Best regards,



May 21, 1992

Pete Riegel  
3354 Kirkham Road  
Columbus, Ohio 43221

Dear Pete,

*Heart monitors—to ban or not to ban?*

Sounds strikingly similar to a tongue-in-cheek group here in Central Florida called FLAP... Florida League Against Progress. Yes, they often create a flap. Two well-rehearsed slogans used by the locals: "I got my piece of the pie, keep everybody else out." The other memorable ditty: "When headed back north this spring, take a Yankee and Canadian with you and stay there!"

People who oppose heart monitors almost fit the FLAP profile. Maybe they forgot that years ago people opposed the electric starter on automobiles as a replacement for the hand crank. Then, too, people even opposed the invention of the automobile itself (scared the horses)! Years later those voices were saying, "Why do we need disc brakes?" Or how about the auto corporations who battled tooth-&-nail *against* installing the air-bag?

The message is simple: Let the innovators do what they do so well—innovate. Encourage them to the fullest. We are the benefactors.

The marketplace best decides what is good or bad, and what survives. When it comes to "unfairness" of runners wearing heart monitors... the guy next to me in the last event had an unfair advantage—he was wearing racing shoes and I had only trainers. Also, his watch records 30 time-splits, mine only records eight. Pity the guy on the other side of me, though... he didn't even have a watch!

Consider this: If the forces attempting to stifle the heart monitor were present a few years ago, today we wouldn't have gel pads, Gatorade, air-soles, Spenco products, etc. Even the mother-of-all-shoes: Nike... would have been nuked.

Lighten up guys! Stick to what we do best—running and measuring courses.

Best regards



Ed Okie

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POST OFFICE BOX 448 □ LAKE WALES, FLORIDA 33859 □ PHONE (813) 676-1374

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## Putting the Cap on Air

# Expansion: tube tire versus airless

by Ed Okie

Measurement News, March 92 edition, carried a well written dissertation by Pete Riegel about the Capair tire. In case you missed it, the Capair is an "airless" tire molded from polyethylene and a few strands of nylon cord (it is *not* a solid hard-rubber tire.)

Pete provided a chart citing Capair's circumference across various temperatures - data gathered in 30 tests using two different Capair tires.

For measurement enthusiasts, the airless tire is breathtaking... the best thing to come down the road since sliced bread and cold butter.

Advantages: flats are eliminated, heat-related circumference changes are modest, and measuring precision is greatly increased. What could be better?

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### *The airless tire is breathtaking*

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My measurement research reflects less accumulated data because of impending MN publishing deadlines. In spite of less data I'm confident in the results. Two reasons: 1. The *permanent calibration course* used for comparative historical data with my old tube tire is the identical site used for airless tire testing. 2. The *identical bike rim* (and bicycle) is used for the tube-versus-airless tire comparison.

Early trials quickly revealed the stunning news: In the temperature range of 80 to 90 degrees the airless only expanded about 3 counts per mile (12"). Historical data for the tube tire suggested it jumped as much as 24 counts (about 100"). The percent-

age variance between the two tires is more than 600%!

Equally intriguing, old data from the tube-tire vividly pointed to wide measurement discrepancies at near-equal temperatures because of internal air pressure. Within a narrow range of 84 to 86 degrees, instances varied up to 22 counts per mile (93 inches)!

Tube tires have two variables that affect circumference, heat and air pressure; rarely (if ever) is it constant--from day to day, or from the start to finish of a ride.

The airless tire has only one basic variable - heat, and it expands one-fifth less than a tube tire. Also, the tire's expansion is remarkably predictable. A simple temperature-circumference conversion chart becomes very workable in measurement applications.

Effectively (and this statement likely will bring shouts calling for my MN impeachment) --*it eliminates the need for pre and post-ride calibrations!* It eliminates math errors that easily occur at this point. It *produces a more precise course measurement.*

Also, re-calibrating during a ride (different segments of a course) easily can be accomplished by using a thermometer!

I'm not advocating elimination of the calibration procedure; but the procedure is less needed with the airless tire. "Instant" recalibration is another benefit.

Applied to course measurement - it appears that a course can be more precisely measured *without* the normal calibration procedure, compared to prior tube-tire efforts involving pre and post calibrations. Another advantage is it saves time.

The airless tire is... breathtaking.

*Okay...*

*there is a catch*

Locating an  
airless source

&

The installation  
process

The apparent only source of airless tires is a company in California called Capair. Pete Riegel provides this information in the March 1992 edition of Measurement News, page 4. Price is \$28 per tire postpaid. Mike Girard, the owner, can be reached at 2330 S. Susan St; Santa Ana, Calif. 92704; voice phone is (714) 556-9000 or by FAX at (714) 556-9005. That is the good news. Now the downside. To wit:

Capair, unfortunately, is not a bicycle-oriented business. Their production (building tires from "scratch") is directed toward supplying "trouble free" and long wearing tires for devices like wheel chairs, high-wheel lawn mowers, etc. Capair's knowledge of bicycle tire-sizing is, well, non-existent. Worse, their sizing designations do not necessarily correspond to those used in the bicycle industry.

I ordered a replacement for my Specialized 27" x 1 1/4" touring tire. When Capair's tire finally arrived a few weeks later (coiled up in a box with a striking resemblance to a pretzel), quickly I discovered that 1 1/4" isn't the same nationwide. Capair's tire was about 50% wider than the original tire. It didn't come close to fitting my rim. Also, its diameter appeared at least three inches too small. A quick phone call to Capair in California (three

were required to reach Mike Girard) provided the installation "technique" (and I use the word very generously).

Mike said, "Clamp the rim on a workbench with "C" clamps and get a couple of buddies to help. (He was correct... find yourself a couple of off-duty NFL linemen). Insert the tire on one side of the rim and use more "C" clamps to hold it in place. Then use a couple of screwdrivers and slowly stretch (force/pry) the tire onto the rim, clamping each segment with more "C" clamps."

"You have to be kidding," was my nonverbal reaction. "Screwdrivers and "C" clamps on a delicate, finely turned, high-tech aluminum bike rim?"

A call to Pete Riegel in Ohio provided further words of wisdom (then, again, maybe they were words leading down a darkening tunnel). Pete said something to the effect "yes, use "C" clamps, screwdrivers, a workbench, and a few buddies." Pete also suggested an alternative: go down to the local bike shop and find a used wide steel rim and *let them* install the tire! (Smart guy, that Pete. One can tell he wasn't born just yesterday!)

I tried Pete's suggestion: two bike shops later neither store had applicable rims. Apparently I was looking for a dinosaur type of rim from a bygone era. A check in a national bicycle catalog offered heavy-duty wide rims at \$36, plus: spokes, hub, installation and mailing charges. The tab was nearing a \$100 total investment and I said, "Whoa, this is only a hobby."

Later in a larger city I ventured into a third bike shop and they (literally) went up in the attic and located a wide steel rim, a vintage leftover from the 1950's. A quick huddle and the team went to work: the "workbench, "C" clamps and 3-NFL linemen" working to install the Capair tire.

Okay, so these guys weren't NFL linemen. They were skinny,

purist, professional bike racers (the type that walk around wearing those strange lycra-spandex shorts, with bulging thighs, and funny little shoes on their feet that go 'clackity-clack' when they walk across the floor).

A short story made shorter: My "NFL linemen" gave up after five minutes. Steve, the bike store owner, said, "Wait a minute, I've got a couple boxes of airless tires up in the attic. I tested these many years ago (after reading the advertising hype) and found they 'road like a rock.'" (Steve's true descriptive words aren't printable in a family magazine. Suffice to say, Steve didn't like the tires for bike racing).

---

*A quick huddle  
and the team  
went to work:  
the "workbench,  
"C" clamps and  
3-NFL linemen"*

---

Down from the attic arrive two boxes filled with "Zeus" brand airless tires (Zeus has long since gone out of business). Steve picked out a bright yellow tire (labeled 27" x 1") and he and his "pseudo-NFL linemen" again went to work on the installation process, this time using my original aluminum rim. The installers used a long bar-like device that bolted to the hub with a built-in roller in the rim area that leveraged the tire onto the rim without the bar touching the rim. Smart guy, that Steve. A bit of perspiration, some cussing, and a few minutes later, and presto - the bright-yellow Zeus airless tire was mounted on my rim.

Caveats to the installation story: One must be persevering when switching to an airless tire.

Sizing is a problem, particularly with Capair Corporation... their sizing is nonstandard and, unfortunately, they know "zero" about biking. The new Capair tire I ordered (27 x 1 1/4) remains in my garage. Considering the original \$28 price, plus multiple phone calls and travel involved in seeking a solution I must have \$40 invested. If anyone is interested, send \$20 and I'll mail the tire. Be sure that the *inside* dimension of your 27" rim is between 19 and 22 millimeters with a mounting depth of 6 millimeters (the 19-22mm is the critical dimension).

Another suggestion is to order from Capair (\$28) but ask for a one-inch width (1") if replacing a similar 27" x 1 1/4" tire. A possible advantage of the narrower tire width is that it *might* be easier to stretch onto a rim. Keep in mind, though, the fit *will not* be easy (at least one NFL lineman will be necessary). Also, I recommend ordering a tire that is *light in color* instead of black. A lighter color absorbs less radiant energy (heat) and possibly this is a partial factor in the improvement of precision I've experienced. (Capair's Mike Girard initially asked me what color I wanted... "said he could make 'em any color I wanted." At the time "finding the tire" was the battle-of-wits, I didn't give a second thought about color.)

A second suggestion is to contact Steve Bent at Bent's Schwinn Cyclery in Lakeland, Florida, (813) 688-2126. Steve is a professional in the field of bicycling and understands rim sizes, etc. He has a limited supply of Zeus tires in various sizes in his attic and will be glad to supply tires at \$20 per unit. His mailing address is 1058 South Florida Avenue, Lakeland, FL 33803. An even better idea (if you don't have a local bike shop) is to have Steve supply the entire front wheel, pre-mounted with a Zeus tire; but check with Steve for applicable cost.

## Reasons for simplifying the task

Here in Central Florida I can site example after example of inaccurate courses. Four reasons (in order) caused this condition, reasons that likely prevail nationwide: 1. People and running clubs who are lazy; 2. Lack of measurement knowledge; 3. Complexity (and time involved) for the procedure, 4. Cost if the job involves hiring an expert.

Unfortunately, we can't eliminate #1 (Never can, never will). We can provide instruction and guidance on #2. The airless tires' precision simplifies #3 and #4.

The tire is breathtaking.

## Cause and effect?

Curiosity got the best of me last summer trying to cope with varying tire pressures. Beyond buying a superb pump (Zefal dual-chamber) and a special (Zefal) air gauge to fit presta valve stems, I tried to standardize on 90-lbs pressure at the start of each measurement. I knew that the sun was a major nemesis. But how much? Here was a brief experience last year:

The white-walled, black-tread, tube tire was placed vertically in the sun pre-inflated to 90 lbs. One hour later it was already at 96 lbs (attempting to measure the pressure a second time caused a slight loss of air... maybe the reading was 97 or 98).

Unless one is a "whiz-kid" at measuring road courses, it takes longer than one hour. In Florida the tire is rolling across asphalt pavement with temperatures varying from 70 to 120 degrees, if not more. Internal pressures of tube tires obviously go up (and the circumference changes) after a long day of bike use in the hot Florida sun.

The airless tire eliminates the inflation variable. Another possibility contributing to its precision (this is only speculation) is that higher temperatures may cause the airless tire's polyethylene material to soften - the softness reduces the circumference... a self-compensating effect.

Regardless, the airless tire provides the best of both worlds for bicycle measurement enthusiasts: less hassles and greater precision.

## How hot is hot?

The movie title "Cat on a Hot Tin Roof" almost applies for Course Measurement (nuts). In their case it's "Measurement on a Hot Asphalt Road."

Along with soaring heat, people shrink, and tire sizes grow. To gauge wide temperature swings during the airless tire testing I picked the coolest temperature available here in Cen-

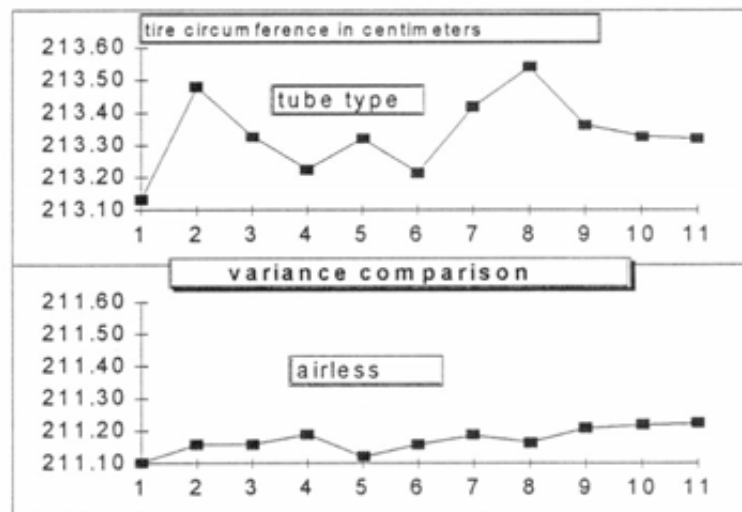
tral Florida. At 6:30 a.m. on one morning in June it was 68 degrees (It poured the evening before). I dutifully made my four passes over the quarter-mile calibration course and arrived at a mile count of 15,247. Easy enough. Now back to bed.

To simulate a high range (on a different day) I waited for what was developing as a hot day (eventually reaching 91 degrees on the back porch) and subjected the front tire to three hours of midday baking-in-the-sun. At 2:30 p.m. I nimbly slapped the wheel on the bike and sizzled down to the nearby calibration course one mile away.

At the calibration site, 2" above the dark-gray asphalt the temperature was 99 degrees. After the 3-hour bake job and one-mile ride to the calibration course site - this should subject the tire to a near worst-case scenario. The result:

Over this 31-degree range, the counts-per-mile changed from the 15,247 reading at 68 degrees to 15,239.1 at 99 degrees. Tire circumference calculated at

The two charts below are drawn to the same scale. Both reflect actual measurements across various temperatures and conditions. In spite of being subjected to an even wider temperature range, the airless tire exhibits dramatically less fluctuation. More than 600% less.



211.103 cold, and 211.212 hot - a variance of only about 5/100 of 1% (.000518) for a worst-case scenario. Even this extreme is within TAC's measurement standards of .08% tolerance). By using a midpoint baseline of, say, 82 degrees, the swing (plus or minus) is cut in half, or about 16-inches per mile. Pick an overcast day and the variance will be less.

By plotting a temperature/count-per-mile conversion chart for use at a measurement site, the bicycle becomes a reasonably precise instrument without the necessity to calibrate in the normal sense. The rider's ability (riding skill and knowledge) becomes the weak link in the chain. Before switching to the airless tire the opposite was true... the tire was our excuse (and exasperation).

Reminds me of the oft-heard "blame it on the computer" claim. For bicycle measurement people, our version was... "blame it on the tire." No more. 'Nuff said.

Is it worth your time?  
Is your time worth anything?

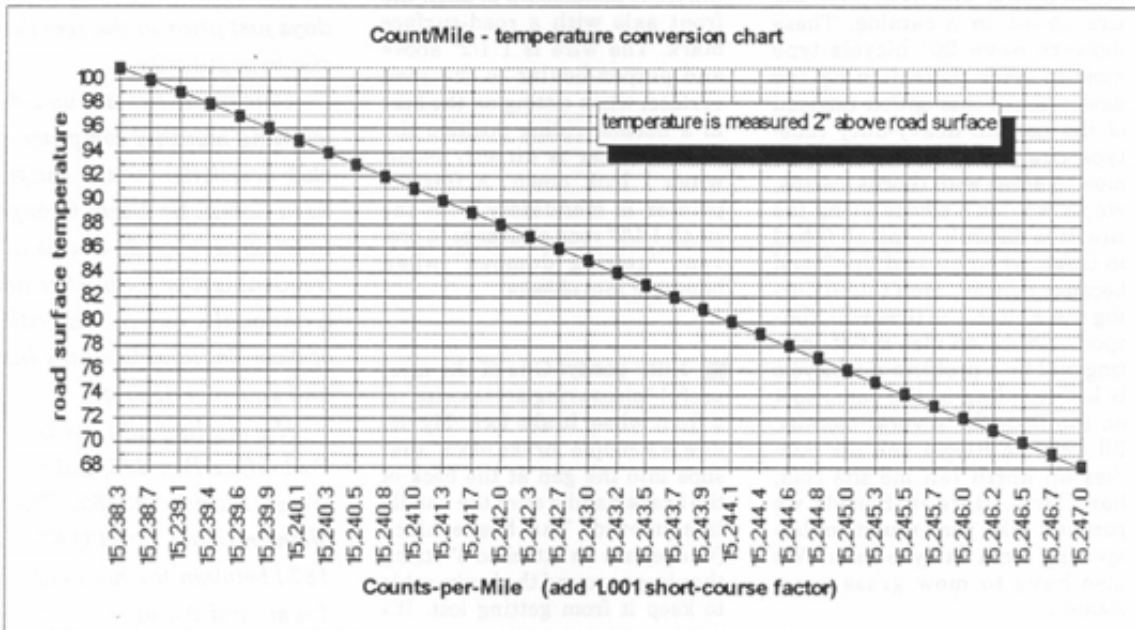
## The "bottom line"

Is the aggravation of the changeover to an airless tire worth it? The answer for road-measurement enthusiasts is a resounding "Yes!" It's nearly a dream come true. Beyond eliminating the worry-about-flats, tire expansion is modest. Better yet, the small expansion is very predictable.

Anything we can do to simply our lives, and simplify course-measurement procedures, is one giant step for progress, one big leap for mankind.

-Ed Okie

The conversion chart reflects eleven measurements across the 68 through 101 degree temperature range. Temperature was measured 2-inches above the road surface with a shaded thermometer. Mid-points were interposed. Counts per mile was rounded to tenths.





# Quips, Quotes & Etc.

by Ed Okie

■ The airless tire isn't "glued" to the bike rim, it's stretched like a rubber band- the resulting tension holds it in place. A typical 27-inch tire appears to be about 25 inches when laid next to the rim... the "big-stretch" is what turns installation into a wrestling-mania media event. Pete Riegel says that his tire slips (in relation to the rim) a tiny amount across mega-miles of use. My experience with the Zeus tire shows "zero" movement after about 50 miles. Pete said "to mark it." I did. It still doesn't. Possibly my tire is a tighter fit, but that is doubtful. Another possibility: Pete uses a steel rim, mine is aluminum. An aluminum surface provides much higher friction or "grabbing power."

■ The airless tire is sometimes used on high-wheeled commercial lawn mowers. I recently replaced a "Kee" (or Trailmate) brand mower and discovered the tire option in a catalog. These mowers have 20" bicycle-type rims in back. Questioning the dealer about this option (instead of the normal heavy-duty tube-type tire) he said, "Unless you mow in areas with thorns (cactus, etc.) I wouldn't advise using the tire. It is difficult to install (I had to laugh when he said that!) and because mowers aren't used during the winter, the tires will "flat-spot." I have no idea if flat-spotting will be a problem if a bicycle is left standing in the same spot on the floor for several months. I'll let Pete Riegel and his buddies up north tell me the cold, hard facts. Here in Florida we run and bike year-round so flat-spotting is not likely to occur. (We also have to mow grass year-round!)

■ I advise all bicyclists, measurement zealots or otherwise, not to use a steel rim. In spite of what logic suggests, the steel rim is weaker than the aluminum counterpart. The main argument, though, is wet weather use. Rain on a steel rim makes brake pads respond with a slickness equal to a banana peel on the floor. Aluminum rims are far superior in similar conditions.

■ Another "hot-tip" worth noting: I use a stiff wire (a heavy 12-gauge copper wire inside a plastic tube) attached to the front edge of a water-bottle bracket beneath the bicycle's down-tube. This locates the point-marker about 8" in front of the crankset's centerline. After extended use, it's readily apparent that accuracy is enhanced plus a convenience advantage. It eliminates the awkwardness - and visual parallax error - of leaning over the front handlebars to align the front axle with a road-surface mark. The wire is 1 1/2" above and perpendicular to the road surface; when sitting on the bike in a normal riding position the point-marker is directly below when I look down. A flexible pointer is mandatory with the small 1 1/2" road clearance to prevent "getting dumped" when bumping into objects.

■ Nifty goody: One of the most useful "measuring accessories" is a front wheel brake lock. My device is a simple "brake block" that slips into the gap at the back of the brake handle after the handle is squeezed. The brake block (wedge) has an attached 4" string that loops around the brake cable to keep it from getting lost. It's

one of those \$3 items picked up years ago that has proved invaluable. Last year I tried another device, a \$7 "flick-stand" that attaches to the downtube to hold the front wheel in place. The flick-stand works exceptionally well at holding the wheel from moving in a left or right direction but provides no "rotation-locking" ability. A flick-stand is handy, though, in preventing a bike from falling over when leaning it against an object. Worth considering.

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## About our *Measurement News* writer

*Ed Okie is a resident of Lake Wales, Florida, a small city located in the geographic center of the state, north to south, east to west.*

*An avid runner, coach and race director, his roots of enthusiasm reach back to the days just prior to the sport's rise to popularity.*

*Okie publishes an award-winning monthly computer club newsletter for the Ridge Area Computer Users Group in Central Florida and is a frequent writer, publisher and a nationally recognized critic of New England Country Inns and gourmet dining.*

*His mailing address is Post Office Box 448, Lake Wales, Florida 33859. The phone number is (813) 676-1374 between the hours of 7 a.m. and 9 p.m.*



TADEUSZ DZIEKONSKI  
ul. Chrobrego 4 m. 8  
(skrzynka pocztowa 14)  
15-057 Białystok  
POLAND

Dear Pete,

Thank you very much for your letter of April 15 and the next copy of "NNNews" issue 53.

In my example of 20 K measurement I used two/not three/ rides - in two versions - to determine two final adjustments:

- a/ 1st and 2nd-version A rides,
- b/ 1st and 2nd-version B rides

So, I did not make a mistake in version B, but I should put a sum of the shortest splits, because those figures included data from three rides.

Final adjustment are:

- a/ \* 3,008 ms /5 km + 0,565 m, 10 km - 0,898 m, 15 km - 1,027 m/  
2nd-version A ride as an official  
shortest splits - 19 kms 994,751 ms
- b/ + 1,303 ms /5 km + 0,326 m, 10 km + 0,652 m, 15 km + 0,978 m/  
1st ride as an official  
shortest splits - 19 kms 998,457 ms

I abide by my opinion, because this solution is agreed to the IAAF/AIMS procedure:

- a/ + 3,008 ms - using sum of shortest splits + 5,249 ms -  
difference 2,241 ms
- b/ + 1,303 ms - using sum of shortest splits + 1,543 ms -  
difference 0,24 ms

The IAAF/AIMS procedure does not recommend a sum of shortest splits/when two rides exists/ to determine a final adjustment. Please make next comment.

I enclose for you my photos which were made during a measurement.

A very bad thing was happened during the Wrocław marathon May 17, which course I measured under the name of AIMS: the lead car made a mistake and the runners ran a wrong way/totally around 300 ms short/. I finished this marathon/ca 41,9 kms/ in 2:53.45/82nd place/ and the winner in 2:15.25.

With best wishes

Białystok/Pol, May 20, 1992

THE ATHLETICS CONGRESS  
OF THE USA

3354 Kirkham Road  
Columbus, OH 43221

Road Running Technical Council  
Peter S. Riegel, Chairman

614-451-5617 (home)  
614-424-4009 (work)  
FAX 614-424-5263

June 1, 1992

Tadeusz Dziekonski - ul. Chrobrego 4 m. 8 - 15-057 Bialystok - POLAND

Dear Tadeusz,

Thanks for the photos. I may put one in MN.

Neither the TAC nor the IAAF measurement books mentions "sum of shortest splits." The concept is a bit complicated, and we did not wish to confuse new measurers. It is very useful, though, when intermediate data is not of high quality. Suppose you measure a 20 km course and obtain:

<u>Point</u>	<u>First Ride</u>	<u>Second Ride</u>	<u>Shorter Split</u>
START			
5 km	5000	5010	5000
10 km	5000	4990	4990
15 km	5000	5010	5000
FINISH	5000	4990	4990
Total	20,000	20,000	19,980

What would you do with this data? It is easy to say "ride the course again until I am happy with the data." However, this is not always possible.

An ignorant measurer would say "I had a perfect measurement, with exactly 20,000 metres measured on each of the two rides."

If I got that data I would add 20 metres to the course. The book does not say to do this, but it does not prohibit it either. Remember, the goal is a course that is not short.

This is especially important if you think somebody may check your work. All the intermediate points never match exactly, and sometimes the measurer must use judgment with the numbers he gets. Otherwise he can suffer embarrassment.

I remember running a marathon in which the leaders, by a mistake, ran 2 km more than the rest of the field. The monitors made things correct after the first 100 runners had passed, and the other 1900 runners ran the correct course. It certainly was a mess at the finish line!

Best regards,





#### MEASURING IN POLAND

Here we see Tadeusz Dziekonski ready to begin his measurement of the Lebork Marathon (just west of Gdansk, on the north coast of Poland near the Baltic Sea). The date is March 21, 1992, and the weather looks cold and wet.

Tadeusz enroute during the measurement. Traffic protection does not seem to be a problem on this stretch of road, nor does figuring out the SPR.

Maybe he is riding a calibration course.



### IS TEN YEARS OF COURSE LIFE ENOUGH?

The course list has a lot of deadwood in it, and no one has proposed a workable way to separate the courses that are used from those that are not. Some certifiers indicate that courses are to be dropped from the list, from time to time, but the list continues to grow.

In order to get rid of the deadwood, one way to do it is to limit the effective life of a certificate to ten years. If this is done, the list will remain at its present size, and deadwood will be pruned annually. The lists we send out will not contain an increasing number of lapsed courses.

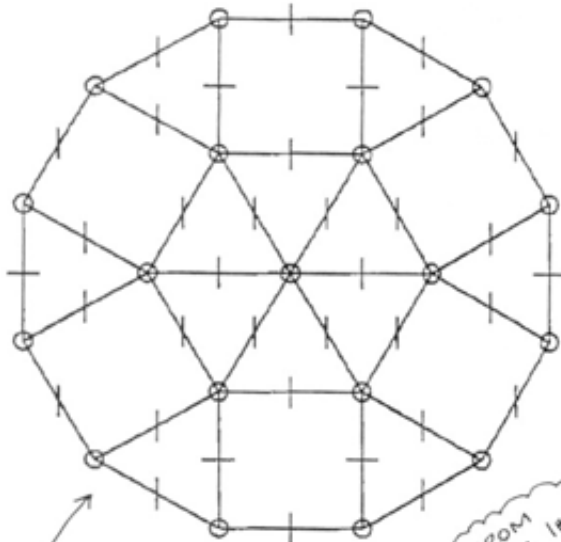
There will certainly be a very small number of courses that remain used and unchanged for more than ten years. If they wish to be reinstated to the list, all it would take is a simple request, and new course number could be assigned. Any race held on a lapsed course would still be considered valid, if the certificate is presented to TACSTATS with results.

The most immediate effect of this proposed action is that all courses certified in 1982 would be dropped from the list on January 1, 1993.

Please let Joan and Pete know what you think about this.

**"BRACING THE SQUARE"  
STILL UNCONQUERED**

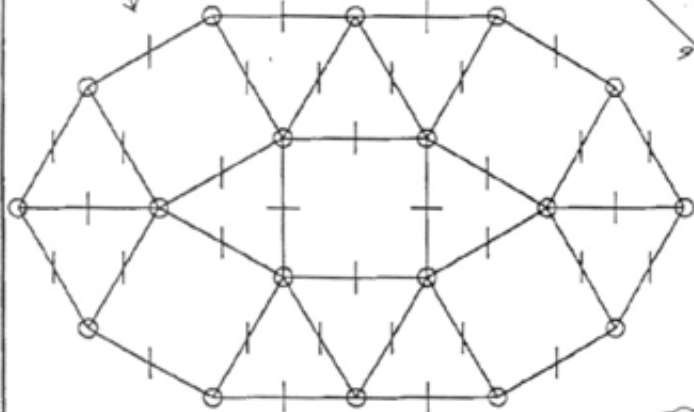
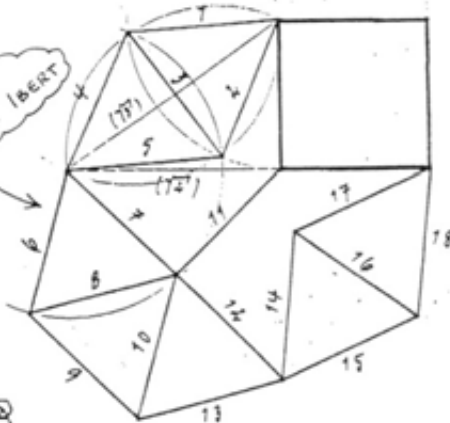
Three solutions to the March puzzle were received. They are ingenious, but unfortunately none is a rigid structure. Can no one brace the square with fewer than 43 links (not counting the links that make the square)? There is more than one answer to this. Don't give up! Humble your fellow measurers!



FROM  
TOM RECEL

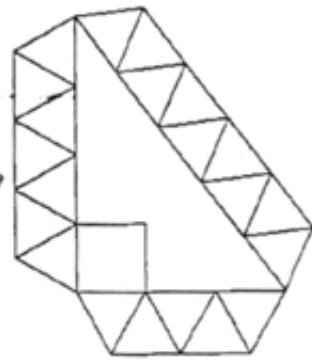
19 JOINTS  
36 MEMBERS (32 ADDED)

FROM  
HELGE IBERT



18 JOINTS  
34 MEMBERS (30 ADDED)

THE  
ORIGINAL  
PUZZLE  
43 LINKS





One Hoover Drive, Suite 140, Indianapolis, Indiana 46205 (317) 961-0500  
Cable Address: ATHCONGR/SS MD • Telex 87-312 • FAX (317) 961-0481

June 3, 1992

TO: National Committee Chairs  
TAC National Officers  
TAC Executive Committee

FROM: Martin E. Weiss/Consultant *Marty Wein*

SUBJECT: 1992 National Convention Schedule

Enclosed please find a copy of the first draft of the schedule for The Athletics Congress' 14th Annual National Convention; as mandated by the Congress during TAC's 1989 Convention in Washington, the schedule commences on Tuesday morning, and has an estimated conclusion of 4 p.m. on Saturday.

For the most part, meeting dates and number of sessions (inclusive of anticipated attendance and set-ups) listed for this year's Convention parallel those utilized in New Orleans; the remainder, as nearly as possible, incorporate the changes requested by committee chairs on their 1991 Convention meeting report forms, and/or in communications to the National Office subsequent to that Convention.

In the event that any committee chair feels that any meeting(s) for his or her group as scheduled might create a problem or conflict, please contact me by mail or phone with respect to any changes which might be desired. As has been the case in past years, every effort will be made to accommodate such requests.

Additionally, in the event that more meetings have been scheduled for your committee than you feel will be required, please advise me of the date(s) and time(s) of the meetings which can be cancelled.

Do not be concerned if the number of attendees indicated is greater than you either anticipate or had requested -- this basically reflects utilization of meeting rooms for each day's morning, afternoon and evening sessions without having to change set-ups; however, please do let me know in the event you anticipate an attendance greater than that indicated on the schedule.

MEW/lag  
Enclosure

cc: National Staff



THE ATHLETICS CONGRESS/USA  
14th ANNUAL NATIONAL CONVENTION

The Galt House  
Louisville, KY  
November 30-December 5, 1992

Schedule as of May 28, 1992

C = Conference  
C-T = Conference/Theatre\*  
S = Schoolroom  
S-T = Schoolroom/Theatre\*\*  
T = Theatre

Time	Monday, November 30	Number	Set-up
12 Noon-5 p.m.	Registration Desk National Convention Office Typing Room Press Room U.S. Athletics Calendar Office		
P.m.			
2-5:30	TAC Executive Committee	30	C-T
6-11	Coaches Education	30	S-T
7:30-9:30	TAC Executive Committee	30	C-T
Time	Tuesday, December 1	Number	Set-up
8 a.m.-6 p.m.	Registration Desk National Convention Office Typing Room Press Room U.S. Athletics Calendar Office		
A.m.			
9-11	First-Timers Orientation	150	T
9-12 Noon	Associations Executive Committee	20	C-T
	Coaches Education	30	S-T
	Officials Executive Committee	30	S-T
	Athletes Advisory Executive Committee	30	S-T
	U.S. Women's Track Coaches Assoc.	20	C-T
	Advisory Board	100	T
	Member Services	20	C-T
	SSC Executive Committee	20	C-T
	Youth Athletics	20	C-T
	Masters Long Distance Running	20	C-T
	Men's Track & Field	20	C-T
	Women's Track & Field	20	C-T
	Men's & Women's Race Walking	30	C-T

\* Room set-up Conference-style for number of people indicated; chairs theatre-style around perimeter of room.

\*\* Room set-up Schoolroom-style for number of people indicated; chairs theatre-style around perimeter of room.

2-2-2

Time	Tuesday, December 1	Number	Set-up
p.m.	TAC Board of Directors	150	Special
1-5	Masters Track & Field Executive Committee	20	C-T
6-8	Men's Long Distance Running Executive Committee	20	C-T
6-9	Athletics for the Disabled	30	S-T
	Youth Athletics	200	T
	Officials	150	T
	Men's Track & Field	150	T
	Women's Track & Field	150	T
6-11	Rules	20	C-T
	Masters Long Distance Running	100	T
	Men's & Women's Race Walking	150	T
	Athletes Advisory	150	T
8:30-11	Masters Track & Field	75	T
9:30-11	Women's Awards Subcommittee	20	C-T
	Joint Men's & Women's Cross Country Subcommittee	20	C-T
	Youth Athletics Regional Coordinators	30	S-T
	Men's Long Distance Running	150	T
	Associations Workshop	150	T
	Coaching Education	150	T



Time	Wednesday, December 2	Number	Set-up
7:30 a.m.-6 p.m.	Registration Desk		
	National Convention Office		
	Typing Room		
	Press Room		
	U.S. Athletics Calendar Office		
a.m.	The Athletics Congress-General Meeting	900	Special
8-12 Noon	Men's Awards Subcommittee	20	C-T
p.m.	Men's LDR Championships Subcommittee	20	C-T
1-3	First-Timers Orientation	200	T
	Youth Athletics Resource Development Workshop	30	S-T
	Public Relations Task Group	30	S-T
	Standards/Men's & Women's Subcommittee	20	C-T
	Rules	20	C-T
	Race Walking Site Selection Subcommittee	20	C-T
	Budget & Finance	30	S-T
	Officials	150	T
	Member Services	100	T

3-3-3

Time	Wednesday, December 2	Number	Set-up
1-5:30 (cont.)	U.S. Women's Track Coaches Association	150	T
	International Competition	150	T
	Women's Long Distance Running Executive Committee	20	C-T
	Race Walking National Team Subcommittee	20	C-T
	Associations Committee Seminars	200	T
	Ultra-Distance Subcommittee	15	C
	Communications	30	S-T
	Men's Development	200	T
	Convention Subcommittee	20	C-T
6-8	Rules	20	C-T
6-11	Women's Track & Field Schedule Subcommittee	20	C-T
8:30-11	Women's Heptathlon Subcommittee	20	C-T
	Officials Equipment & Facilities Subcommittee	20	C-T
	Youth Athletics	200	T
	Ultra Distance Subcommittee	15	C
	Road Running Technical Council Communications	30	S-T
	Men's Development/A	150	T
	Men's Development/B	150	T
	Men's Development/C	150	T
	Men's Development/D	150	T
	Masters Track & Field	150	T
	Member Services	100	T
	U.S. Women's Track Coaches Association	150	T
	Athletes Advisory	150	T

Time	Thursday, December 3	Number	Set-up
8 a.m.-6 p.m.	Registration Desk		
	National Convention Office		
	Typing Room		
	Press Room		
	U.S. Athletics Calendar Office		
a.m.	Women's Cross Country Subcommittee	20	C-T
8:30-11:30	Records	20	C-T
	Law & Legislation	20	C-T
	Youth Athletics	200	T
	ARRA Race Directors	150	T
	Joint Site Selection Subcommittee	30	S-T
	Member Services	150	T
	Masters Track & Field	150	T
	Masters Long Distance Running	150	T
	Women's Development	200	T



4-4-4

Time 8:30-11:30 a.m. (cont)  
Thursday, December 3  
Substance Abuse Education & Testing  
Women's Long Distance Running

12 Noon-2 p.m.  
AWARDS LUNCHEON

p.m.  
2:30-6  
Records  
Rules  
Youth Athletics  
Officials  
Men's Development  
Joint Masters Track & Field and Long Distance Running  
Men's & Women's Race Walking  
Sports Science Development Seminar  
Women's Development  
Men's Long Distance Running  
Women's Long Distance Running  
Men's Decathlon Subcommittee  
Officials Executive Committee  
Rules  
Road Running Technical Council  
Cultural Exchange  
Joint Men's & Women's Development  
Men's & Women's Race Walking  
Sports Medicine & Science  
U.S. Olympic Festival  
Associations  
Athletes Advisory

RRTC

5-5-5

Time P.m.  
1-3

1-5

2-5  
3:30-5

6-7

7:30-777

Time  
8 a.m.-3 p.m.

7 a.m.-Finish

a.m.  
8:30-10  
9-11:30

Friday, December 4  
Athletes Advisory  
Men's Track & Field  
Women's Track & Field  
Men's Long Distance Running  
Women's Long Distance Running  
Rules  
Cultural Exchange  
Associations Committee Zone Meetings  
Joint Men's & Women's Track & Field  
Joint Men's & Women's Long Distance Running

RECEPTION  
BANQUET

Saturday, December 5  
Registration Desk  
National Convention Office  
Typing Room  
Press Room  
U.S. Athletics Calendar  
Delegates Race

Ball of Fame Library Advisory Board  
Track & Field Junior Commission  
Athletics for the Disabled  
Youth Athletics  
Voter Service  
Masters Long Distance Running  
Joint Law & Legislation and Rules  
Committees  
Men's Long Distance Running  
Women's Long Distance Running

12 Noon-Conclusion\*  
The Athletics Congress-General Meeting

Custodial Board & Doping Bearing Board  
SATURDAY AFTERNOON MASS

\* Estimated conclusion of General Meeting is 4:00 p.m.  
\*\* Will commence one half-hour following conclusion of General Meeting in the event that conclusion is earlier than 4 p.m.

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# Fujitsu 8 km Validation — 1992/06/13

Note: Cal Course Length = 300.000 m

	Tom Knight	Bob Baumei (Validator)	Paul Oerth	Tom Benjamin
<b>Pre-Cal</b>				
07:55	43000.0	1000.0	772700.0	804539.0
--> 08:05	45823.0	4469.0	776057.0	807374.0
18°C	48645.5	7938.0	779414.0	810208.0
	51468.0	11407.0	782771.0	813042.0
	54290.0	14876.0	786128.0	815876.0
Pre-Const	9408.333 counts/km	11563.333 counts/km	11190.000 counts/km	9447.500 counts/km
<b>Post-Cal</b>				
09:15	47000.0	29100.0	896500.0	908898.0
--> 09:25	49822.0	32568.5	899858.0	911732.0
19°C	52644.5	36037.0	903219.0	914566.0
	55467.0	39505.0	906579.0	917400.0
	58289.0	42973.5	909939.0	920234.0
Post-Const	9407.500 counts/km	11561.250 counts/km	11199.167 counts/km	9446.667 counts/km
<b>Const-Day</b>				
	9407.917 counts/km	11562.292 counts/km	11194.583 counts/km	9447.083 counts/km
<b>91 Course:</b>				
Start (91)	Counts	Counts	Counts	Counts
Start (92)	Interval(m)	Interval(m)	Interval(m)	Interval(m)
Before 1 mi	CUM(m)	CUM(m)	CUM(m)	CUM(m)
2 mile				
Before Loral				
After Loral				
3 mile				
3 mile (again)				
5 km				
4 mile				
Finish (91)				
<b>92 Course:</b>				
Start (92)	Counts	Counts	Counts	Counts
After Loral	Interval(m)	Interval(m)	Interval(m)	Interval(m)
After Loral	CUM(m)	CUM(m)	CUM(m)	CUM(m)
3 mile (91)				
3 mile (91)				
Finish (91)				
Finish (92)				



# Marathon Sports

May 31, 1992

Mr. Wayne Nicoll  
Ragged Mt. Fish/Game Club  
Potter Place, New Hampshire 03265

Dear Wayne:

Enclosed you will find entry form for the ██████████ 5K/10K road races held on Sunday, May 17th. As you can see it states that both courses are TAC certified. As you mentioned in our conversation on Monday the 18th the 5K course was certified but not the 10K. ██████████

Once again Mr. ██████████ of ██████████ was race director for this event. Last year this event produced several PR's. When Doug White re-measured the course he found it not even close to being accurate. I run through the park where this event takes place. Last year there were no markings on the road prior to running this race. I made note of the turn around point which was marked in chalk.

This years turn around was approximately 75 yards longer than last years. You say it was certified...but after the event had already taken place.

Mr. ██████████ is getting away with this and I believe something has to be done about it. You mentioned that you would be willing to write a letter for us to publish in our club newsletters. I would welcome your input and will make sure that the letter is included in the next Delaware Sports Club, Pike Creek Pacer, Downstate Delaware Striders, and Seashore Strider newsletters. If Mr. ██████████ does not get his act together I will also publish in my MARATHON SPORTS CALENDAR which has a circulation of 5,000.

Those of us in the running community know we have a problem. With your help maybe we can solve it.

Sincerely,

Wayne S. Kursh  
President/Marathon Sports

109

360 Ninth Street Plaza • Wilmington, Delaware 19801 • (302) 654-2354



**The  
Athletics Congress  
of the USA**

*The Governing Body for Athletics in the United States  
including Track and Field, Long Distance  
Running and Race Walking for  
men and women and boys and girls  
at all age levels.*

**WAYNE B. NICOLL**  
Ragged Mountain Club  
Potter Place, New Hampshire 03265  
(603) 735-5721

Dear Editor,

11 June 1992

As the TAC/USA course certifier for the state of Delaware, I supervise the road race course certification program in your state. In the past several years there has been an ongoing problem with some races advertising in their entry flyer that the course was TAC certified, when in fact it was not. All of the participants in a road race are interested in their finish time, but that time is not worth remembering if the course is not accurately measured. I still find many experienced runners who claim their PRs on uncertified courses. I have measured dozens of courses that had been run previously without TAC certification, and rarely have I found an uncertified course that was the proper length. Runners should insist that race organizers produce what they have promised on their entry flyer.

Delaware runners have a program with a very high percentage of TAC certified race courses, thanks to diligent measurers like Doug White. The term "TAC certified" means the course has been measured using procedures approved by the governing body, The Athletics Congress (TAC). The measurer has submitted to me an application and, based on the quality of the data submitted, I have issued a course certificate with a course code number. The code number is simple to read - it breaks out into state, year, a three digit sequence number, and the certifier's initials. For example, the first course I approved in Delaware this year was DE 92 001 WN. The race organizers are encouraged to put the code number conspicuously on the entry form.

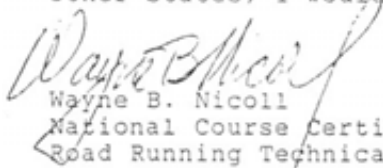
Unfortunately, some race organizers fail to meet their commitment to the runners to have a certified course by race day. Probably the most glaring example of this has been the record of the [REDACTED] 5K. This race looks like a lot of fun and surely attracts large numbers with the offerings of a neat shirt, a post-race party and generous age and sex divisions, including walkers. But this race has a cloudy history of advertising it was TAC certified when it was not. In two different years the race organizer was well aware of the measurement and paperwork requirements and I believe he intended to complete the measurement requirements prior to race day, but for some reason it did not always happen. As a result, any open, age group, and single age record and national age group rankings are lost, and no runner can accept with any certainty that they may have run a PR that day. I received the paperwork for the 5K and 10K postmarked after the 1992 race had been held, too late for consideration for this year. If there are no changes in the course between now and the 1993 date, the 5K and 10K have been certified for next year's races.

I am appealing to the runners in Delaware to put the pressure on this race and any others that fail to produce the TAC certified course

they have promised on the entry form. When you discover a change in a certified course, check to see if a new code number has been issued. If you are still suspicious, ask to see the certificate (a detailed course map is on the reverse side), and if you receive one, take it out on the course and check it against the map. The best advice I can offer - if you know the race is falsely advertised as certified, then vote with your feet. Stay away from that race and let the organizers and the sponsors know why you refused to participate in that race. If you need my guidance or help regarding a course in question, call or write to me at the address and number in the letterhead.

You may wonder why there are rarely any national open, age group, or single age group records set in Delaware. In fact, there have probably been dozens of records set in Delaware, but race directors are not sending their results in to TACSTATS, the national record keeping center. Since you are already keeping state records, it would not be that difficult to submit for possible national records. The TACSTATS reporting form requires the course be certified, and evidence of proper timing and reconciliation of raw results be included. The form is submitted with a copy of the complete results. Those of you who take your performances seriously should be insisting that the race courses be certified, the race be properly timed and scored, and the results properly reconciled and promptly submitted to TACSTATS. It is also possible to achieve yearly national rankings in all age groups from these submissions. For more detailed guidance on submitting for national records, contact Linda Honikman, TACSTATS, 915 Randolph, Santa Barbara, CA 93111, tel# (805) 683-5868.

The question has been raised that perhaps some of the Delaware courses may not have been competently measured and may be short. That is possible but our statistics on courses the Road Running Technical Council has checked in other states show that over 98% of the courses checked were of the proper length. The irony in the Delaware situation is that you will never have a course checked by an expert RRTC measurer until you start reporting race results to TACSTATS. Upon discovering a possible new record in race results, TACSTATS requests the RRTC to send an expert measurer to verify the length of the course. Since I have performed this task many times in other states, I would be delighted to have a reason to visit Delaware

  
Wayne B. Nicoll  
National Course Certifier, Delaware  
Road Running Technical Council

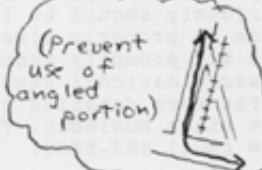
**RUN vs ROW**  
**10K CHALLENGE RACE**  
**Alexandria, VA**  
**TAC-CERTIFIED COURSE**  
**VA-92005-RT**

**KEY**  
 — Runners' Path - 1st time  
 ... Runners' Path - 2nd time  
 - - - Runners' Path - 3rd time

**LOCATIONS**

Start - VERC0 pole on Madison, 170 feet east of Fairfax

1 - Union St, opposite tunnel + volleyball court; 144 yds N of Gibbon; 19' past VERC0 pole # AG 22



2 - Jones Point Rd, 43' before (west of) bike path

3 - Union St, 105' S of Sedge Queen St, at entrance to #211 Harbor Center on R

5K - Union, 5' before N edge Princess St

4 - Bike path, 80' before wood bridge at VERC0 plant

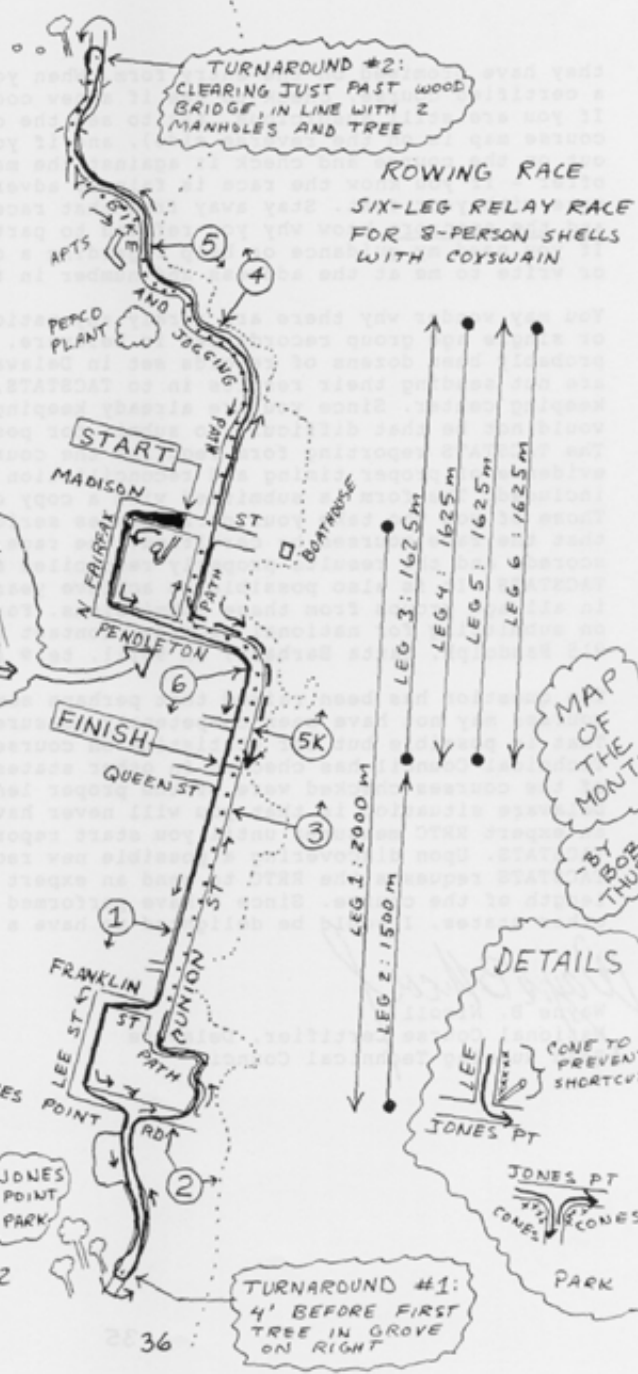
5 - On "boardwalk," even with inside corner of apartment building

6 - Corner, Pendleton + Union; 6' before second RR crossing

FINISH - Union St, 68' N of Queen St; 27' N of Stop Stripe N of Queen

Measured 2/29 + 3/14, 1992  
 by R Thurston

RET





**The  
Athletics Congress  
of the USA**

George P. Regan  
233 Fourth Street  
Troy, NY 12180

*The Governing Body for Athletics in the United States  
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Running and Race Walking for  
men and women and boys and girls  
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**WAYNE B. NICOLL**  
Ragged Mountain Club  
Potter Place, New Hampshire 03265  
(603) 735-5721

24 April 1992

Dear George,

Here are my observations and recommendations resulting from my assignment as the TAC/USA Course Inspector at the U.S. Mens' Marathon Olympic Trials at Columbus, OH on April 11, 1992. I would like to express my deepest thanks for the opportunity to be part of such a professionally orchestrated event. I felt on several occasions an overwhelming sense of pride and deep humility as I watched the events unfolding before us.

I received this assignment as the result of a most fortunate circumstance. Peter Riegel, Chairman, RRTC, is a Columbus resident and the measurer of the Marathon course. He was the person originally selected for the assignment, but he was already committed as an IAAF Validator for the London Marathon on the same weekend. I was fortunate to be selected as his replacement. The Riegels made available to me a personal vehicle and standby measurement equipment which could have been used if a course change had been necessary.

Prior to the '91 Columbus Marathon, the course (which was the same for the Trials) was pre-validated by a team of RRTC Certifiers. The purpose of the pre-validation is to eliminate any possible doubts as to the length of the course. Secondary benefits include a sharing of course measurement and design expertise with race staff and local measurers, and increased visibility of the course measurement, certification, and validation process. The TAC/USA Womens Measurement Team has been particularly successful in promoting the measurement program. The pre-validation procedure has been voluntarily put into effect at both the Mens' and Womens' Marathon Trials courses in 1988 and 1992. It should be formally included as part of Trials bid packages to insure the bidders accept and support the pre-validation with funding and on-site logistical support. This procedure should also be included in the road course planning for the Olympic Games in Atlanta

The duty of Course Inspector is one of the new job titles we have proposed for LDR officials. As I see it, he has two primary duties. (1) He checks the race day course to insure it is set up according to the descriptions on the TAC/USA Course Certificate, and (2) he observes the race in progress to see the runners follow the measured path of the certified course.

If it had been necessary to make a course change in the 48 hours prior to the race, the Course Inspector (CI) was available to work with the police department and race officials to select an alternate route. The CI would insure the alternate course was the proper length.

If a detour became necessary during the race the CI should be present in a lead vehicle so he can verify the detour path used. He would later return and conduct comparison measurements of the measured path and the detour path to determine how far the athletes ran. He would report his findings as soon as possible to the Referee. In the 1989 Bobby Crim 10 Mile in Flint, MI, the winning woman, Cathy O'Brien, appeared to have set a U.S Womens record on a course where the race had been detoured for a short distance by the lead police vehicles. A quick comparison measurement showed she had run the full distance and her national mark was later ratified.

In the 48 hours prior to the race no measurement action on my part was necessary. I toured the course and familiarized myself with the course and the adjoining streets. On race day I was assigned to the lead digital clock car and was equipped with a cellular phone which gave me communications to key officials and managers. During the race I did not observe any major problems, and the few minor problems I noted were either handled on the scene (for example, widening of cones to allow larger race vehicles to pass) or were reported to the management. In my opinion it was a superbly conducted race.

I feel we need to clarify the titles of TAC/USA officials who are assigned to duties on the road course. The three teams designated as Course Officials were assigned by their team chief to duties which involved the reporting of incidents that occurred on the course. I believe the original intention of these teams was to record runner bib number data for the Referee so he would have immediate information available in the event of a course cutting allegation. This aspect of LDR Officials titles and duties on the course needs some massaging.

The following is recommended:

- 1) The duties of the Course Inspector be considered for permanent inclusion in any future LDR road officials structure. The title may need to be changed so it is not confused with other inspectors.
- 2) The RRTC course pre-validation process be formally included in the planning for all Olympic Trials (and Olympic Games in the USA) which use roads outside a stadium. This should include the Womens' LDR events and the Race Walks.
- 3) We should give more study to the titles and duties of TAC/USA road officials who will perform duties on the course.

Sincerely,

  
Wayne B. Nicoll  
Vice Chair East, RRTC

Copy: Doug Thurston, Pete Riegel, James Perkins



# FINISH LINES

Finish Line Sub-Committee  
Alan Jones, Chairman  
3717 Wildwood Drive  
Endwell, NY 13870  
(607) 754-2339  
July 1992

## *Revival of Finish Line Column*

Pete Riegel had the nerve to call my Finish Line column "moribund." I can think of other adjectives: dead, non-existent. In any case, his attack had the desired effect. Here, like the phoenix, is the revived Finish Line column.

## *Technology*

Technology moves on! Race directors should be taking advantage of improvements in electronic devices. For example, our club bought a Chronomix 707 printing timer for close to \$1000 in 1981. It weighed many pounds, had no display to tell one the current time into a race, and had serious human factor problems. Today one can buy a Seiko printing timer for \$279 which weighs about one pound and has excellent human factor features. However, this device has no computer interface. For that one must move up to the Chronomix 737, the TimeTech Sprint 8, or the Time Machine. I have information on each of these devices. Contact me for phone numbers.

Even though technology can help enormously, one must still apply the fundamental rule of race direction: redundancy! Murphy has not been declared dead yet and I don't expect him to be. The best of devices can fail or be used incorrectly. You must have backups!

Let me summarize two technology improvements.

## *Bar Code Readers*

Most races of any size these days use bar code readers. When bar code readers were first introduced into race management, they were usually a wand which one passed over the bar code. Today new laser and CCD (charge coupled device) scanners are increasingly showing up. In addition, a number of these have their own memory so that one can scan the bar codes at one point and then carry them to the scoring computer and transferred. I watched the bib numbers being entered at the Hospital Hill Run in Kansas at the 1991 Road Runners Club of America Convention. One woman fanned the bar codes out while the other hit them with her laser scanner. I couldn't believe how fast they went

in. And, the whole time she scanned them, she carried on a conversation with me! Much easier, faster, and more accurate than typing the numbers in -- even with someone who can touch-type on the numeric keyboard.

## *Tag-Reader (tm) and Time Tag Identification Systems*

At this year's RRCA convention in Milwaukee, a new device was introduced. It consists of a tag which each runner wears on the arm like a wrist watch. Each tag has a 16-character code which the computer knows for each runner. In other words, each runner is known by two numbers -- the bib number and the tag number. You don't have to enter this 16-character code -- the device does it for you press it against a small box. When the runner leaves the chute, this tag is pressed against the box which is connected to the computer. The tag, which has no battery or active devices, has its number read by the box. One can see that, while this can record the bib numbers, it cannot do the timing as the Time Tag system can. The Time Tag has electronics and a battery. It is awakened by radio waves at the finish line and broadcasts its ID. The problem with the Time Tag is that each tag costs about \$30. They are recovered at the end of the chute. The new Tag-Reader system tags costs \$8.00 in small quantities and drops to \$5.00 in large quantities.

Information on the Tag-Reader can be obtained from Reliable Racing Supply, Inc., 630 Glen St., Queensbury, NY 12804 (518) 793-0526, FAX: (518) 793-6491. Information on the Time Tag can be obtained from American Sports Timing Systems, Inc., 458 Boston Road, Topsfield, MA 01983, (508) 887-3727

## *Send Ideas for Columns*

To keep the Finish Line column going, I need ideas. Send them to me at the above address.

THE ATHLETICS CONGRESS  
OF THE USA

3354 Kirkham Road  
Columbus, OH 43221

Road Running Technical Council  
Peter S. Riegel, Chairman

614-451-5617 (home)  
614-424-4009 (work)  
FAX 614-424-5263

April 30, 1992

To: Baumel, Honikman, Knight, Nicoll, Wickiser

Subject: Short courses

Last summer's IAAF seminar, and the recent bandit remeasurement of Carlsbad, has got me thinking about short courses and what, if anything, to do about them. I took a new look at validated courses, using only those courses that were certified in 1985 or later, to get rid of the ancient history.

What I found out, which you probably suspected, is that the shorter the course, the more likely it will fail validation. Also, the shorter the course, the more variable the measurements. A twisty 5k is the worst of all, as we found out in West Jefferson in 1990.

Here are a couple of pages of graphs and tables that show how it came out.

By and large the recreational aspect of the certification process is working just fine. Even though a few courses have been found short, only 1 or 2 percent were short enough to even begin to be noticeable. Those shortnesses may probably be ascribed to some outright blunder rather than to a fault in measurement technique.

One of the seven 2.5 km racewalk loops we've checked has failed, or 14 percent. Still, this is only one failure and we don't really have that much of a database.

Three of the 20 5k's we've checked have failed (15 percent), which I think is higher than it ought to be if our method is robust.

I believe the problem could be simply corrected by tweaking the 5k SCPF upward a bit. It would be possible to write a complicated expression, or another way would be to simply say "double the SCPF for 5k's." However, I don't relish the idea of making it an official must-do procedure. The last thing we need is a protracted fight about the SCPF.

I can recall several measurements I have made in which I arbitrarily added some distance or other because I judged I might have been sloppy. You don't really have to add very much.

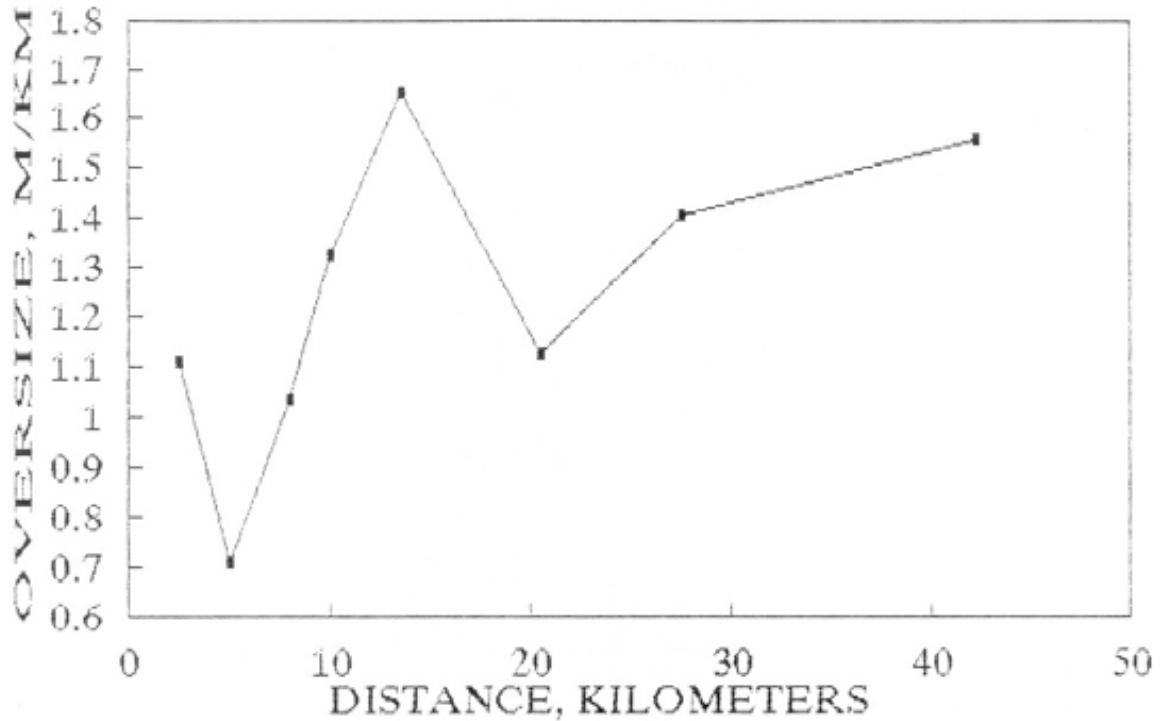
Do any of you think this is a big enough problem to require any official correction? I am thinking of putting this in next MN to see what everybody thinks, but I thought I'd share it with you first.

Best regards,



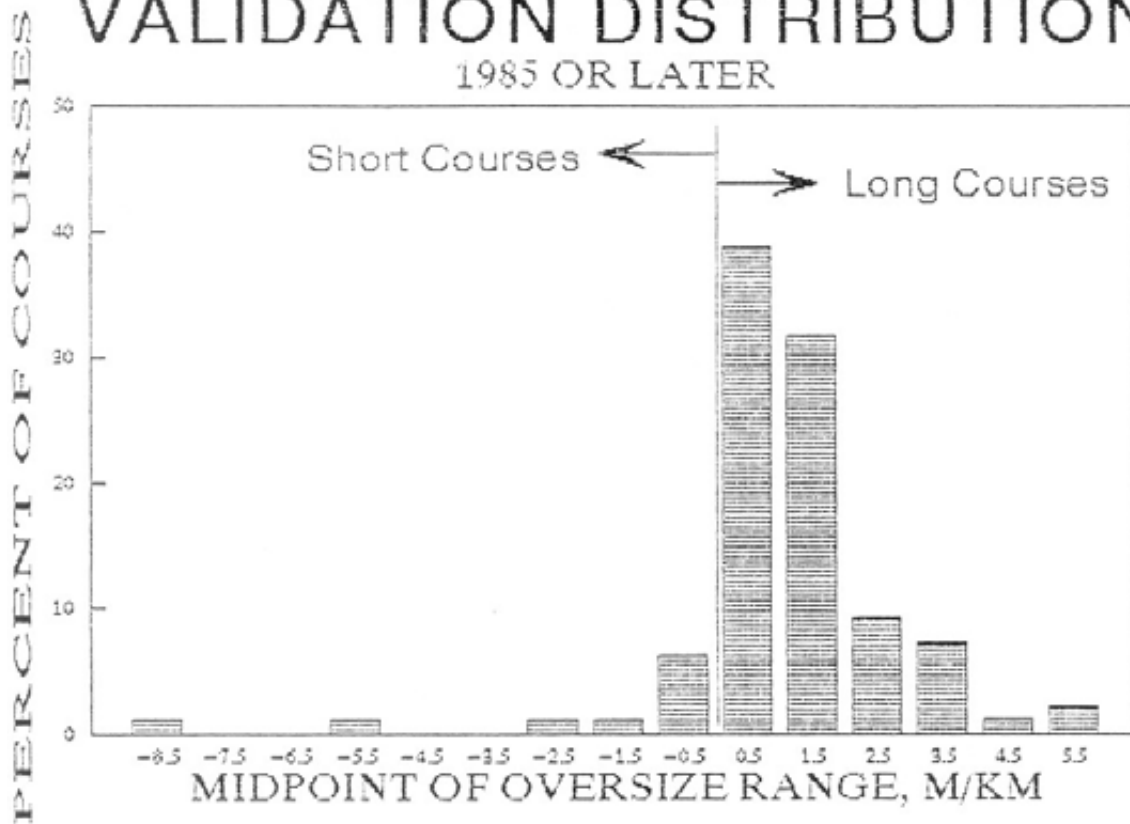
# VALIDATION STATS

BASED ON 1985 OR LATER



DISTANCE KM	AVERAGE OVERSIZE M/KM	STANDARD DEVIATION M/KM	NUMBER OF COURSES	NUMBER OF SHORTS	PERCENT SHORT
2.5	1.11	1.26	7	1	14.3
5	0.71	2.56	20	3	15.0
8	1.03	1.19	14	1	7.1
10	1.33	0.90	10	0	0.0
12, 15	1.65	1.15	6	0	0.0
20, HMAR	1.13	1.60	12	1	8.3
25, 30	1.41	0.66	6	0	0.0
MAR	1.56	0.59	9	0	0.0
			84	6	...

# VALIDATION DISTRIBUTION 1985 OR LATER



NUMBER OF COURSES	MIDPOINT OF RANGE	PERCENT OF COURSES
1	-8.5	1.0
0	-7.5	0.0
0	-6.5	0.0
1	-5.5	1.0
0	-4.5	0.0
0	-3.5	0.0
1	-2.5	1.0
1	-1.5	1.0
6	-0.5	6.1
<hr/>		
38	0.5	38.8
31	1.5	31.6
9	2.5	9.2
7	3.5	7.1
1	4.5	1.0
2	5.5	2.0
98		100

SHORT  
 ↑  
 ↓  
 LONG



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including Track and Field, Long Distance  
Running and Race Walking for  
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at all age levels.*

MIKE WICKISER  
2939 Vincent Road  
Silver Lake, Ohio 44224  
(216) 929-1605

5/18/92

Peter Riegel  
3354 Kirkham Rd.  
Columbus, Ohio 43221

Hi Pete,

I think you are on the right track suggesting to add to or double the S.C.P.F. for 5k and shorter distances. The real corkers, as you point out are those twisting ones like the West Jefferson course at Battelle Institute. All courses require the S/F and turn around points to be accurate but a 5k with separate Start, Finish, two artificial turns, and a fair measure of twists like Carlsbad 5000 really accent the need for a S.C.P.F. and exact reproduceable location pinpointing. For courses such as these some added cushion, like doubling the S.C.P.F. is "cheap insurance".

Best regards,

cc: Baumel, Honikman, Knight, Nicoll

Trowbridge 1st June, 1992

Dear Pete,

I spoke to Mike Gee, the Technical Officer of the IAAF, last week. I had asked him sometime ago the status of heart rate monitors, and he said he would raise the subject with the IAAF Technical Committee. As you may know, the Technical Committee met in Stuttgart recently. After long debate they decided that for the moment Heart Rate Monitors are legal in competition but the situation will be reviewed at the Congress to be held in association with the next World Championships(Track and Field). This means that such monitors can be used in the Barcelona Olympics. (That decision was subject to ratification by the Council of the IAAF at Toronto this weekend.)

I enclose a copy of John Jewell's original report from June 1961(I had two copies - and I thought you might like one.) I also enclose a copy of a summary that John made of the Report which was published in Athletics Weekly magazine shortly afterwards. It seemed to me that his summary would be much more accurate and appropriate than any I could produce, so I got his permission to send it to you for reproduction in MN. Please credit the piece

- re-produced from Athletics Weekly 1961. John has said recently the hardest part was disseminating the ideas and persuading people that the use of the calibrated bicycle was the quickest and most accurate method easily available.

As you well know course measurement has only been one of John's many activities - he has only recently, at the age of 80, given up as editor of the excellent RRC Newsletter(he remains as assistant editor!) Last weekend a dinner was held in his honour before the National 100km Championships at Nottingham. There it was announced that the John Jewell medal would be awarded to the top road runner in the United Kingdom each year, and that John should be on the selection committee, along with the President of the RRC and a representative from the British Sportswriters Association.

My own view on aided performances is simple. I ask one question - Can the runner re-produce that performance without that particular aid?

If the answer is yes - then the runner didn't need the aid in the first place.

If the answer is no - then the runner was getting an advantage from that aid, and the performance was unfairly aided compared with any other competitor in the race who was unable to be so aided.

One last thought whilst on the subject. Has the TAC ever thrown out a pending <sup>ultra</sup> record because the performance was aided by pacing? This has happened in the UK, and in France(the former mark being a world best.) With the incidence of pacing on three mile loops etc in California seeming to be on the increase(though how one could get lost on such a loop in daylight and be at risk is surprising to me.I had not realised that Californian road loops were so hazardous!!) is there a check in US record application forms to guard against such aid?

I hope you find the enclosed of use and of interest.

All good wishes,



Andy Milroy

See John Jewell's report of the state of the art in England, in 1961, on the following pages.

Reproduced from Athletics Weekly, 1961.

A summary by JOHN JEWELL of a report by the Road Runners Club on Road Course Measurement. The programme of work and compilation of the report took two years to complete and it shows that most of our road courses are short, by an average 10 yards per mile.

FROM  
1961

HOW many Road Runners or Walkers have ever considered how road courses are measured? The correct measurement of road courses is nevertheless of fundamental importance as road running championships are held at definite distances such as 20 miles and the classic marathon distance. Standards are awarded for performances in these events and unless the distance is correct such standards are meaningless.

Last year the winners of three different marathons were chosen to represent Great Britain in the Olympic Games. If the distance of any of these three events had been much in error, the selectors would have been presented with incorrect information upon which to work.

Furthermore, marathon rankings are now published. Although weather conditions play a more important part in these long distance events than in most others, and the character of the course—in particular as regards gradients—affects performances, it is axiomatic that the distance should be above suspicion.

Occasions have occurred when considerable errors have existed in the distance of the race and these have not been confined to club promotions but Championship events and even International races. The competitors themselves soon realise if the course is either too short or too long. It is logical to adopt a critical attitude when a very fast road time has been recorded until it is proved that the course measurement is above suspicion.

The I.A.A.F. and A.A.A. Rule states that the road shall be measured one metre or 3 feet 3 ins. from the kerb in the direction of running, but no guidance is given as to how the measure shall be made. The established method of measurement which has been used for generations is by Surveyor's wheel. This is a wheel of exact circumference, generally of two yards, which is mounted in a frame similar to the front forks of a cycle. It is pushed along the road and the number

of revolutions recorded on a counter, so that the distance in yards be can read directly. The same principle was used by the Romans to measure their roads and similar wheels were in use in England during the 13th century.

It was apparent in view of the controversies which arose from time to time as to the correct distance of a number of courses, that a thorough investigation was required into the accuracy of the various measuring instruments employed. The measurement of a physical quantity is subject to experimental error. This may be extremely small, as in the case of weighing where the error may be only one part in 100 million, but accuracy is relative and in the first place it was necessary to define how accurately a road course *should* be measured.

#### VARIETY OF METHODS

If Standard times, and in particular the R.C.C. Standards which are set to the nearest minute, are not to be misleading, calculation shows that the error in the measurement of the course must not exceed 5 yards per mile. Since inquiry showed that an amazing variety of methods of measurement were being used, including car mileage recorders, cyclometers, pedometers, maps and the cycle method used by the Road Time Trials Council of the British Federation of Cyclists, as well as the surveyor's wheel, it was desirable to investigate the accuracy of all these methods.

The programme of work took two years to complete and a detailed report of the procedures and results has been published by the Road Runners' Club. This report is available to anyone interested in this important and hitherto neglected subject.

Firstly it was apparent that as regards athletic events, little if any thought had ever been given to the accuracy of course measurement and far too much had hitherto been taken for granted. Apart from the cyclists and the Police who may be con-

cerned in legal disputes concerned with taxi fares, no section of the community desired to know the distance from one place to another as accurately as the road athletes.

A number of types of surveyor's wheels were tested along a carefully measured stretch of road and it is significant that all of them overestimated the distance, the average error being 10 yards per mile and sometimes being twice this amount. The error was found to depend on the road surface and the speed of pushing the wheel. Successive measurements over the same stretch of road with the same wheel did not in fact give the same distance. The wheels in general possessed poor road holding qualities owing to the narrowness of their rims which resulted in inaccuracies due to wobble and bounce.

Although these wheels are not therefore precision instruments, some were just capable of producing results of sufficient accuracy. The speed of operation should not exceed 3 m.p.h. and their average errors should be determined on a measured stretch of road but not on a running track.

The car speedometer mileage indicator is a commonly used means of road measurement. These are however not precision instruments but mass produced articles and are liable to errors from a number of causes. These errors may be as much as 5%-10% so that measurement of road distances by this means is useless. A. D. McSweeney has, however, developed a method by calibrated car mileage indicator which has given satisfactory results for a number of years on road walking courses. Another limitation of this instrument is that it will not indicate distances of less than a tenth of a mile. Neither cyclometers or pedometers are sufficiently accurate for road course measurement.

#### **R.T.T.C. METHOD BEST**

It is not always possible for promoters to wheel their courses and the question arose as to how accurately a road distance could be obtained from a map. Excellent results were obtained from Ordnance Maps, distances agreed to 4 yards per mile with those obtained by the R.T.T.C. method described later. Map measurements can serve as checks on wheel measurements and if reference is made to maps, gross errors which occur from time to time would be avoided. The 6 inch series is probably best but the 2½ inch maps also gave excellent agreement.

It is important to keep records of intermediate distances as road alterations are fairly common. Reference has already been made to the measurement by calibrated cycle wheel as used by the R.T.T.C. This method was thoroughly investigated and proved without doubt the best for road measurement. It is not only very accurate (1 yard per mile and better) but rapid and simple to use. The measurement of road distances is of prime importance to the Time Trial cyclist as times on many courses all over the country are compared. The measurements are carried out by a number of District Committees using this method, the precise details of which have been laid down by the National body.

The accuracy of the means of measurement having been established, a number of road running courses in the London area were measured using the R.T.T.C. method. It was found that all but one were short, the deficiency averaging 10 yards per mile and therefore amounting to a sizeable distance in a long race. The Brighton road was measured three times this year and close agreement was obtained between the three measurements, the distance from Big Ben to the finishing point being 52 miles 786 yards, 1,103 yards less than the published distance. It is interesting to note in view of the times recorded on the 8th stage of the London to Brighton Relay, that this relay is 281 yards shorter than the figure given.

A full account of these measurements and the detail of the method used are described in the R.R.C. report already mentioned. Times and distances in track events are measured to a high degree of precision but this precision has not been attained so far in the measurement of distances on the road for athletic events.

Information from overseas indicates a similar state of affairs exists elsewhere. The standard of course measurement for athletic events is far below that achieved for many years by the cyclists. The R.C.C. through the willing cooperation of the organisers of road races have, during the past 7 years, achieved a marked improvement in the standard of course measurement in England. The technical problem has been solved, it only remains to bring the knowledge to those who can make use of it.



## THE "FLICKER FLEA" PUZZLE

Brian Smith fooled just about everybody with his puzzle. Some comments received were:

"It seems so simple it's probably wrong" - Mike Wickiser - answer 42. Mike went on to comment on the course:

The course can be run two ways from start to finish. By going straight up from the start, then following the center-line of the ceiling to the far wall and then down ( I like down hill finishes myself ! ) the wall to finish. A second version , of same length, would start by descending the wall and end going vertically on the far wall to finish ( Boo - Hiss ).

These two courses would yield a race distance of 42'.  
The drop would be at the rate of 23.4357 meters / km.  
Separation would be 75.9232%.

The only way I can come up with to effectively shorten the course would be to use the course with the uphill Finish, then simply leap off the wall at the Start, fall to the floor then proceed towards the Finish. This would then shorten the distance actually "run" to approx. 31' or less depending on how far from the wall a Flicker Flea could land from that point where the floor and wall meet. Assuming, of course that the fall didn't kill the little rascal Course distance would remain the same as would "drop" and separation.

"The fleas have only 2 choices of courses to follow" - Stu Riegel

Dear Dad,

Regarding Brian Smith's puzzle in MN, May, the fleas would have only 2 choices of courses to follow. The courses would be mirror images of one another. Both courses measure exactly 31 feet. Course One starts with an 11 foot drop to the floor, without touching the wall, continues straight to the opposite wall and up to the finish. Course Two starts with a vertical climb to the ceiling, continues to the opposite wall and ends with a 12 foot drop, crossing the finish line in the process.

I would choose Course Two, for the following reasons. First, the drop presents a significant risk of injury. One of the fleas' six legs could be broken in the fall. If the fall occurs in the final seconds of the race this is not a problem, as the flea can be replaced for the next race. Also, having to climb 1 foot vertically at the end of a race would be tiring, whereas the same climb at the start of the race would not be a big problem.

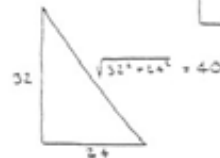
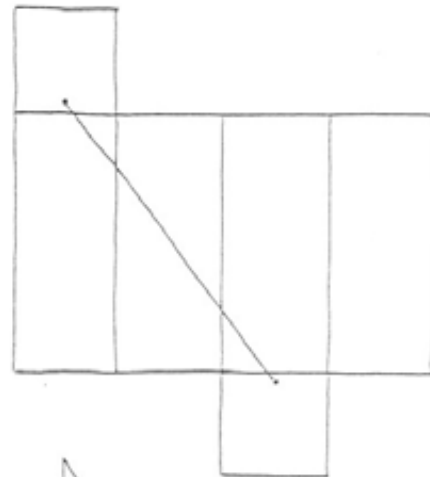
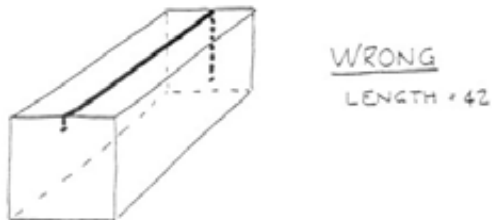
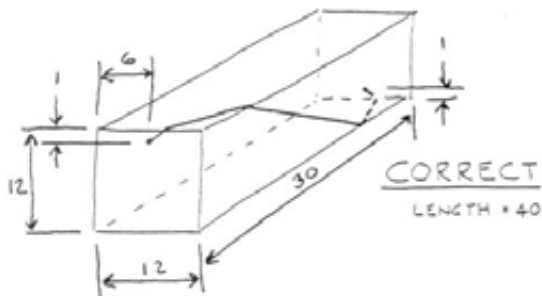
It was not mentioned how far or high the fleas can jump. If they can jump more than a couple of inches the course would be shorter, since the transition from horizontal to vertical could be triangulated, and the sides of the triangle formed by the hypotenuse (jumped line) could be subtracted from the overall distance run. This would be similar to starting or ending a road race with a broad jump.



"The puzzle of the month seems almost too easy" - Bob Langenbach - answer 42

"The puzzle seems too easy" - Gene Newman - answer 42.

The way to find the shortest possible route inside the box is to unfold the box, so all its sides lay flat. Then draw a straight line between the points. Of course, there are many ways to unfold the box. Shown below is the combination of unfolding that yields the minimum value of 40 units. Other ways of unfolding can yield nine different distances, but 40 is the shortest.



### POSSIBLE LENGTHS

- 40.00
- 40.72
- 42.00
- 43.17
- 47.52
- 48.27
- 48.37
- 57.27
- 62.37

There's more to puzzle-solving than mere science. The winner this month is officially declared to be Stu Riegel. Mike Wickiser came up with the same 31 foot distance, but Stu's course design overcame the potential problem of broken legs. Questions regarding nepotism are not invited.

PAUL OERTH  
2455 UNION ST #412  
SAN FRANCISCO, CALIFORNIA 94123

ROAD RUNNING TECHNICAL COMMITTEE  
PETER S. RIEGEL, CHAIRMAN

February 5, 1992

Dear Pete,

The puzzle last month was a beaut. I worked on it, but I kept coming up with a 4th degree equation. I can solve a 4th degree equation using HORNER'S METHOD; but I know there has to be an easier way...a better way. As a matter of fact I enjoy working math problems of all sorts. Here is one you might use.

A column of soldiers marching along is exactly 5 miles long. There is a Captain at the back, and a Sergeant at the front. The Captain sends a runner to the Sergeant with a message. The runner reports back to the Captain just as the Captain reaches the point where the Sergeant was when the runner started out. The runner lost no time delivering the message. The runner's rate of speed and that of the column is constant. How far did the runner run?

PUZZLE OF  
THE MONTH  
- ANSWERS  
SEND TO PETE.

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#### MEASUREMENT OF BERLINER HALBMARATHON

Here is a foreign measurement that has some interesting features:

The course was originally laid out by Prof. Dr. Horst Herzog of Berlin. On the night before the race, Dieter Damm of Frankfurt came to measure the course. The measurement was done in the middle of the night. Herzog had laid out what seems to be parallel calibration courses on Karl-Marx-Allee, close to the start. This permits the rider to calibrate safely, riding on the legal side of the street. The calibration courses were laid out using EDM, and were of slightly unequal length, meaning that calibration counts in both directions did not match up. This, of course, was accounted for in Damm's calculations.

Two styles of calibration recording were used. Damm rolled his bike across the street, and began each calibration ride with a fresh count. Herzog locked his wheel and started each calibration ride with the finish count of the previous ride.

Damm and Herzog rode together, stopping at two reference points enroute, but not recording data at intermediate splits.

When I was doing the calculation to check the work, I was fooled at first by counter rollover. Damm's counter rolled over twice between SP2 and the finish. Initially I gave it one rollover, but the distances did not check. Later I saw the mistake I had made. My calculations matched those of Damm.

The remeasurement of Herzog's course showed excellent agreement with the course as laid out. At the conclusion of the measurement about 6 meters was removed from the course, although a few more could have been removed.

MEASUREMENT OF BERLINER HALBMARATHON

04/05 April 1992

All calculations use AVERAGE constant INCLUDING 1.001

Dieter Damm - Precal - 22:30 - 3 C

		Cal	Length	
		Counts	Cal, m	Cts/m
81790	87181	5391	584.6	9.230912
87560	92956	5396	585.13	9.231104
93486	98877	5391	584.6	9.230912
99272	104669	5397	585.13	9.232815

Postcal - 0:35 - 1 C

9480	14871	5391	584.6	9.230912
15230	20627	5397	585.13	9.232815
21224	26615	5391	584.6	9.230912
27029	33425.5	5396.5	585.13	9.23196

Constant for the day = 9.231543

Horst Herzog - Precal - 22:30 - 3 C

		Cal	Length	
		Counts	Cal, m	Cts/m
51750		5496	584.6	9.410701
57246		5501	585.13	9.410731
62747		5497	584.6	9.412414
68244		5501	585.13	9.410731
73745				

Postcal - 0:35 - 1 C

81458				
86957	5499	584.6	9.415838	
92460	5503	585.13	9.414152	
97959	5499	584.6	9.415838	
103461.5	5502.5	585.13	9.413297	

Constant for the day = 9.412963

Measurements:

	Damm			Herzog			Shortest
	Recorded Count	Interval Count	Interval Metres	Recorded Count	Interval Count	Interval Metres	Interval Metres
Start	10220			78600			
SP1	41822	31602	3423.26	10819	32219	3422.83	3422.83
SP2	72320	30498	3303.67	41910	31091	3303.00	3303.00
Ziel	05083	132763	14381.45	77294	135384	14382.72	14381.45
Length as measured:			21108.39			21108.55	21107.28
HMar =		21097.5					
Shorten by:			-10.89			-11.05	-9.78
Actually shortened by about 6 m.							
Course as run:			21102.39			21102.55	21101.28

**BERLIN 2000**  
 10. Olympische Spiele 2000

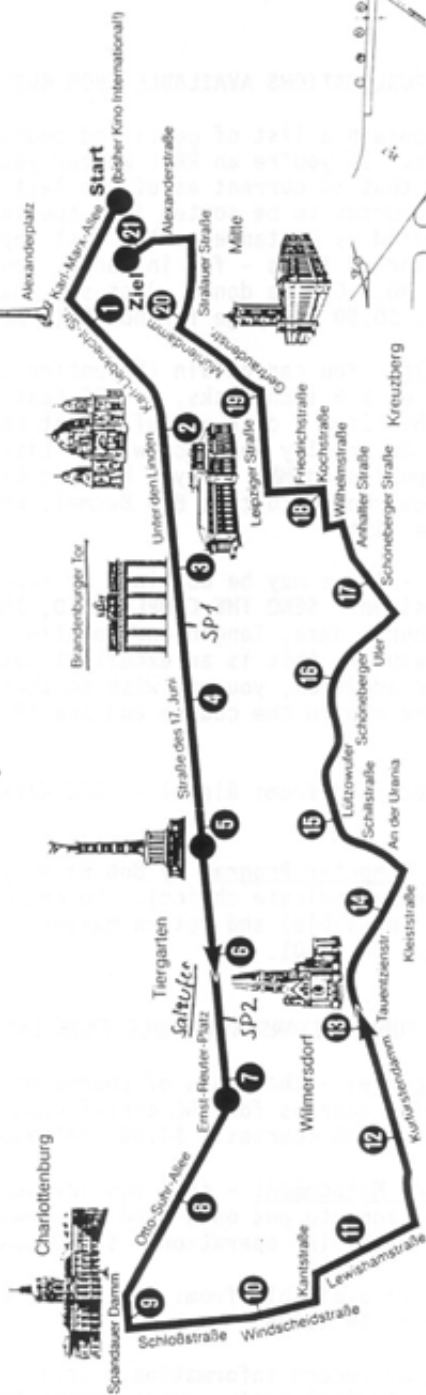


**SOC BERLIN**

# BERLINER HALBMARATHON

21,0975 km

5. April 1992



**SOC - Streckenplan -**  
**BERLIN**  
 - course-map -

Streckenprofil BERLINER HALBMARATHON

